B&G

H3000

System Installation Guide

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B&G

NOTIFICATION

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LIABILITY AND SAFETY WARNINGS

Navico Holding accept no responsibility for the use and/or operation of this equipment. It is the user's responsibility to ensure that under all circumstances the equipment is used for the purposes for which it has been designed.

Warning: Electrical Hazard

This equipment uses high voltage electrical power. Contact with high voltages may result in injury and/or loss of life.

Warning: Calibration

The safe operation of this equipment is dependent on accurate and correct calibration. Incorrect calibration of this equipment may lead to false and inaccurate navigational readings placing the yacht into danger.

Warning: Operational Hazard

The H3000 system is an Electronic Navigation aid and is designed to assist in the navigation of your yacht. It is not designed to totally replace conventional navigation procedures and precautions and all necessary precautions should be taken to ensure that the yacht is not placed into danger.

The Pilot is an aid to steering the vessel. It is the users responsibility to ensure the safe control and movement of the vessel at all times.

Caution: Electrical Supply

This equipment is designed for use with a power supply source of 12V dc. The application of any other power supply may result in permanent damage to the equipment.

Caution: Cleaning

The use of alcohol or solvent-based cleaners will damage this equipment and any warranty in force will be invalidated.

Caution: Display Installation

Displays installed into locations manufactured from conductive materials (e.g. Steel, Carbon Fibre etc.) should be insulated from the structure to prevent damage to the casings as a result of the effects of electrolysis.

Caution: Processor Installation

All B&G Processors should be installed below decks in a dry location protected from water and moisture.

Power Off Disclaimer

When in standby mode the H3000 system continues to consume power. To conserve the vessel's battery life switch off power at the main breaker.

ABOUT B&G

B&G has welcomed the constant challenge to develop new electronic solutions for every sailor's need. Harnessing technical developments and providing proven solutions has continued to be the focus that keeps B&G on the leading edge of advanced marine electronics.

Proven in the worlds most testing environments, B&G offers the most accurate and reliable systems used by blue water cruisers, single-handed racers and record breakers alike, firmly establishing ourselves as one of the leading innovators of the most highly advanced marine electronics. B&G is renowned for tried and trusted solutions and is ever evolving to offer the best technology to the customer.

B&G's Promise.

"Uncompromising performance, precision and reliability from both our products and our people".

ABOUT THIS HANDBOOK

Instructions in this handbook describe the installation and routine maintenance of your H3000 system.

SYSTEM INTRODUCTION

H3000 is the successor to the leading Hydra 2000 and Hercules 2000 instrument and Pilot systems from B&G.

Hydra and Hercules 2000 and its predecessors have been used and depended upon by the worlds serious cruising and racing fraternity for fifty years, during which time the systems have been constantly evolving to provide the most dependable instrument and autopilot systems available.

At the heart of every H3000 System is the Central Processor Unit (CPU). Depending upon your system choice, this will either have Hydra, Hercules, Hercules Performance or Hercules Motion software enabled.

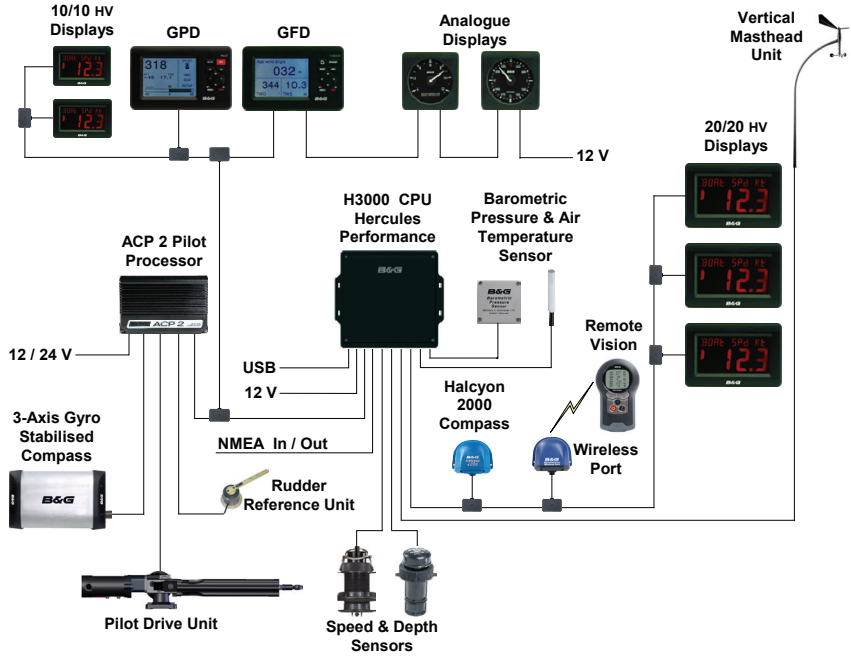
The CPU integrates raw data from sensors and makes them available on a choice of displays anywhere in the yacht. The modular design allows you to progress from a standard system, adding new units or software as required.

This manual describes the standard system and then describes how the system can be expanded.

The system is connected together by the Fastnet communication network, which handles all of the data that travels between devices: including the CPU, analogue displays, Graphical Display (GFD), Pilot Display (GPD) and HV Displays. Analogue displays are connected to a GFD via the Simnet network.

These combined with the wind speed and angle, compass heading, boat speed and depth sensors make up the standard system.

H3000 SYSTEM EXAMPLE



Above is an example of a typical H3000 system. At the centre of the system is the Central Processor Unit (CPU).

All sensor information is fed back to the CPU and can be easily controlled and configured via the Graphical Function Display (GFD).

PROCESSOR

CENTRAL PROCESSING UNIT (CPU)

The CPU is the core of the H3000 system, taking the majority of sensor inputs and using a dedicated processor to rapidly calculate and calibrate further functions and distribute them to display units and external devices.

The new enclosure enhances ease of installation with its plugged connections. The CPU is function upgradeable to enable the purchase of upgrades for additional functionality. This means upgrading your system is straightforward.

As well as sensor inputs there is also a USB interface that allows straight-forward connection of a PC for either NMEA communications or the H-Link™ communication protocol used by software packages such as Deckman.

The H3000 CPU is supplied with powerful software functions that include easy to use, highly accurate AutoCal calibration tools to bring the established power of the H3000 system calibrations to all users.

