h1000 system

user manual

HB-1000D-02 English

WARNING!

Use of solvent based or chemical cleaners on displays will result in damage and invalidate your warranty.

www.bandgservice.co.uk

overview

Congratulations on your purchase of the h1000 System from B&G. The h1000 navigation system combines clever thinking with incredibly simple operation, and represents B&G's commitment to providing customers with the finest marine navigation systems. The h1000 is a fully expandable integrated system of Pilot, Instrument and Chart Plotters offering a major advance in display flexibility. You can access any information from any display unit, so even one display unit can do everything providing the sensors are in the system.
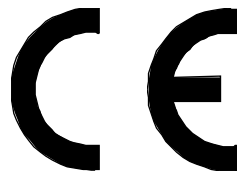
Before you begin using your new h1000 System, please take the time to read this manual to help you achieve the full potential from your new system.

certification

C E

warnings and precautions:

WARNING:

DO NOT USE AN ALCOHOL BASED CLEANER ON THIS DISPLAY.

Note:

This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference, the user is encouraged to try to correct the interference by relocating the equipment or connecting the equipment to a different circuit. Consult an authorised dealer or other qualified technician for additional help if these remedies do not correct the problem.

This device meets requirements for CFR47 Part 15 of the FCC limits for Class B equipment.

The h1000 meets the standards set out in European Standard EN 60945: 1997 IEC 945: 1996 for maritime navigation and radiocommunication equipment and systems.

During the manufacturing process, an anti-mist coating is applied to the inside of the display window, however, under certain atmospheric conditions, a small amount of condensation may form on the window of the instrument display, this will not harm the unit and should clear after a short period once the instrument has been switched on

The h1000 contains no user-serviceable parts. Repairs should only be made by an authorised service centre. Unauthorised repairs or modifications will invalidate your warranty.

trademarks

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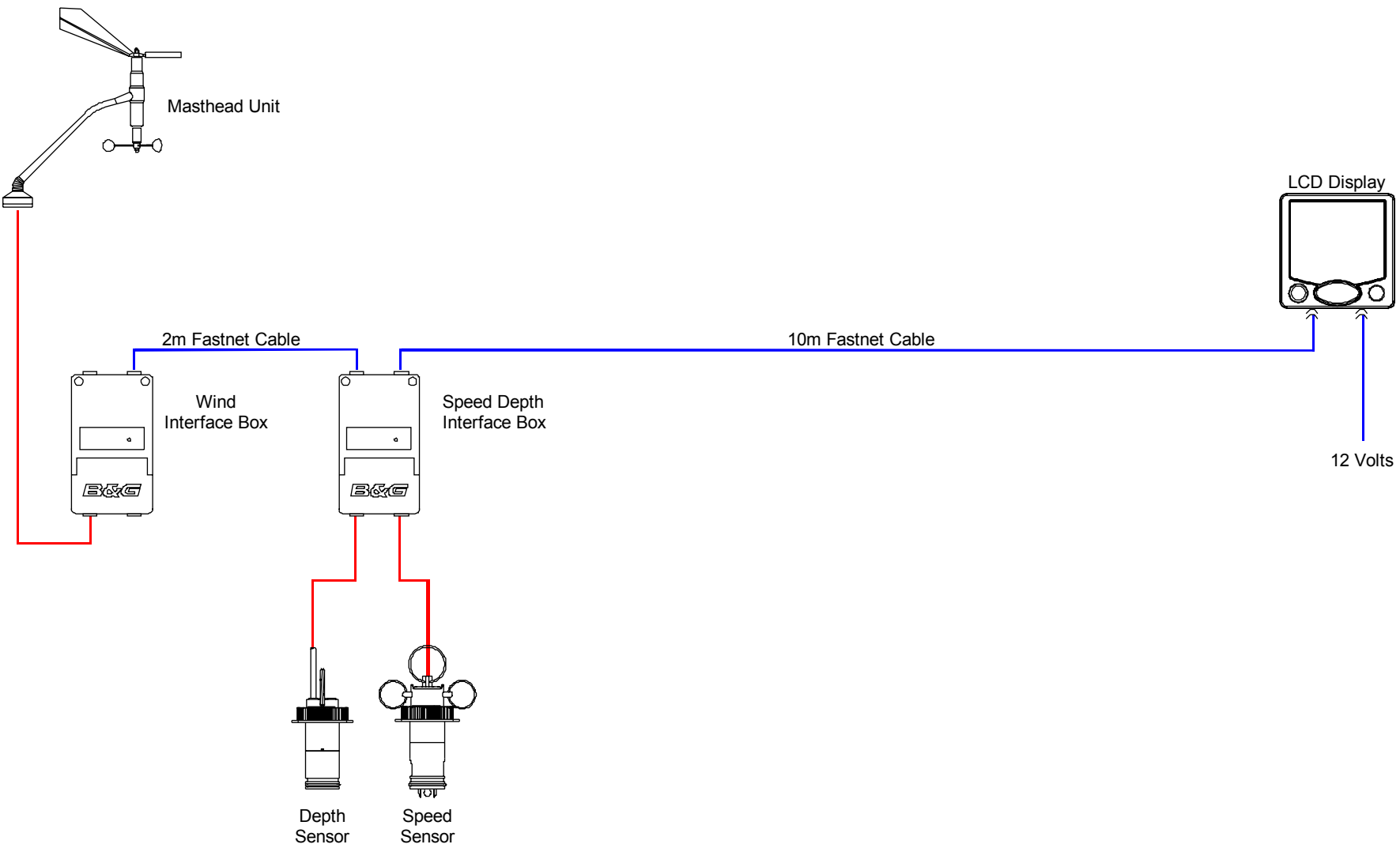
contents

h1000

contents

Masthead Unit

LCD Display

2m Fastnet Cable

10m Fastnet Cable

Wind
Interface Box

Speed Depth
Interface Box

12 Volts

Depth
Sensor

Speed
Sensor

display overview

Title Line

Highlighted Menu Item

Data Entry Field

Additional commands are displayed here

Alarms
Wind speed 40kts
Shallow 3.5m
Off course 15°
Low battery off

OK

OK returns to previous menu when highlighted and the ENTER key is pressed

	light controls
	The lighting level can be changed at any time by pressing the LIGHTS key. This causes the lighting level to cycle in the sequence **high - medium - low - off** and then back to **high.**
	The **UP/DOWN** keys are used to move through the various display pages and to scroll through options.
	Pressing the **ENTER** key displays the **Main Menu**, it is also used to select highlighted items.

switching on and off

Before switching the h1000 on, check that the installation instructions detailed on pages, 28 and 29 have been correctly followed.

switching on

Turning on the 12 Volt power supply to the system you will be presented with the B&G logo splash screen.

The h1000 will then perform a short self-test procedure that checks internal memory and displays any failure detected on the screen.

After a few seconds, the screen will display a data page, from here you can move through the page options using the **UP/DOWN** keys.

default data pages

The h1000 displays are pre-programmed with six default data page formats. These can be accessed by pressing the **UP/DOWN** keys. To change the default data page settings; refer to **changing screen format** on **Page 7** of this manual. The flexibility of the h1000 system allows for a virtually endless combination of screen formats to suit individual needs.
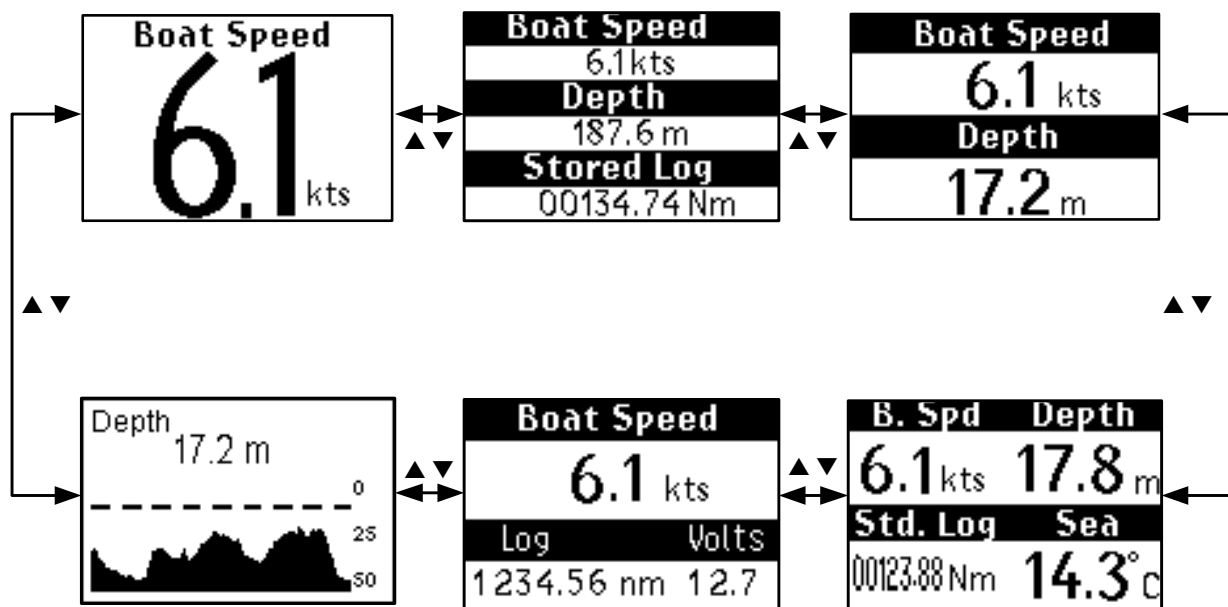
examples of the default data pages

switching off

Turning off the 12V d.c. power supply at the breaker will power off the h1000 System.

default factory settings

Language:	English
Speed/Distance Units:	Nautical Miles
Depth Units:	Metres
Wind Speed Units:	Knots
Bearing Reference:	Magnetic
Date Format:	Day-Month-Year
Time Reference:	UTC (universal time coordinate)

changing screen format

screen formats

The display can be customised for personal preferences using the Page Contents menu.

changing page data

Pressing the **ENTER** key from a data page will display the main menu. Select the Page Contents menu and press **ENTER** to select the screen format of the data page previously displayed.