There are four software levels available:

Hydra

Hydra provides class leading performance and is ideally suited for cruising applications:

Multiple sensor inputs for external sensors (Barometer, Air and Sea Temperature etc.)
AutoCal routines to simplify otherwise complex calibration procedures

Up to 4Hz update rates
True Wind Corrections
USB interface for interfacing NMEA data to a PC
NMEA 0183 input and output
Alternative use of SOG as boat speed

Hercules

A software level designed specifically to meet the requirement of racing and advanced cruising applications. Hercules adds the following:

Up to 6Hz update rates
Dynamic Damping
Wind data corrected for Heel angle
Advanced TWS calibration
Secondary Pulse input for additional boat speed sensor
Boat speed linearity/heel angle correction

Hercules Performance

Designed to further enhance the H3000 range, the Hercules Performance level software integrates B&G's Tactical Navigation software, Deckman, along with several advanced features:

Deckman™ Tactical Navigation software
H-Link™ communications (USB or RS232), USB lead included
Polar tables
Polar related performance functions (e.g. Target Boat Speed)

Hercules Motion

Hercules Motion uses technology from B&G's grand prix level systems to calculate and correct wind data for the errors induced by the motion of the yacht. This includes all features and functions from Hercules Performance. Additional features include:

Performance Wind Filter (PWF)
Pitch and Roll measurement
Wind Motion Correction

EXPANSION PROCESSOR

The Expansion Processor provides 12 additional linear/analogue sensor inputs.

HALCYON GYRO PROCESSOR

The Halcyon Gyro Processor is an interface between the Halcyon Gyro Stabilised Compass and the B&G Fastnet network. It also outputs NMEA heading information at a rate of 10Hz for use with other marine instruments and AD10 for use with Radar.

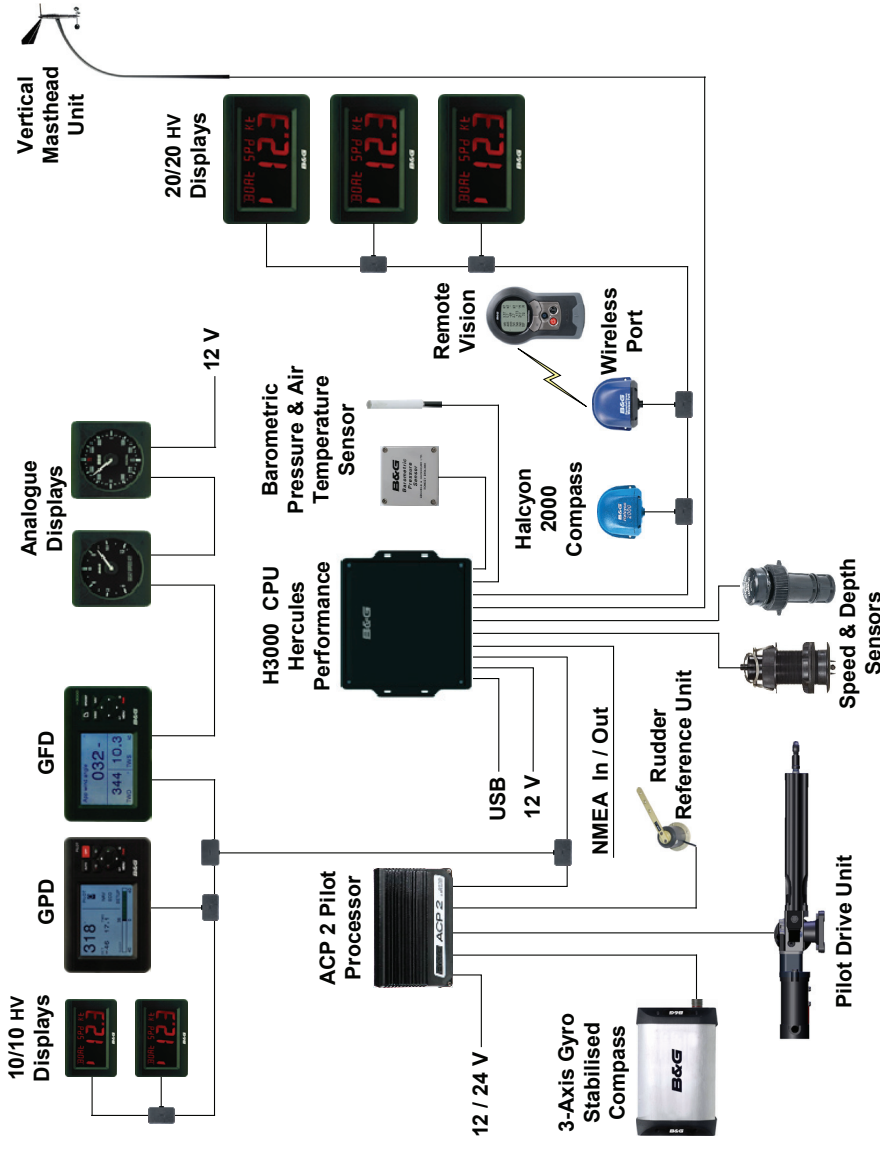
The Halcyon Gyro Processor accepts NMEA data from your position fixer for magnetic variation information to allow display and output of True referenced heading.

The Halcyon Gyro Processor can also be used as an interface to output NMEA heading and AD10 from a B&G system compass, or to accept NMEA heading information from an external compass for use on the H3000 system.

INSTALLATION INFORMATION

1. H3000 Example System
2. Network Terminator Installation
3. GFD Installation
4. Analogue Installation
5. HV Display Installation
6. Remote Button Installation
7. System Power Supply
8. Paddle Wheel Sensor – Temperature Sensor
9. Depth
10. NMEA Depth
11. Masthead Unit
12. NMEA 0183 Interface
13. 200 PPM (Pulses Per Mile)
14. Linear Con 1 and Linear Con 2
15. Fastnet
16. Pulse 2
17. Alarm
18. Halcyon 2000 Compass
19. Heel and Trim Sensors
20. Air Temperature and Barometric Pressure Sensors
21. Motion Sensor
22. USB & RS232
23. Change Over Switch
24. Halcyon Gyro Processor with Halcyon Gyro-Stabilised Compass
25. Halcyon Gyro Processor with NMEA Gyro Input
26. Halcyon Gyro Processor with Output Interface
27. Expansion Processor

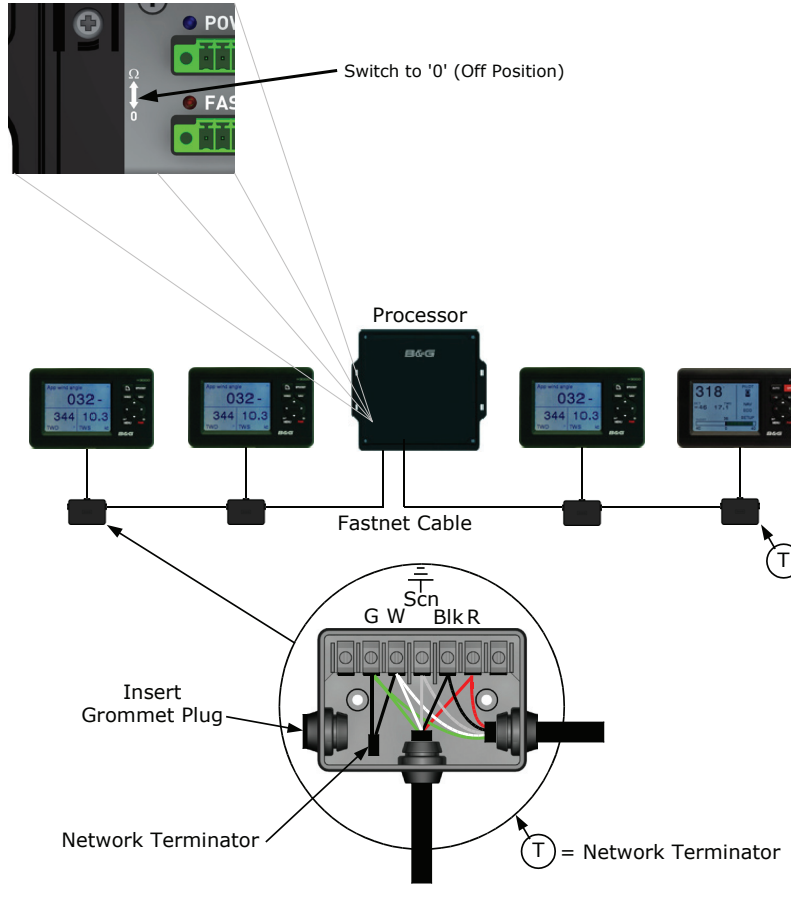
H3000 SYSTEM EXAMPLE



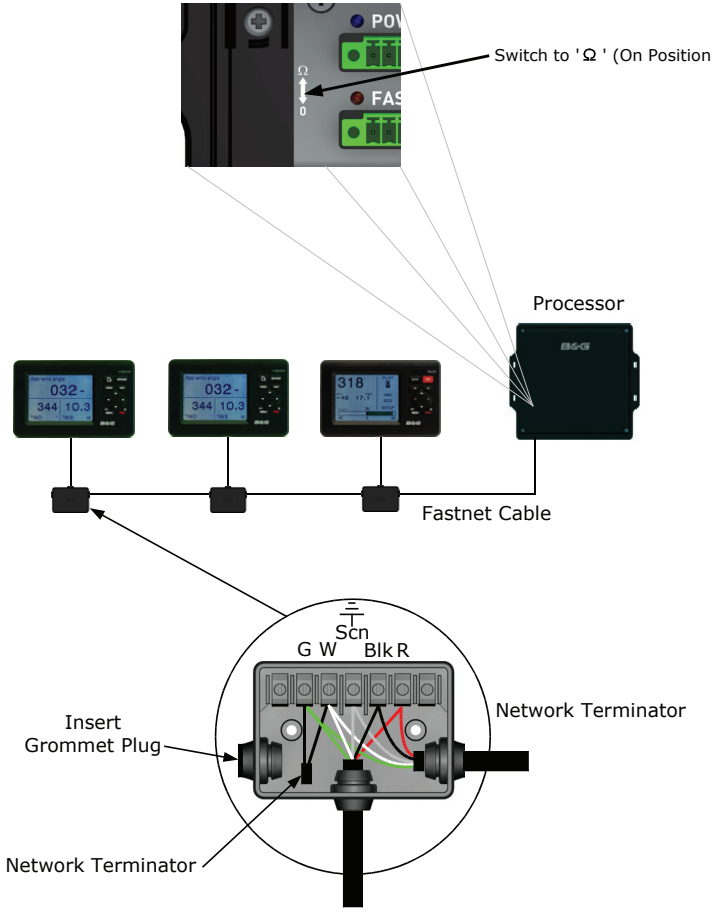
NETWORK INSTALLATION

The Fastnet network installation shown below should be installed in a linear fashion and ideally run in a line from one end to another with short 'spurs' to displays and processors etc. A 'star' network with many network spurs off one point will not work correctly, and must be avoided.

Example 1~ Two network cables. Processor switch to OFF. Terminated in the last junction box at each end.



Example 2~ Single network cable. Processor switch to ON. Terminated at processor unit via switch as shown. Add a network terminator to the last junction box at the end.



Note: *A network terminator must be fitted across the green and white network data wires of the last unit or junction box at each end of the network cable.*

When adding more displays or units to the network, ensure that the terminator is moved to the ends of the network cable. Never fit more than two terminators on the network.

GFD INSTALLATION

GFD		
TERMINAL	**COLOUR**	**FUNCTION**
1	GREEN	Network Data -ve
2	WHITE	Network Data +ve
3	SHIELD	Network Cable Shield
4	BLACK	Ground
5	RED	Supply +ve 12V

GFD Installation Notes

• The H3000 system requires at least one GFD.

• A GFD can be connected at any point on the system network.

• Multiple GFDs can be used on the system network. Each can control and enter data into the system processor memory.

• GFDs can be used in combination with all other display types i.e. HV and Pilot displays.

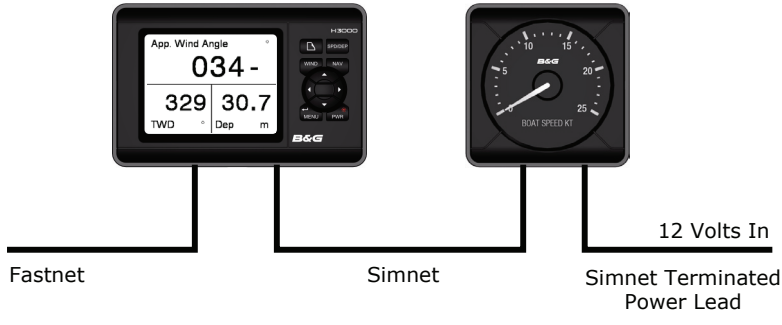
• Screened cables should be connected to their neighbouring screened cable in the junction box.

• Shielded cables are supplied to provide protection against unwanted emissions (EMC) and must be connected in accordance with these instructions.

• Network Termination. If the GFD is the last unit on the system network a network terminator MUST be fitted across the network data wires, i.e. between the green and white wires.