Choose one of the pre-defined screen formats using the **UP/DOWN** keys and then press **ENTER** to select.
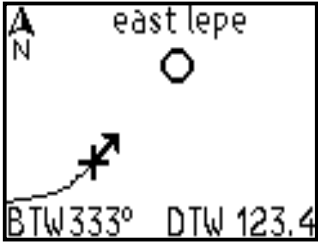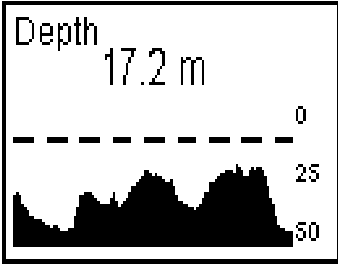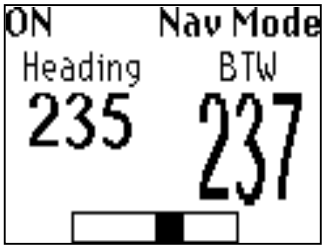
Once a screen format has been selected, use the **UP/DOWN** keys to select which pane you wish to configure and press **ENTER**. Use the **UP/DOWN** keys to scroll through the 'information displayed' choices and then press the **ENTER** key to select. Use the **UP/DOWN** keys to scroll to the next pane and press **ENTER** to select the pane.
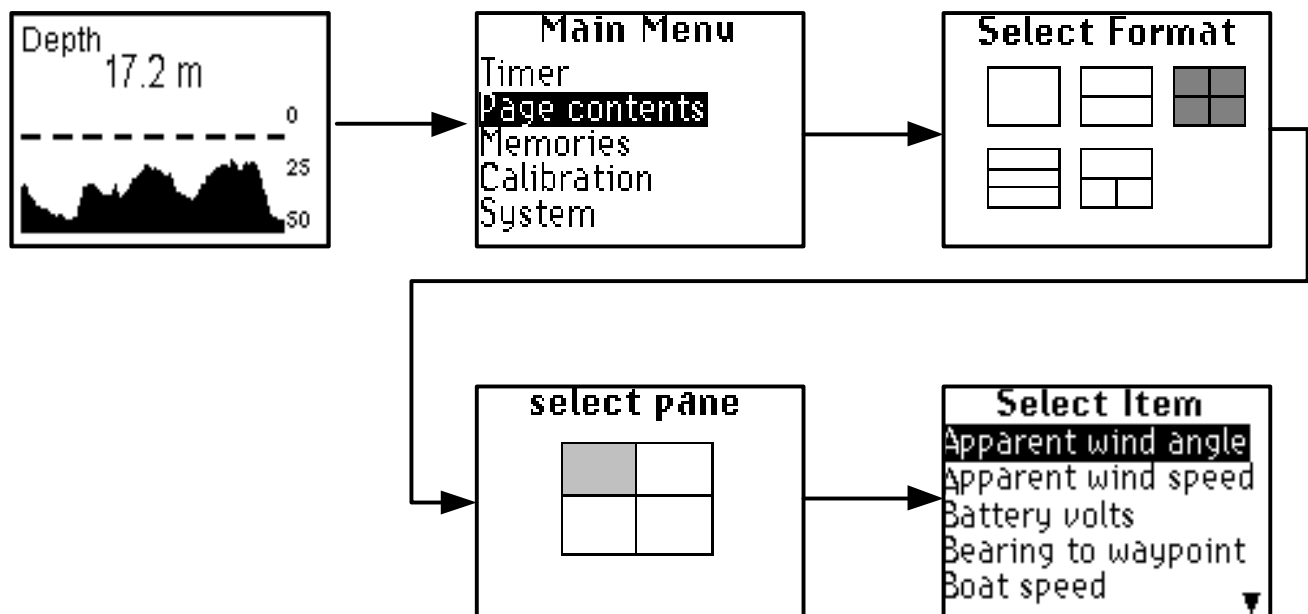
Repeat the selection process until you have made a choice for each pane. Use the **UP/DOWN** keys to highlight OK and press the **ENTER** key to save your selections.

To exit this function, use the **UP/DOWN** keys to highlight OK in the bottom right hand corner of the screen and press **ENTER**, you will then be taken back to the **Main Menu**.

graphical pages

	graphical pages There are three full-screen graphical pages available when the appropriate data is on the system. These pages are viewed by selecting Page Contents from the Main Menu, and then selecting the Full Screen option from the Select Format page.
	track screen Available when a GPS is part of the system and currently navigating to an active waypoint. The track screen shows the vessel's position on the screen as an X, the arrow from the vessel's position shows the current course over ground to the next waypoint of the leg. The relative position of the waypoint is shown as a circle. The name of the waypoint, the bearing to waypoint (BTW) and distance to waypoint (DTW) information are also displayed. The position of this information depends on the direction of the vessel.
	depth Available when a Depth sensor is part of the system. Depth is clearly shown in figures in the top half of the screen. The histogram in the lower half the screen gives an impression of the profile of the seabed.
	pilot display Available when a Pilot is part of the system. This is a read-only repeat of the main page on the pilot display unit. The layout of this page will depend on the mode currently selected by the pilot. Refer to the h1000 Pilot User manual for more details.

main menu

```
Main Menu
Timer
Page content
Memories
Calibrations
System
```

menu system

From any data page, press the **ENTER** key to access the h1000 menu system. The **Main Menu** will be displayed.

If no other key is pressed within a period of six seconds, the display will revert to the previously displayed data page.

timer

timer

When the Timer is selected from the **Main Menu** for the first time, the display will show **Time to Start**. To adjust the start time, highlight 00 mins and press the **ENTER** key. Alter the countdown start time by using the **UP/DOWN** keys and press the **ENTER** key to move between the digits.

To start the timer, use the **UP/DOWN** keys to highlight Start and press the **ENTER** key when ready. If the timer is counting down to the start of a race, the Title will remain as **Time to Start**. When the timer reaches zero, the title will change to **Elapsed Time** and continue counting up until Reset is selected.

The timer function continues to operate even when the timer page is exited. This allows access to other pages if necessary or perhaps even configure a data page to show the **Timer** function.

```
Race Timer

  00 mins

  Start
        OK
```

```
Race Timer

  00 mins

  Start
        OK
```

memories

	memories
	This menu covers various features of the system in which user-supplied data is stored for future use.

compass

The compass memory holds the current course and can be user defined. Port and Starboard courses are retained and are updated at each **ENTER** key press whilst in the **Tactical compass** page. When OK is selected control returns to the **Main Menu**.
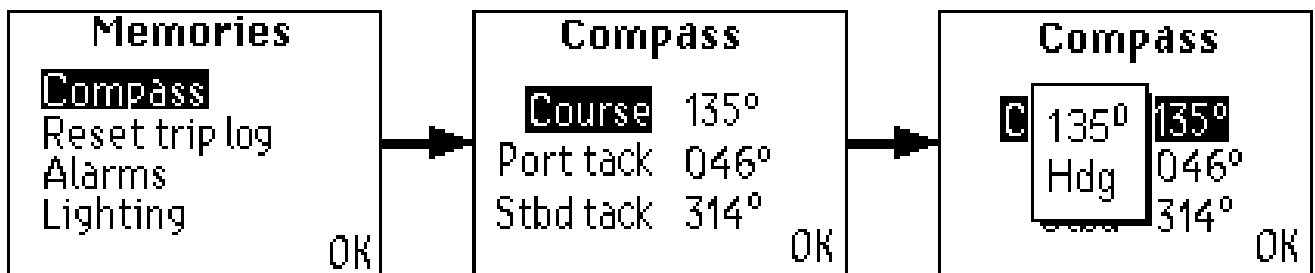
reset trip log

Trip log and Stored log functions can be accessed and displayed from the **Page Contents** menu when a Speed/Depth Interface is connected to the system. The trip log can be reset to zero by highlighting Reset trip log from the **Memories Menu**, selecting OK from the drop down box, and then pressing the **ENTER** key. Choosing cancel from the drop-down box will exit the function without resetting the trip log value.
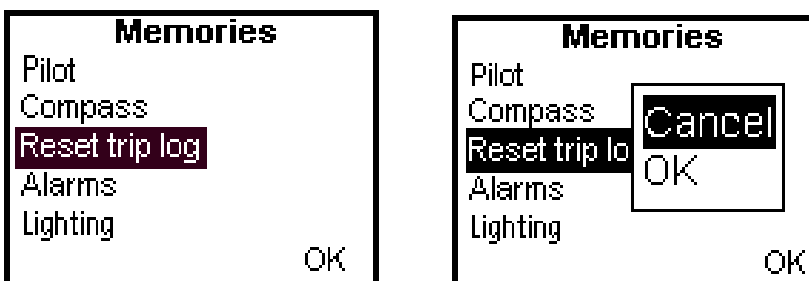
alarms

Alarm levels for high wind speed, shallow depth, compass off course and low battery volts can be set from the **Alarms** menu.