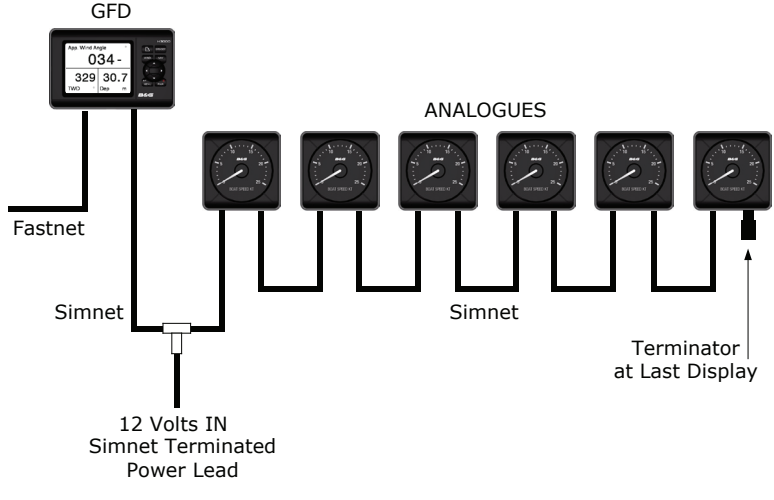
ANALOGUE INSTALLATION

EXAMPLE 1~ H3000 System with up to six displays



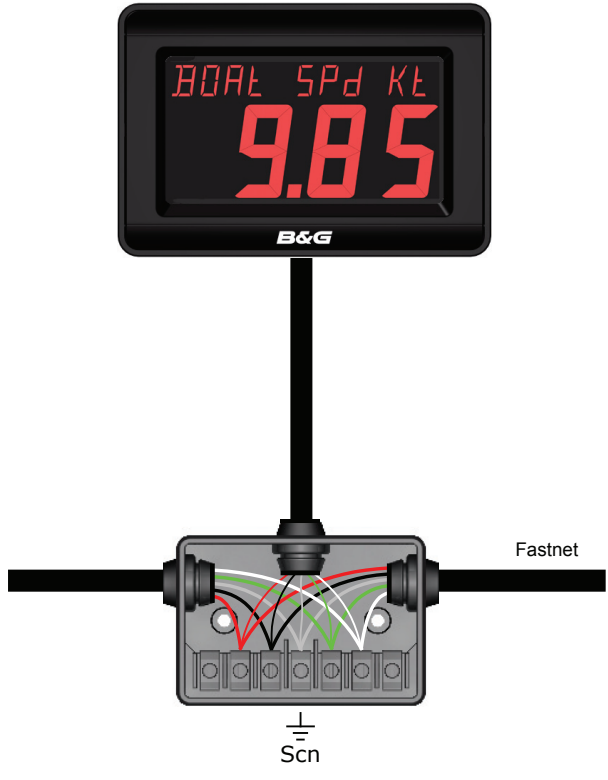
Note: *For systems with up to six analogues a Simnet terminated power lead with 12Volts power should be attached to the last analogue on the network*

EXAMPLE 2~ H3000 System with more than six displays



Note: *For systems with more than six analogues a terminated power lead must be added to the network typically between the GFD and the first analogue. A terminator must be attached to the last analogue on the network.*

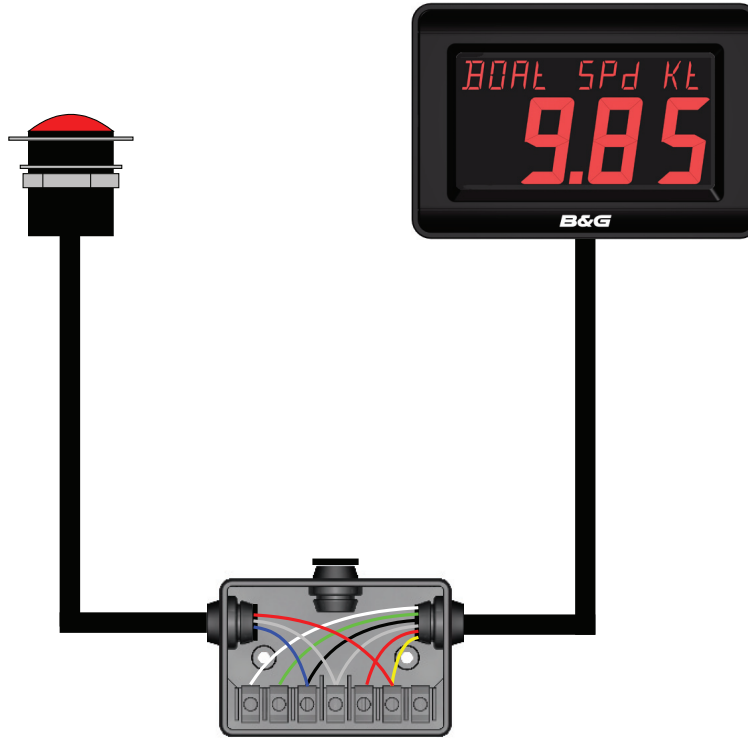
HV DISPLAY INSTALLATION



Note:

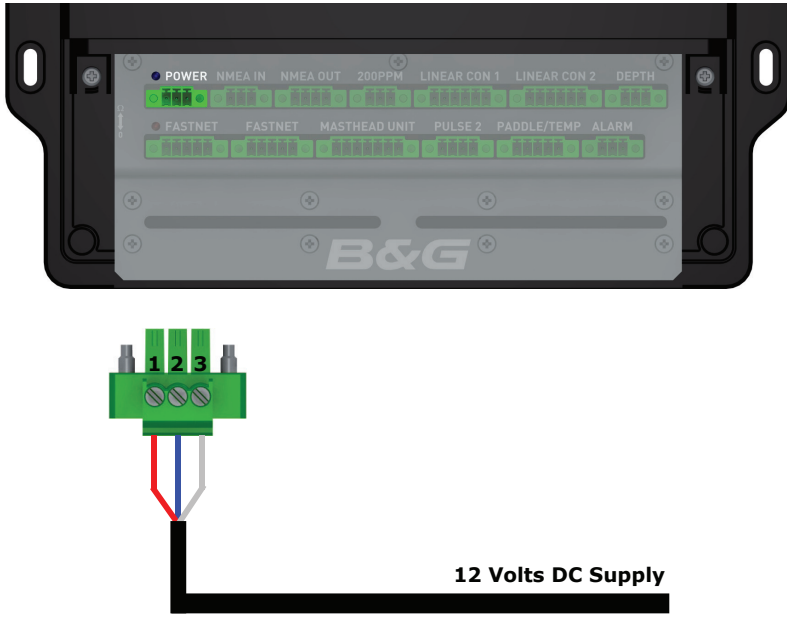
- Above is an example of the installation of an HV Display.
- 10/10, 20/20, 30/30 & 40/40 HV Displays are all be installed identically.
- Wire like colours together in junction box.

REMOTE BUTTON



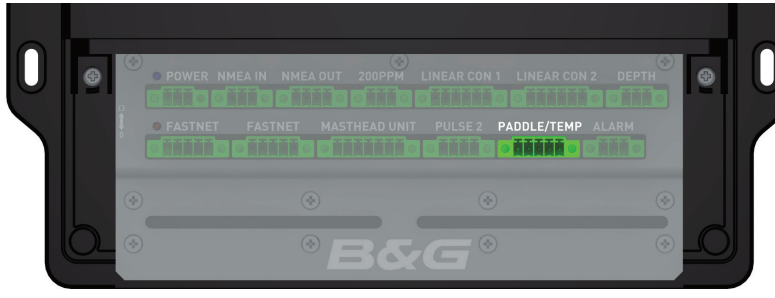
REMOTE BUTTON	HV DISPLAY
-	White
-	Green
Blue	Black
Screen	Screen
-	Red
Red	Yellow

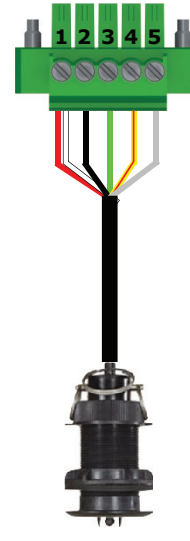
POWER



POWER		
TERMINAL	**COLOUR**	**FUNCTION**
1	RED	12 Volts DC Supply
2	BLUE	0 Volts
3	SCREEN	Screen

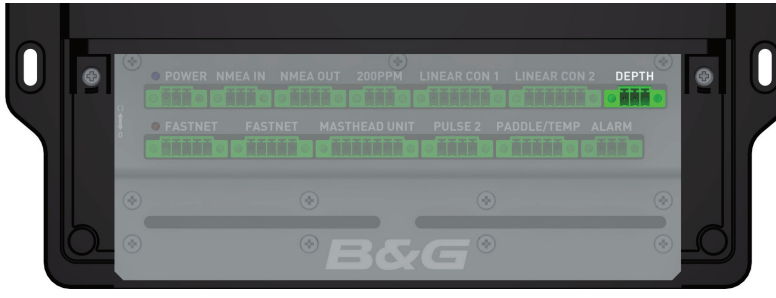
PADDLE / TEMP

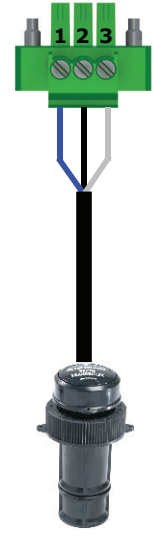




PADDLE / TEMP		
TERMINAL	**COLOUR**	**FUNCTION**
1	RED and WHITE	5 Volts DC Supply
2	BLACK	0 Volts
3	GREEN	Paddle Input
4	YELLOW / RED	Sea Temp Input
5	SCREEN	Screen

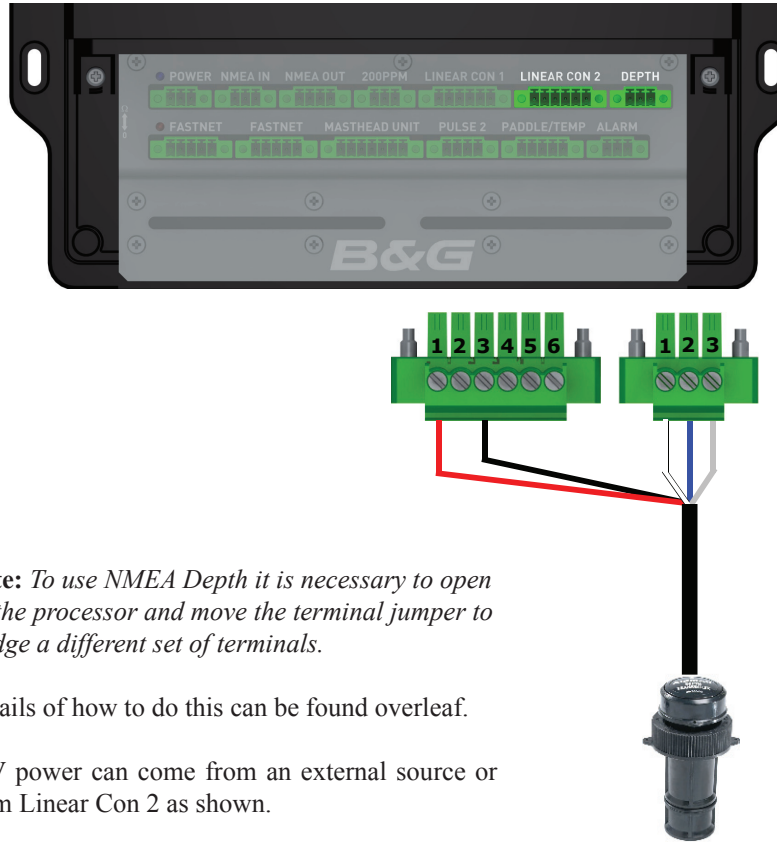
DEPTH





DEPTH		
TERMINAL	**COLOUR**	**FUNCTION**
1	BLUE	Sensor +ve
2	BLACK	Sensor -ve
3	SCREEN	Screen

NMEA DEPTH



Note: *To use NMEA Depth it is necessary to open up the processor and move the terminal jumper to bridge a different set of terminals.*

Details of how to do this can be found overleaf.

12V power can come from an external source or from Linear Con 2 as shown.

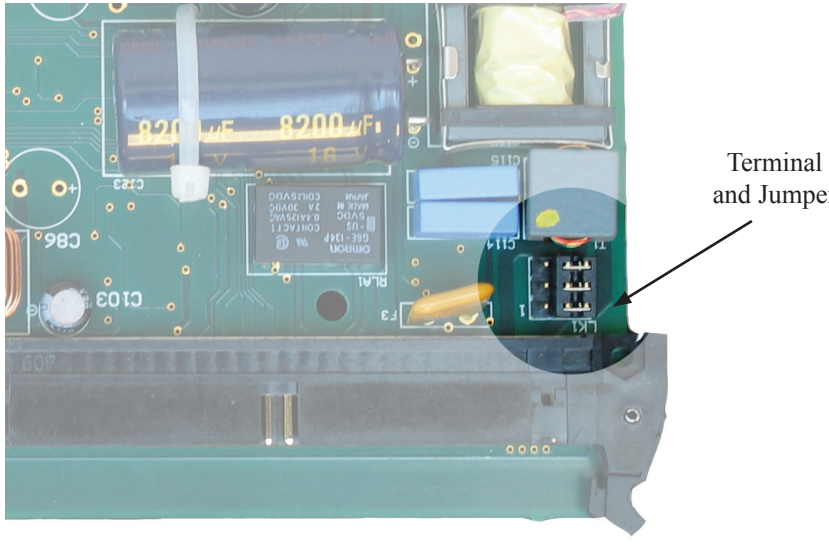
NMEA DEPTH		
TERMINAL	**COLOUR**	**FUNCTION**
1	WHITE	NMEA +ve
2	BLUE	NMEA -ve
3	SCREEN	Screen
Linear Con 2 Term 1	RED	12 Volts
Linear Con 2 Term 3	BLACK	0 Volts