To set the wind speed alarm, highlight Wind speed from the menu and press the **ENTER** key. A drop-down box will appear showing an alarm wind speed value and off. To set the alarm, select the wind speed value from the drop down box and press the **ENTER** key. Using the **UP/DOWN** and **ENTER** keys, alter the value to the desired setting. The alarm is now active and will trigger if the wind speed is exceeded. To switch off the alarm, simply highlight off from the drop-down box.

The procedure for setting the wind speed alarm is shown on the following page as an example. The other alarms are set in a similar way.

Note: The low battery alarm is pre-set at 10.5V, and can only be turned **ON** or **OFF**.

memories

alarms

Alarms		Alarms		Alarms	
Wind speed	40	**Wind speed**	40 / Off	**Wind speed**	40
Shallow	3.5	Shallow		Shallow	3.5
Off course	15⁰	Off course		Off course	15
Low battery	off	Low battery off		Low battery	off
Pilot alarms		Pilot alarms		Pilot alarms	
	OK		OK		OK
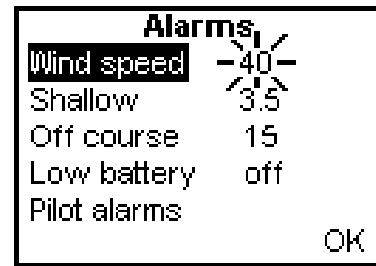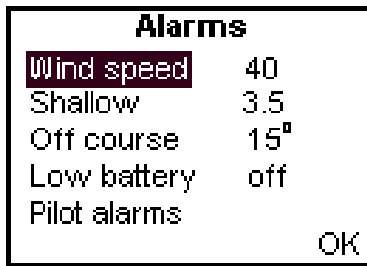
Note: all alarms are set to off when they leave the factory.

When an alarm condition occurs, **all** displays will show an alarm window that identifies the alarm and displays the current value. If an external alarm is connected to the **Universal Interface**, this will also sound. To silence the alarm press the **ENTER** key on any display.

lighting

The three display lighting levels are controlled by the **LIGHTS** key in normal operation, but the exact brightness can be adjusted for each of the three settings from this menu.

The levels are numbered in the order they appear when the key is pressed, and each level can be set in percentage terms from 00% (minimum) to 99% (maximum).

In addition, this menu page allows for the lighting zone to be set to either **local** (this display unit only), or **system** (the entire system) and is useful when zoning particular displays on the boat. For example, cockpit display lighting can be isolated from a display located below decks.

Highlighting OK and pressing the **ENTER** key returns the display to the Main Menu.

Memories	
Compass	
Reset trip log	
Alarms	
Lighting	
	OK

Lighting	
Level 1	**70%**
Level 2	50%
Level 3	30%
Zone	local
	OK

Lighting	
Level 1	70%
Level 2	50%
Level 3	30%
Zone	local
	OK

Lighting	
Level 1	70%
Level 2	50%
Level 3	**system**
Zone	local
	OK
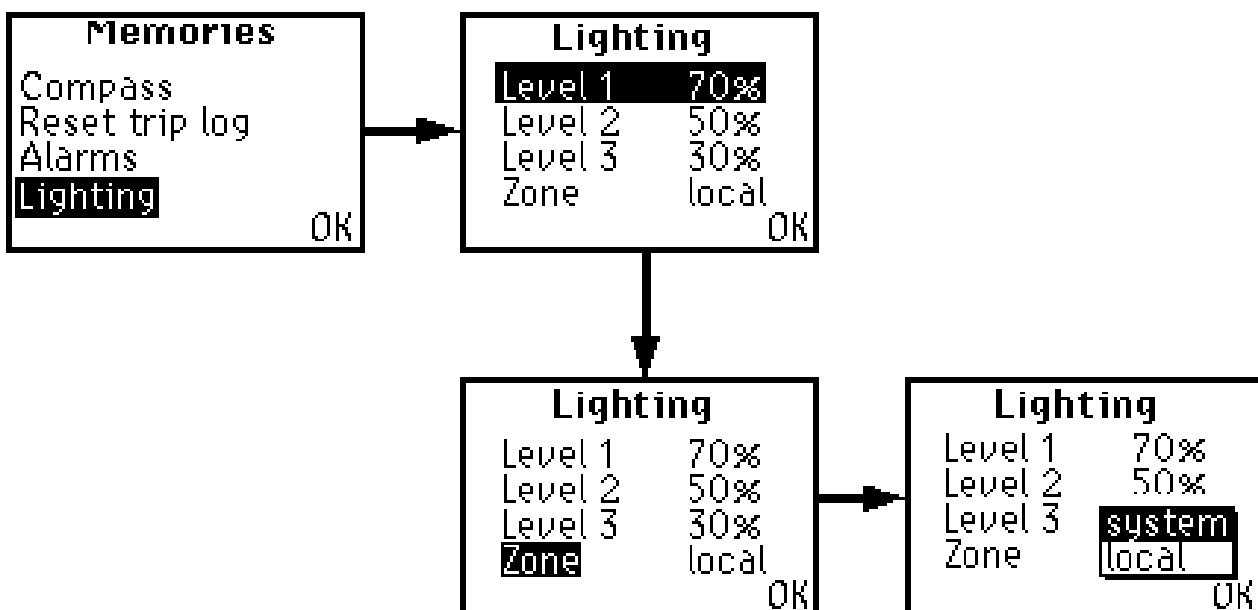
calibrations

calibration

Calibration values take time and effort to set up and it is often necessary to perform various manoeuvres with the boat. For this reason, an optional security lock is provided before entry into the Calibration Menu to prevent accidental resets.

security pin

The security PIN uses a four digit Personal Identification Number or PIN. If security has been activated, this PIN must be entered if you require the **Calibrations Menu**.

If you reset the PIN to 0000, security checking is disabled.

security

Security is an option on the **Calibrations** menu, which allows a new PIN to be set. Once a non-zero PIN has been set the security checking is enabled, and all subsequent access to the **Calibration Menu** is restricted.

Note:

Once the PIN has been entered, the PIN entry screen is automatically by-passed when re-entering the calibration menu. After a power cycle, the PIN is once again required to enter the **Calibration Menu.**

depth calibration

```
          Calibration
     Depth
     Speed
     Wind
     Compass
     Security            OK
```

```
      Depth Calibration                    Depth Calibration

        Unit metre                          Unit    metre
        Offset 1.20                         Offset  foot
                                                    fathom

                                                            OK
```

```
      Depth Calibration                    Depth Calibration

        Unit   metre                         Unit   metre
        Offset  1.20                         Offset 1.20


                   OK                                       OK
```
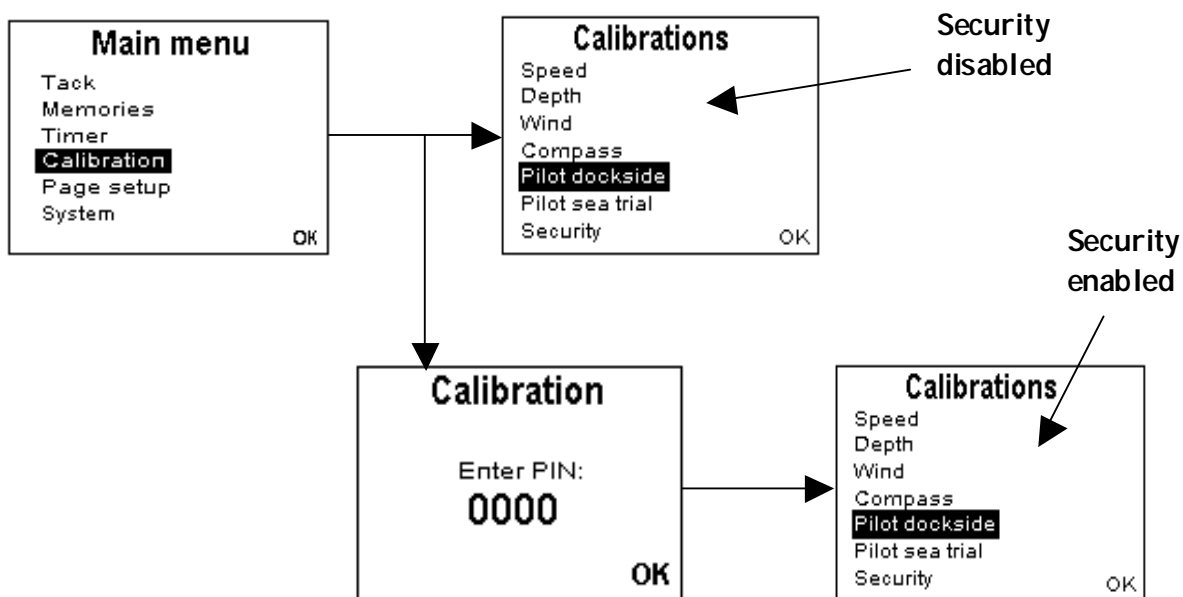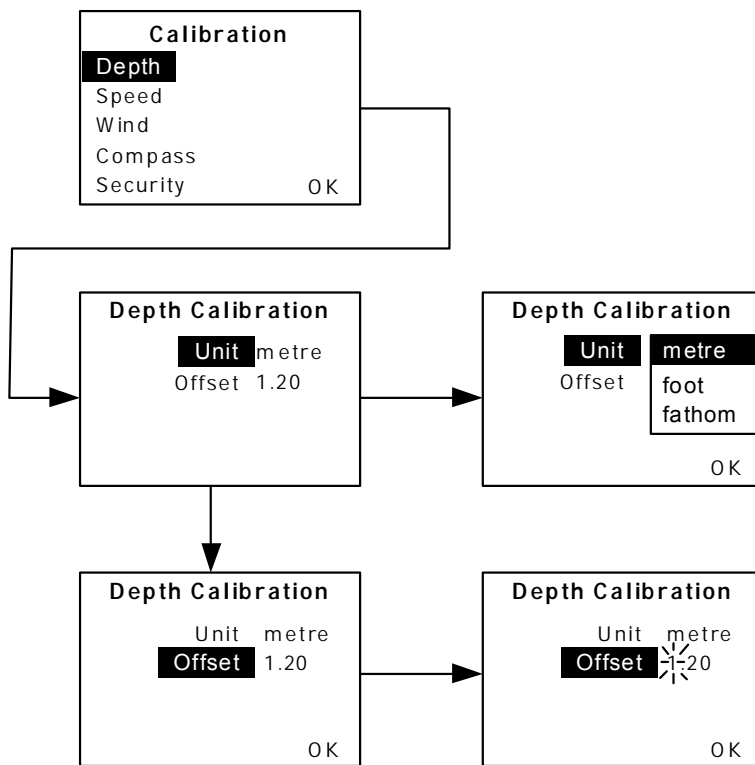
depth calibration

Depth calibration allows the units of measurement and transducer offset to be adjusted.

depth units

Depth values can be shown in metres, feet or fathoms. To change the units, highlight Unit and press **ENTER**. Using the **UP/DOWN** keys, highlight the desired choice and press **ENTER** to memorise.
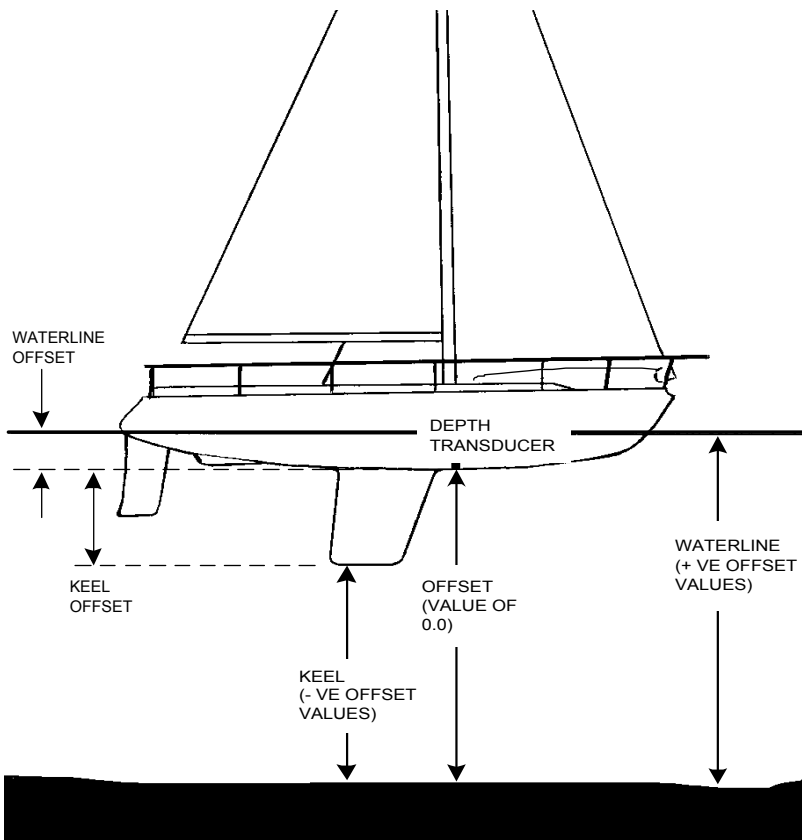
depth offset

Offset allows the h1000 to display depth readings from directly below the keel or propellers of the boat, or from the waterline to the seabed. This makes it much easier to see how much water clearance is left beneath the boat.

The offset value to be entered should represent the distance between the face of the depth transducer, and the lowest part of the boat below the waterline, or the distance between the face of the depth transducer and the water surface.

WATERLINE
OFFSET

DEPTH
TRANSDUCER

WATERLINE
(+ VE OFFSET
VALUES)

KEEL
OFFSET

OFFSET
(VALUE OF
0.0)

KEEL
(- VE OFFSET
VALUES)

speed calibration

Speed calibration sets the units of measurement, damping and speed calibration factor (Refer to the flow chart detailed on Page 18).

units

Boat speed values can be shown in knots, kph or mph. To change the units, highlight `Unit` and press **ENTER**. Using the **UP/DOWN** keys, highlight the desired choice and press **ENTER** to memorise.

damping

Boat speed damping allows you to slow down the response of speed-readings in rougher conditions by adjusting the damping value from 0 to 9. For minimum damping, set the value to 0, for maximum damping, set the value to 9.

adjustment

Speed adjustment calibration is necessary to compensate for hull shape and paddlewheel location on your boat. For accurate speed and log readings, it is essential that the paddlewheel is calibrated.

adjustment - auto

This procedure will automatically calibrate the boat speed and log readings, and is the recommended method for most boats. This procedure requires the boat to make consecutive runs, under power at a constant speed, over a known distance.

Select two markers that are easily identifiable on the ground and on a chart, and where the effects of tidal flow are at a minimum. Measure and record the distance between the markers on the chart.

It is recommended that three runs are carried out, this accounts for tidal efforts, and improves accuracy. However, a time should be selected when the current is at a minimum, i.e. slack water between tides.

1)   From the **Speed Calibration Menu**, highlight `Adjustment` , choose `auto` from the drop-down box, and then press the **ENTER** key to confirm.

2)   If necessary, adjust the **Run Length** to correspond with your measured distance and then highlight `OK,` and press **ENTER** to accept.

3)   The display will now show **Run 1** and `start` will be highlighted. Maintaining the boat at your constant speed, press **ENTER** when the boat is in line with the start of your measured distance. The display will now change to show **Run 1** with `end` highlighted.

4)   When the boat is in line with the second marker of your measured distance, press the **ENTER** key to temporarily halt the calibration. **Run 2** and `start` will now be shown on the screen.

5)   Maintaining your constant boat speed, turn the boat through 180° in preparation for your second run along the measured distance. When the boat is in line with the second marker, press the **ENTER** key to resume the calibration procedure. The display will now show **RUN 2** and `end` will be highlighted.

6)   When the boat is in line with the first marker, press the **ENTER** key. This will temporarily halt the calibration procedure.

7)   Repeat the procedure detailed above for **Run 3** .

8)   Upon completion of **Run 3,** highlight `accept all` and press **ENTER**. The system will now automatically calculate the new boat speed and update the readings accordingly.

Note: If for any reason during the calibration procedure you wish to abort the calculation, simply highlight **abort all** and press the **ENTER** key.

speed calibration

adjustment – ref

Reference speed adjustment, allows for quick and easy calibration of your boat speed readings against a known calibrated source; for example, speed over the ground from a GPS or alongside another boat with a calibrated log.

1) From the **Speed Calibration Menu**, highlight Adjustment, select ref from the drop-down box and press **ENTER** to select. The display will now show the **Reference Speed** page.

2) If Speed Over the Ground data is available on the system from a GPS, the h1000 will automatically detect this and display this value on the screen with the message **from SOG**. To accept this value, simply highlight the speed value shown, press the **ENTER** key repeatedly to scroll past the digits, use the **UP/DOWN** keys to select OK and press the **ENTER** key.

3) If speed over the ground is not available, simply highlight the speed value and, using the **UP/DOWN** and **ENTER** keys, adjust the value to the known reference boat speed.