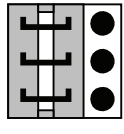
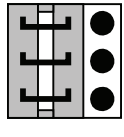
Adjusting the terminal jumper to use NMEA Depth

Caution: *It is recommended that an approved B&G technician performs this operation.*

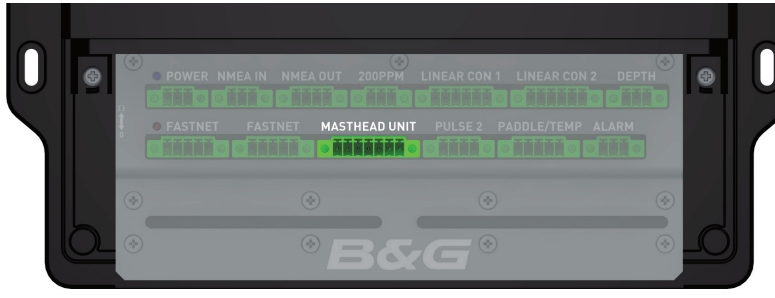
Remove terminal cover – 2 x screws
Remove top case to expose PCB – 4 x screws
Slide off terminal jumper shown below by pulling up.
Replace jumper bridging the terminals shown below by pushing down..

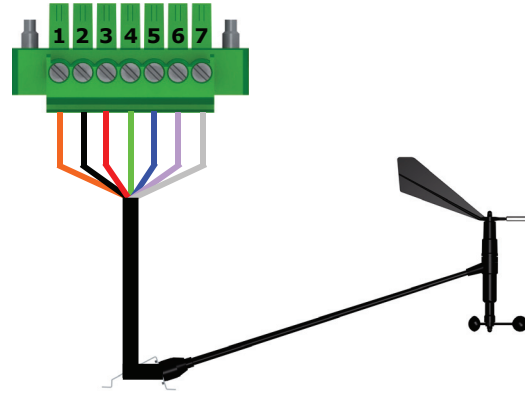
Note: *The jumper is set to the position shown below as the standard depth setting.*



	PASSIVE DEPTH: Terminal jumper as standard bridges between centre and right pins. (Default Setting)
	NMEA DEPTH: Remove terminal jumper and place over centre and left pins

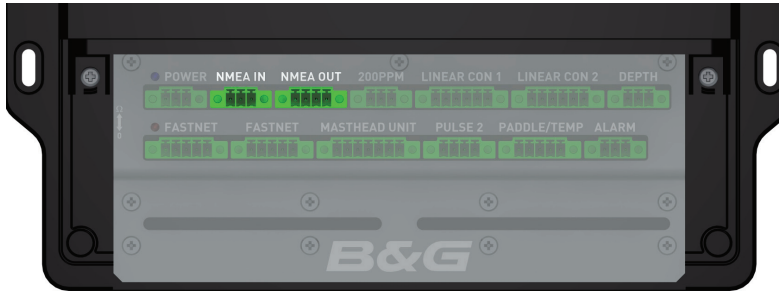
MASTHEAD UNIT

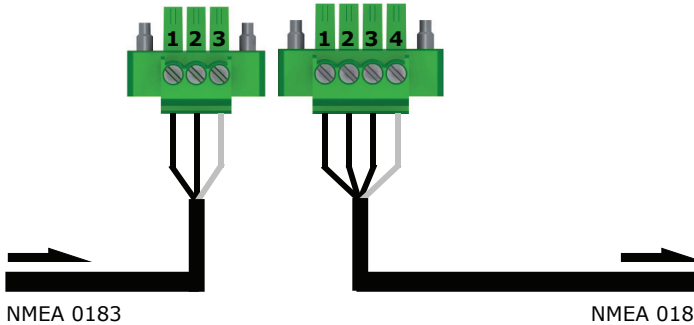




MASTHEAD UNIT		
TERMINAL	**COLOUR**	**FUNCTION**
1	ORANGE	6.4 Volts DC Supply
2	BLACK	0 Volts
3	RED	Red Wind Angle Phase
4	GREEN	Green Wind Angle Phase
5	BLUE	Blue Wind Angle Phase
6	VIOLET	Wind Speed Input
7	SCREEN	Screen

NMEA 0183 INTERFACE



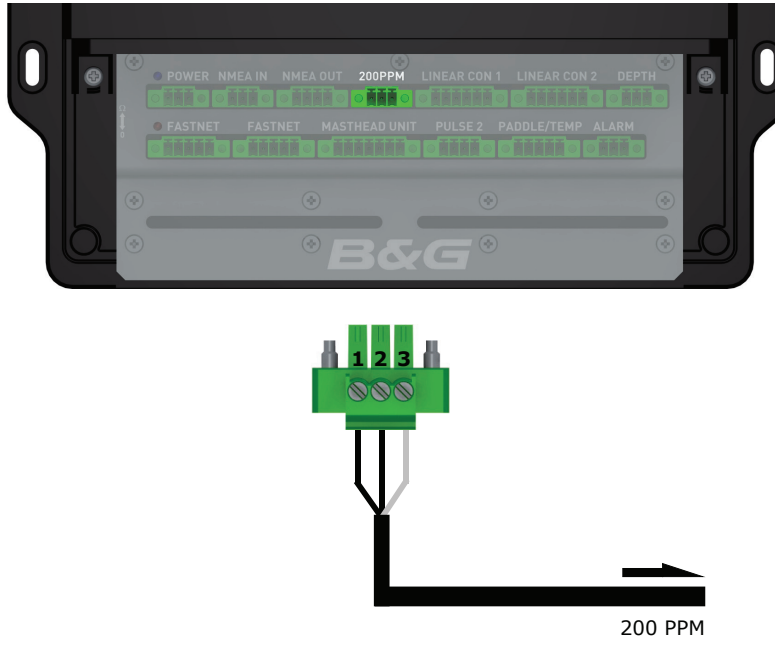


NMEA 0183 NMEA 0183

NMEA IN		
TERMINAL	**COLOUR**	**FUNCTION**
1	-	NMEA IN +ve
2	-	NMEA IN -ve
3	SCREEN	Screen

NMEA OUT		
TERMINAL	**COLOUR**	**FUNCTION**
1	-	NMEA OUT +ve
2	-	NMEA OUT -ve
3	-	0 Volts
4	SCREEN	Screen