4) Next, highlight OK and press **ENTER** to complete the operation.

sea temperature units

Sea temperature information can be shown in °**c** or °**f**. To change the units, highlight **Sea temp** and press **ENTER**. Using the **UP/DOWN** keys, highlight the desired choice, and press the **ENTER** key to memorise.
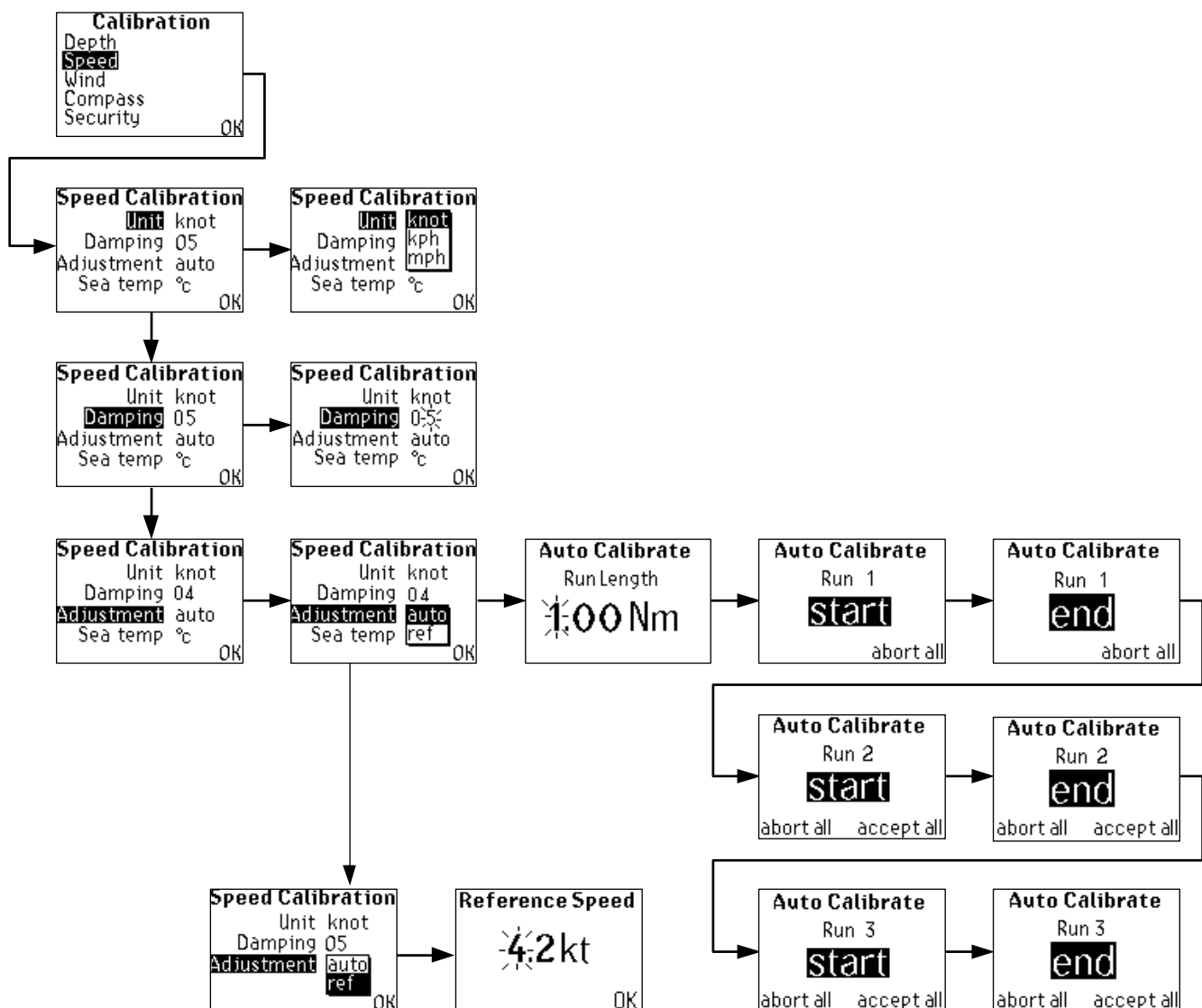
wind calibration

wind calibration

Wind calibration sets the wind speed measurement units, damping, and masthead unit offset. The masthead unit offset can be adjusted while observing the live apparent wind angle on the same page (Refer to the flow chart detailed on Page 20).

wind speed - units

Wind speed values can be shown in knots, kph, mph or m/s. To change the wind speed units, highlight Wind speed from the **Calibration Menu** and press **ENTER**. Next, highlight Unit, press **ENTER** and select the desired choice from the drop-down menu. Press the **ENTER** key again to memorise the setting.

wind speed damping

Wind speed damping allows you to slow down the response of wind speed-readings in gusty conditions by adjusting the damping value from 0 to 9. For minimum damping, set the value to 0. Increase the damping value if the readings are too unstable in rough weather.

wind angle - calibration

Accurate wind angle readings require the masthead unit to be installed facing forward and as close to the centre line of the boat as possible. However, this is not always possible, so the h1000 allows a masthead unit sensor offset to be applied. This offset applies an electronic correction so that wind angle readings are then shown correctly on the display.

MHU offset is calculated by the following procedure:

1. Sail close-hauled on a Port Tack and note the set of all sails. When conditions are steady, note the apparent wind angle. For example, Port 35°.

2. Tack the boat until close-hauled on a Starboard Tack, ensure the sails are set as for the Port Tack. When conditions are steady, note the apparent wind angle. For example, Starboard 25°.

3. To calculate the **MHU Offset** subtract the Starboard value from the Port value, then divide by two. For example, Port 35° - Starboard 25° = 10 / 2 = 5. If the value is positive the offset is to Port, if the value is negative it is to Starboard.

To enter the masthead unit offset, highlight Wind angle from the **Wind Calibration Menu** and press **ENTER** to select. Highlight MHU offset and press **ENTER**.

If the value calculated is positive, the wind sensor is misaligned to Port. To correct this, the value must be offset clockwise (starboard) by the value calculated. Use the **UP/DOWN** keys and the **ENTER** key to alter the value.

If the value is negative, the wind sensor is misaligned to Starboard. To correct this, the readings must be offset anti-clockwise (Port) by the calculated value. Use the **UP/DOWN** keys and the **ENTER** key to alter the value.

wind angle - damping

Wind angle damping allows you to slow down the response of wind angle readings in gusty conditions by adjusting the damping value from 0 to 9. For minimum damping, set the value to 0. Increase the damping value if the readings are too unstable in rough weather.

wind calibration

Calibration
Depth
Speed
Wind
Compass
Security
       OK

Wind Calibration
Wind speed
Wind angle
       OK

Wind Speed
15.4
Unit knot
Damping 0.00
       OK

Wind Speed
15.4
Unit | **knots**
Damping | kph
     | mph
     | m/s
       OK

Wind Speed
15.4
Unit knot
Damping 0.00
       OK

Wind Speed
15.4
Unit knot
Damping 0.00
       OK

Wind Calibration
Wind speed
Wind angle
       OK

Wind Angle
029°-
MHU offset 0.00°
Damping 9.99
       OK

Wind Angle
029°-
MHU offset 0.00°
Damping 9.99
       OK

Wind Angle
029°-
MHU offset 0.00
Damping 9.99
       OK

Wind Angle
029°-
MHU offset 0.00
Damping 9.99
       OK

compass calibration

compass calibration

The **Compass Calibration Menu** sets the heading offset, damping, and swing parameters for the h1000 fluxgate compass (Refer to the flow chart detailed on Page 22).

compass offset

The compass offset electronically compensates for fixed errors (misalignment) between the fluxgate sensor and the direction of the boat. These errors can occur if the compass sensor is not exactly orientated during installation.

To accurately enter a compass offset, the boat's actual heading must be known, for example: reference the h1000 fluxgate against a calibrated bowl compass, or follow a known transit referenced from a chart.

To enter the compass offset value, highlight `Compass` from the **Compass Calibration Menu** and press **ENTER**. Adjust the value using the **UP/DOWN** and **ENTER** keys. The value entered should be between +180° and -180°.

Example:

- Boat's actual heading is 076°
- h1000 display shows 092°
- The compass offset entered would be -016°

To facilitate this procedure, **live heading** is shown on the screen so that the effects of the offset can immediately be seen.

compass damping

Compass damping allows you to slow down the response of compass readings in rougher weather by adjusting the damping value from 0 to 9. For minimum damping, set the value to 0. Increase the damping value if the readings are too unstable in rough weather.

compass swing

The swing procedure allows the compass to learn the effects of any magnetic deviation errors that are unique to your boat. The swing should be performed out in open water, on a calm day, with minimal wind and waves, and away from traffic, which may require the procedure to be aborted.

The swing procedure requires the boat to be turned through a complete 360°, at a speed of less than 5 knots, at about 2° per second. The entire process should take about three minutes to complete.

To swing the compass, highlight `Swing` and press **ENTER**. The **Compass Swing** page will now be displayed with `start` highlighted. With the boat settled on its turn, press the **ENTER** key to start the swing.

The display will now show two bargraphs. The first is the **Progress** indicator, which will fill completely after the boat has been turned through 360°. The second is the **Turn rate** indicator, which, for optimum results, should not be allowed to fill completely.

After completion of the swing, the message **passed** or **failed** will be shown. At any stage during the swing, the procedure can be aborted by selecting abort and pressing the **ENTER** key.

h1000

compass calibration

Calibration
Depth
Speed
Wind
Compass
Security
OK

Compass Cal
274°
Offset 000°
Damping 04
Swing required
OK

Compass Cal
274°
Offset -000°
Damping 04
Swing required
OK

Compass Cal
274°
Offset 000°
Damping 04
Swing required
OK

Compass Cal
274°
Offset 000°
Damping -04
Swing required
OK

Compass Cal
Heading 274°
Offset 000°
Damping 5 secs
Swing required
OK

Compass Swing
Heading **247°**
start
abort
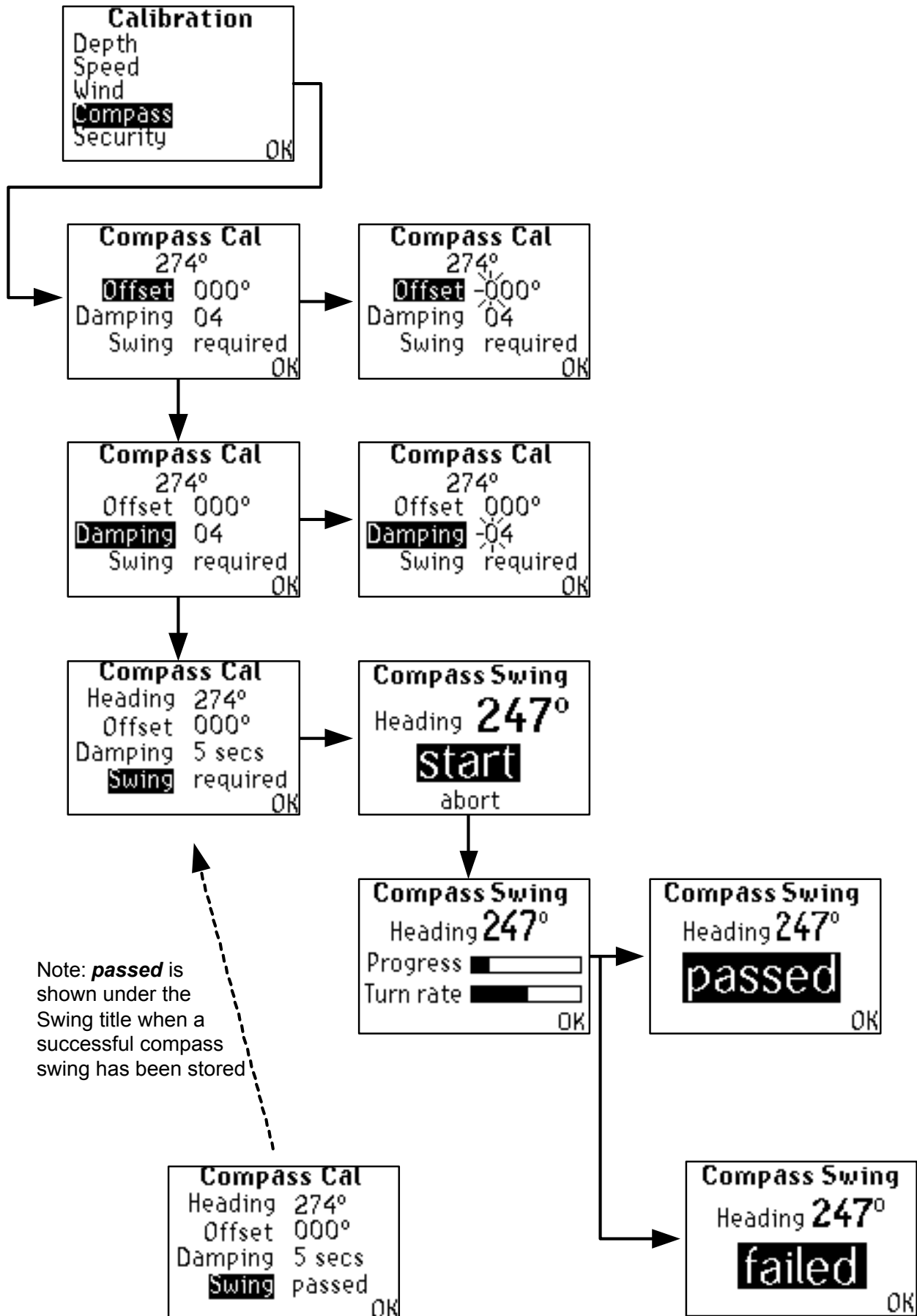
Note: *passed* is shown under the Swing title when a successful compass swing has been stored

Compass Swing
Heading **247°**
Progress ▮▯
Turn rate ▮▯
OK

Compass Swing
Heading **247°**
passed
OK

Compass Cal
Heading 274°
Offset 000°
Damping 5 secs
Swing passed
OK

Compass Swing
Heading **247°**
failed
OK

system set-up

The system menu configures parameters that affect the system as a whole.

Remote unit setup

Remote unit setup allows configuration of units in the system that do not have a keyboard; for example, 3FD's, Analogue meters and Universal Interface boxes.

3FD setup

Select **3FD** from the **Remote Units** page and press **ENTER** to select. If more than one 3FD is connected to the system, select the appropriate 3FD and observe which unit flashes.

Select the functions that are to be displayed on each of the three LCD windows from the list of data options displayed. Highlighting **OK** and pressing **ENTER** confirms your selection. Scroll between the three screens until all selections are made.

Analogue setup

Select the appropriate display, the analogue display pointer will wiggle to indicate it has been selected. The only function of the analogue display, which is user configurable, is the lighting level.

Selectable NMEA sentences

Identify the Universal Interface Box you wish to configure, this is identified by the first three digits of the serial number found on the printed label located inside the lid of the interface box. Select the chosen box from the list displayed, select either **NMEA in** or **NMEA out.** The options available are detailed as follows:

Current Input - Press **ENTER** to select, press **ENTER** again and scroll through the listed sentences, press **ENTER** to view the options. Press **ENTER** and scroll to either **On** or **Off**, press **ENTER** to make your selection. Scroll to **OK** to return to the listed sentences. Repeat the operation until you have made all your selections.

Current Output - Follow the same procedure as detailed above.

Name - Press **ENTER** to re-name the interface box (if required), use the **UP/DOWN** arrow keys to select the number or letter required (maximum 10 characters), once you have completed your name change scroll to, and highlight **OK**, press **ENTER** to return to the **Remote units** screen .

Heading ref

The system switches between true and magnetic headings to set the value of magnetic variation.

Note : If magnetic variation is available via NMEA that value will take precedence over anything entered by the user.

Language

Displays a choice of five languages to select. Highlight the language of your choice, press **ENTER** then highlight **OK** to return to the **System** menu.

Diagnostics

Highlighting an option from the list will display information on Serial number, Software version, Status and Network Node number. The diagnostic information page is read-only.

system set-up

Contrast

Highlighting **Contrast** from the **System** menu and pressing **ENTER** will display the control bar for contrast alterations. Highlight the control bar and press **ENTER** again, then using the **UP**/**DOWN** arrow key adjusts the contrast to the desired level. Press **ENTER** once more to confirm your setting then scroll to highlight **OK**, press **ENTER** to return to **System** page.

compass function

tactical compass display

When a compass and a wind sensor are connected to the system, the Tactical Compass function becomes available as a full-page display option.

After a tack or gybe, and the yacht is sailing a steady course, press the **ENTER** key to store the displayed heading. Note, to access the **Main Menu** from the **Tactical Compass** page, press and hold the **ENTER** key for two seconds.

Any deviation from the stored course is shown on the screen as a lift or head with the corresponding number of degrees. Lift is always shown on the windward side of the display and head on the leeward.

storing the course

When the **ENTER** key is pressed whilst the **Tactical Compass** page is displayed, the present heading is automatically stored and the **head / lift** trend function reset. When this is done, the display overlays the Heading with **Course stored** for two seconds, as shown in the diagram, and the head or lift legends disappear. As soon as heading deviates from the new stored value, head or lift will be displayed with the number of degrees as appropriate. Resetting the stored course also updates the Course memory found under the **Memories → Compass** menu.
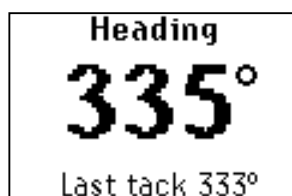
last tack information

When a tack occurs, the head / lift field in the bottom left or right of the display is replaced with the last heading for that tack, providing it was previously stored by pressing the **ENTER** key.

Last tack heading remains on screen until the **ENTER** key is pressed. When **ENTER** is pressed, **Last Tack** information disappears, **Course Stored** is then shown for two seconds, and then the appropriate head or lift information is shown.

alarms

As well as responding to user input the display also shows information about external events reported over the network and allows the user to respond. There are three types of external event:

Alarm conditions

Error conditions

Data failure

alarm conditions

Alarm conditions arise when a measured parameter moves outside a range of set values.