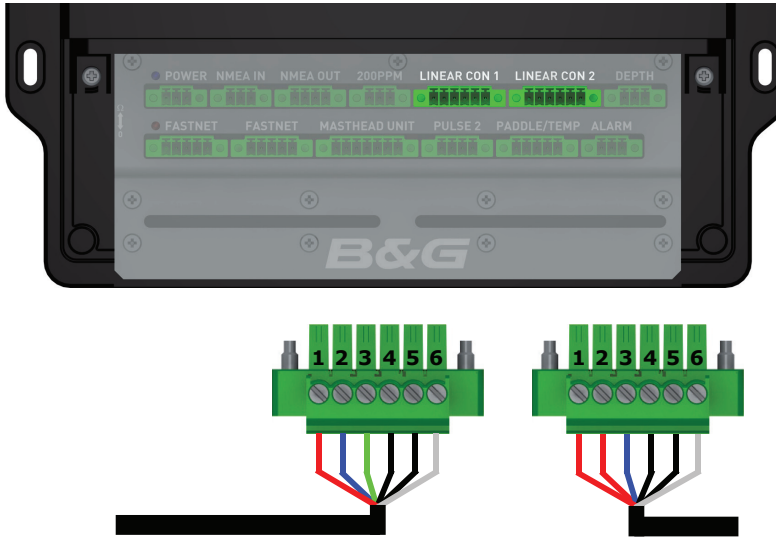
200 PPM



200 PPM		
TERMINAL	**COLOUR**	**FUNCTION**
1	-	200 PPM o/p
2	-	0 Volts
3	SCREEN	Screen

Note: *Open Collector, Active Low*

LINEAR INPUTS

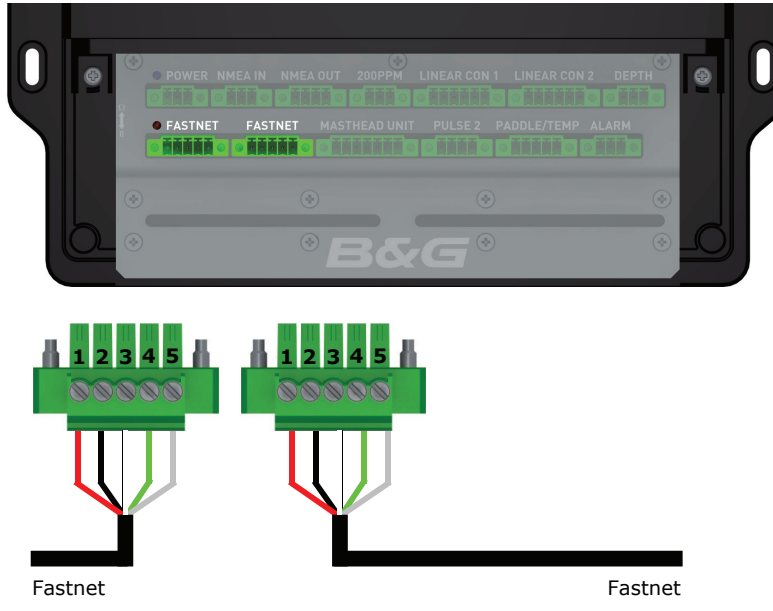


LINEAR CON 1		
TERMINAL	**COLOUR**	**FUNCTION**
1	RED	6.4 Volts DC Supply
2	BLUE	0 Volts
3	GREEN	Air Temperature Sensor
4	-	Linear 1 Input
5	-	Linear 2 Input
6	SCREEN	Screen

LINEAR CON 2		
TERMINAL	**COLOUR**	**FUNCTION**
1	RED	12 Volts DC Supply
2	RED	6.4 Volts DC Supply
3	BLUE	0 Volts
4	-	Linear 3 Input
5	-	Linear 4 Input
6	SCREEN	Screen

Note: *Any unused linear inputs should be connected to ground.*

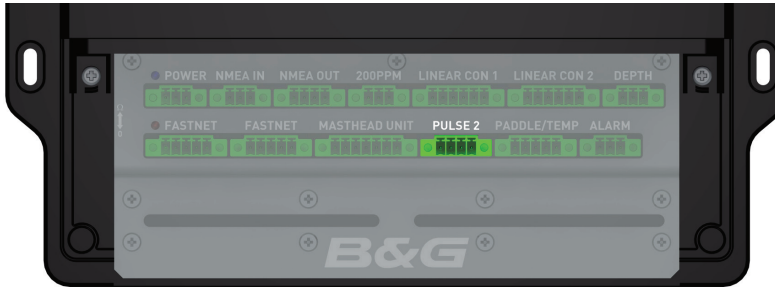
FASTNET

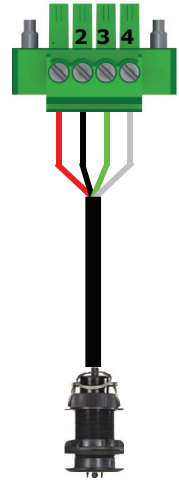


FASTNET		
TERMINAL	**COLOUR**	**FUNCTION**
1	RED	12 Volts DC
2	BLACK	0 Volts
3	WHITE	Network Data +ve
4	GREEN	Network Data -ve
5	SCREEN	Screen