The h1000 unit that is the source of the out of range data detects the condition and broadcasts an alarm message, which initiates the following sequence of events:

All displays respond by showing a flashing *alarm overlay* window.

Pressing any key on the display broadcasts the alarm silence message.

On receipt of the alarm silence message, all other displays remove the alarm overlay window and revert to their previous displayed page.

The display that broadcast the alarm silence message stops flashing the alarm overlay window, and continues to display the current value of the alarming function until the user presses the **ENTER** key, reverting the system to the previous display.

error conditions

An error condition arises when an h1000 unit detects an internal malfunction or when an outside element behaves inconsistently (for example, if the autopilot sends a rudder drive signal but fails to detect any resulting rudder movement).

The unit that detects either type of problem broadcasts an error message and the displays respond by showing an **error overlay** window. This contains a description of the problem, and may suggest a solution.

When any key is pressed on any display, an error acknowledgement message is broadcast by the display, and all displays revert to normal operation.

alarms

data failure

While the system is running, each display keeps a timer for each individual data type that it is currently monitoring. The timer is reset whenever a network message with that data type is received, so if no data has been received for ten seconds or more the data type is marked as having failed.

If data of that type is not currently displayed it will be shown as '**OFF**'.

technical specifications

- **Dimensions:**   110mm x 110mm

- **Power consumption:**   50mA = approx 1 BEN (Max. 60 BEN per System)

Digital Display	3 BEN
Analogue Display	2 BEN
Speed/Depth Interface Box	3 BEN
Wind Interface Box	1 BEN
Universal Interface Box	1 BEN
3FD	3 BEN
CND	1 BEN
Pilot Head	4 BEN
Pilot Processor	2 BEN
Compass	1 BEN

- **NMEA Interface:**   NMEA 0183 ver. 2.3

- **Display:**   LCD Panel FSTN

- **Display Resolution:**   120 x 80 pixels

- **Temperature range:**   -10/+60 degrees Celsius

- **Memory:**   Non-volatile-EEPROM

- **Keyboard:**   Silicon rubber, backlit

- **Weight:**   950g

- **Accessories:**   Flush mounting kit + mounting template
                                                     Power supply and I/O cable
                                                     Protective cover

installation

precautions

To avoid electromagnetic interference, it is recommended that the h1000 Display be installed no less than 0.3 metres from a compass and 1 metre from the GPS.

The h1000 Display is Waterproof to IP67. Use the cover when not in use. The rear connectors that are not connected to cables must remain protected by their appropriate caps.

panel mounting

Ensure the panel is flat and that there is sufficient room behind the panel to accommodate the fixings and connections, and using the template supplied, cut a hole in the panel in the desired position.

Fix the mounting bracket into the hole using the screws supplied.

Note: The sealing ring is fitted to the unit during manufacture. Its purpose is to prevent moisture penetration and reduce the effects of any vibration transmitted through the instrument panel.

Press the Display into the mounting bracket; an audible 'click' will indicate that the case is correctly located.

Secure the unit to the instrument panel by fitting the studs and thumbnuts supplied.

Caution: To avoid damaging the casing, fixing studs must only be tightened 'finger-tight'.
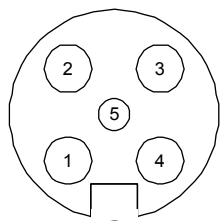

Mounting Bracket

Display Unit

Sealing Ring
(Fitted at Manufacture)

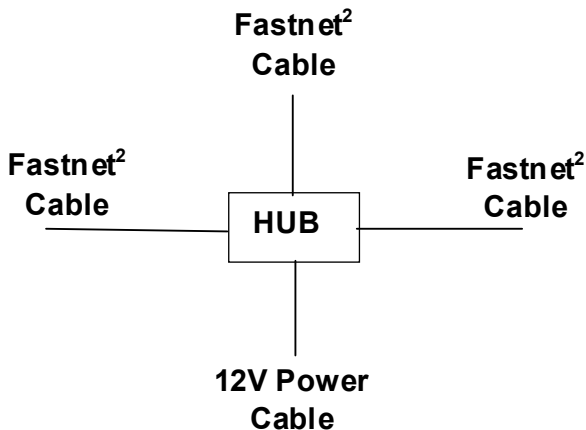Sun Cover
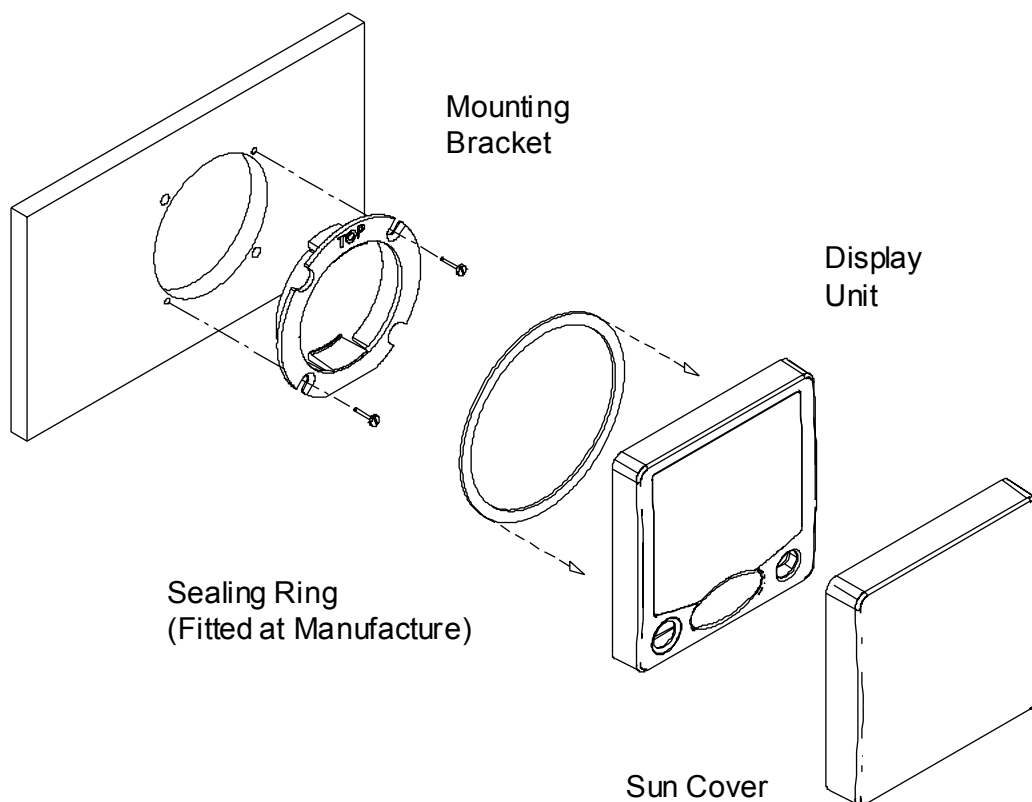
electrical connections
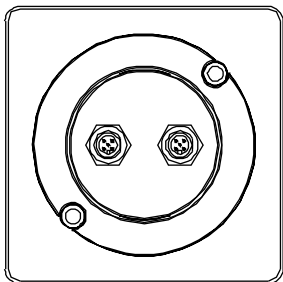
external connections

Two Fastnet² connectors are provided at the rear of the unit. These connectors allow connection to the rest of the system for the supply of power and data.

Front view of
male connector pins

Pin Number	Function
1	12V
2	Busy
3	Fastnet²-
4	Fastnet²+
5	0V

interface connections

connections

System components share data together via a common Fastnet² databus and are supplied with bayonet connectors for ease of installation. Selections of cable lengths are available with options for straight and right angle connectors to suit most requirements.

**Fastnet²
Cable**

**Fastnet²
Cable**

**Fastnet²
Cable**

HUB

**12V Power
Cable**

To prevent the occurrence of voltage drops on larger systems, the power supply to the system should either be placed mid-way or at both ends of the Fastnet² databus. To connect power to the mid-point of the system, it is recommended that the four-way Hub be used. The four-Way Hub offers two advantages. The first advantage is that it offers a convenient entry point for power onto the system. The second advantage is that it conveniently allows the system to be branched to reduce the overall length of the system. The correct selection of Fastnet² cable will negate the need for any plugs to be removed from the system and ensure years of faultless operation.

system expansion

pilot features

The h1000 Pilot is a fully functional Autopilot which can be used either as a stand-alone system or integrated into an instrument system.

- The LCD panel is an FSTN, positive, transflective type having 120 pixels horizontally and 80 pixels vertically

- Three levels of Illumination

cnd features

The Central Navigation Display (CND) is a waterproof colour Chart Plotter which can be used either as a stand-alone system or integrated into an instrument system.

- Unique combination of Data Pages for repeating instrument information

- Latest presentation of C-Map NT+ Cartography, hot-swap cartridges

- Highest specification C-Map NT feature implementation

Utilises C-Map User-Card technology to enable backup of waypoints, tracks, routes and marks. Also can be used for home route planning (with optional C-Map PC-Planner Kit).

analogue features

B&G's h1000 Analogues add a distinctive sophistication to any system - these easy to read displays can be sighted anywhere they are required to provide the helmsman and crew with all necessary clear data.

Clarity and readability of B&G's h1000 Analogues has always been the best, favoured by many for the ease with which trends can be followed.

h1000

system expansion

3fd features

- Configure each line with information to suit your requirements
- Simple and easy to use with the h1000 Display
- Interfaces with the h1000 System via the Fastnet² data bus
- 3 levels of lighting controlled by any h1000 display
- Mast, Bulkhead, Helm, Nav Station or Flybridge mounting
- Up to four units can be supported on a B&G h1000 system
- Display conforms to IP67 waterproofing

interface box features

- Interfaces with the h1000 System through the Fastnet² data bus

system expansion diagram

Masthead Unit

GPS Antenna

Central Navigation Display

CND

12v power

Compass Sensor Unit

LCD Display

Pilot Display

Analogue AWA

0.5m

12v power

Fastnet2

Fastnet2

Fastnet2

Fastnet2

Fastnet2

Fastnet2

Fastnet2

Wind
Interface Box

Speed Depth
Interface Box

B&G

B&G

Hydraulic Ram T1-12V

h1000 acp

B&G

Rudder
Sensor

12v power

Depth
Sensor

Speed
Sensor

h1000
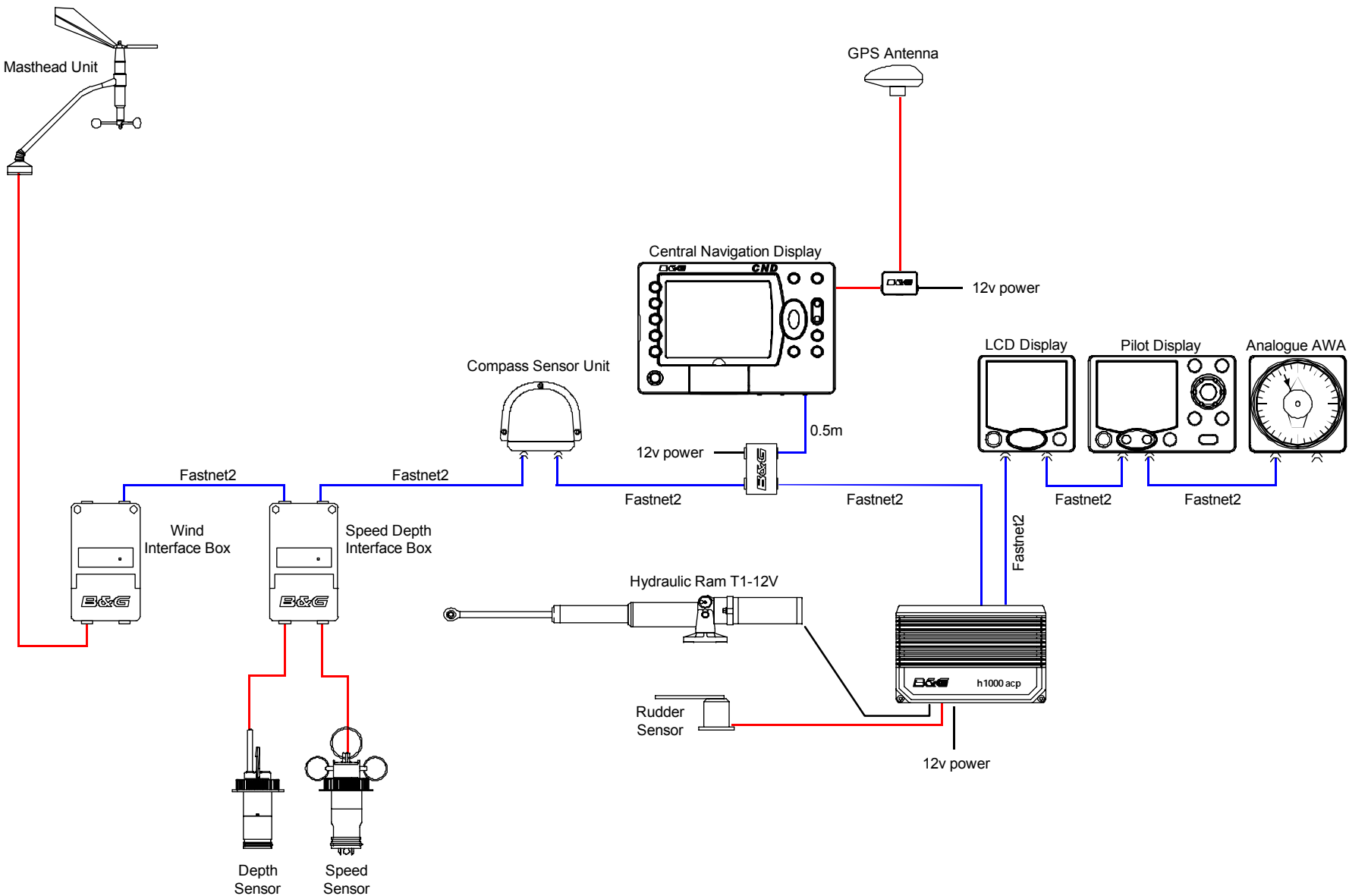
abbreviations

AWA = Apparent Wind Angle	Angle between boat's bow and the wind measured across the deck
AWS = Apparent Wind Speed	The wind speed measured across the deck.
BRG = Bearing	It is the angle between the North (True or Magnetic) and a destination. It represents the direction to follow.
COG = Course Over Ground	Direction of the path over ground actually followed by a boat, derived from a GPS.
Current	Non-periodical movement of seawater, generally horizontal, due to many causes such as different temperatures and prevalent winds.
Default	Indicates a value or a setting that is used if the user has not defined a particular value.
Depth Contours	Imaginary lines connecting points of equal water depth.
Depth Units	Sets the depth units between Ft = Feet, FM = Fathoms and m = Metres. The default setting is metres.
GPS = Global Positioning System	GPS is a satellite based navigation system operated by the US Department of Defence. It gives the navigator a position fix 24 hours a day, 365 days a year.
HDG = Heading	Compass direction of boat.
SOG = Speed Over Ground	A calculation of the rate of movement of the boat over the ground, derived from a GPS.
TWA = True Wind Angle	Angle between boat's heading and true wind direction.
TWD = True wind Direction	Compass direction of the wind.
VMG = Velocity Made Good	Performance measure of upwind or downwind sailing.

warranty

1. warranty

Brookes & Gatehouse Limited ("B&G") warrants this product against defects in materials or workmanship on the terms and conditions set out below (the "Warranty").

2. warranty period

The Warranty continues for 24 months from the date of purchase by the user (excluding mechanical items, including but not limited to, autopilot drive units which are subject to 12 months warranty). It is the user's responsibility to demonstrate the date of purchase by showing a valid warranty card or proof of purchase. If the user cannot do this, the date of purchase shall be deemed the date of manufacture as evidenced by the serial number on the product.

3. repair and replacement

During the warranty period and subject to the terms and conditions set out below B&G will repair or, if it so chooses, replace the product. It is the user's responsibility to arrange and pay for transport of the product back to B&G. B&G shall not be responsible for any such costs, including, but not limited to:

3.1.   Boat slipping or lifting;

3.2.   Freight shipping charge;

3.3.   Engineer's travelling time and expenses;

3.4.   Installation labour costs associated with the Warranty claims; and

3.5.   Loss or damage of products or boats in transit.

4. conditions

The Warranty will not apply in the following circumstances:

4.1.   Where the product has been installed in a manner or location other than that specified in the installation instructions;

4.2.   Where the product has been serviced or repaired by anyone other than an authorized representative;

4.3.   Where the product has been used for purposes for which it is not intended;

4.4.   Where the product has been used in a manner other than that described in the manual supplied; or

4.5.   Where the damage is caused by exceptional events such as, but not limited to:

o   Abnormal levels of magnetic, electrical or acoustic interference;

o   Lightning strikes;

o   Accidents;

o   Intentional damage; or

o   Negligent use.

5. wear and tear

The Warranty is limited to defects in materials or workmanship and does not cover normal wear and tear such as (but not limited to) corrosion and damage caused through the day to day running of the boat.

warranty

6. software

B&G shall not be liable under this Warranty or otherwise for any defect in software incorporated within the product.

7. further warranties

The Warranty set out in this document is the only Warranty offered by B&G. B&G makes no further promises in relation to this product such as (but not limited to):

7.1.   that it is suitable for any particular use; or

7.2.   that it conforms to any particular quality standards.

8. transfer

This Warranty is not transferable.

9. consequential loss

B&G shall not be liable for any damage to persons, yachts, equipment or any other property or for any other kind of consequential loss.

10. governing law

This document is governed by and shall be construed in accordance with English law.

11. statutory rights

This Warranty is offered as an extra benefit and does not affect your statutory rights against the party who sold you the product.