Note: *For Termination of the Network see 'network installation'*

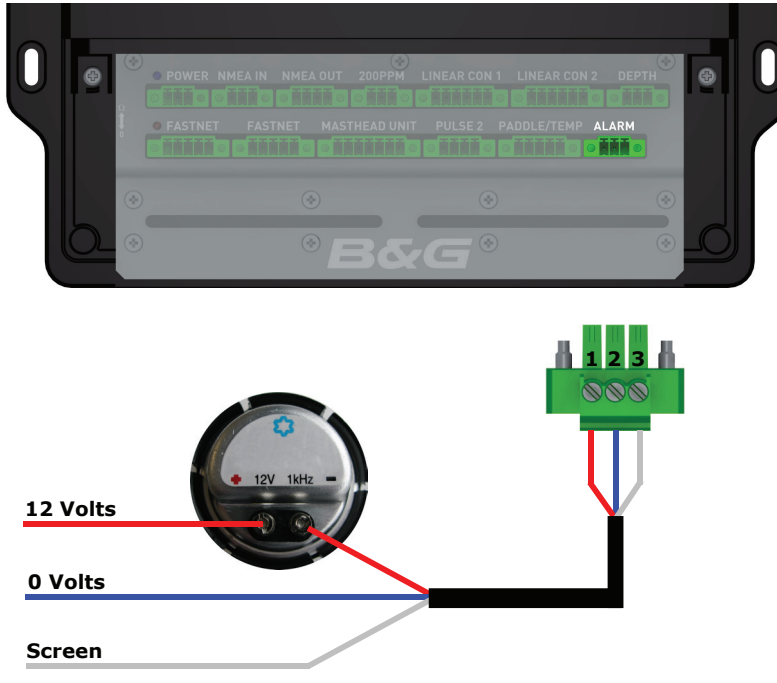
PULSE 2





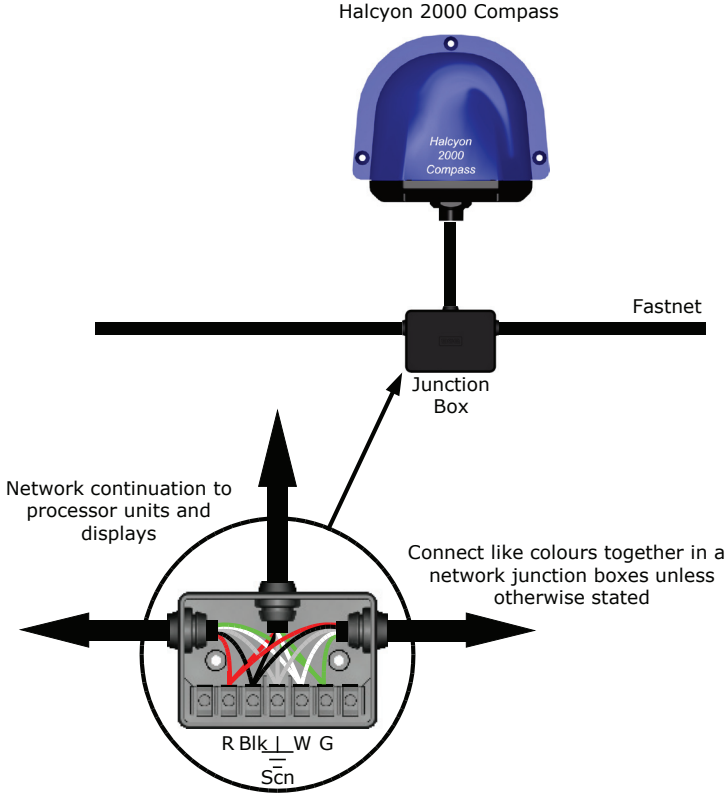
PULSE 2		
TERMINAL	**COLOUR**	**FUNCTION**
1	RED	5 Volts DC Supply
2	BLACK	0 Volts
3	GREEN	Pulse 2 Input
4	SCREEN	Screen

ALARM

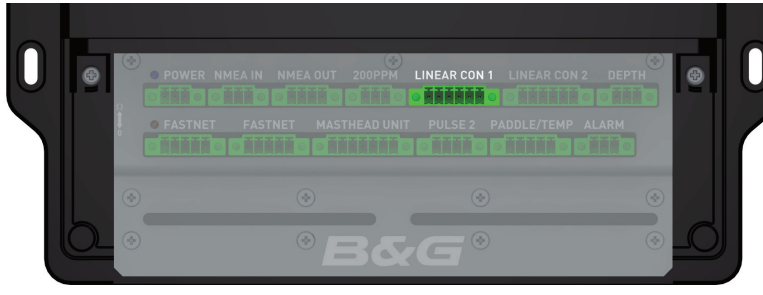


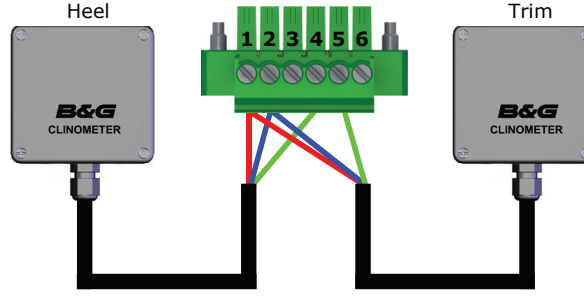
ALARM		
TERMINAL	**COLOUR**	**FUNCTION**
1	RED	Alarm +ve
2	BLUE	Alarm -ve
3	SCREEN	Screen

HALCYON 2000 COMPASS



HEEL & TRIM SENSORS

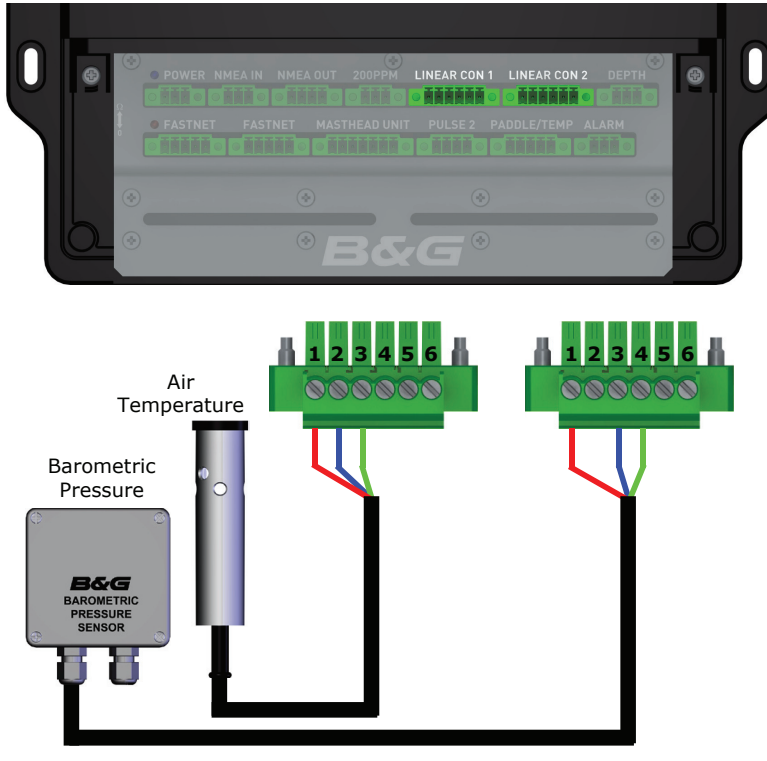




HEEL		
TERMINAL	**COLOUR**	**FUNCTION**
1	RED	6.4 Volts DC Supply
2	BLUE	Ground
4	GREEN	Heel Input

TRIM		
TERMINAL	**COLOUR**	**FUNCTION**
1	RED	6.4 Volts DC Supply
2	BLUE	Ground
5	GREEN	Trim Input

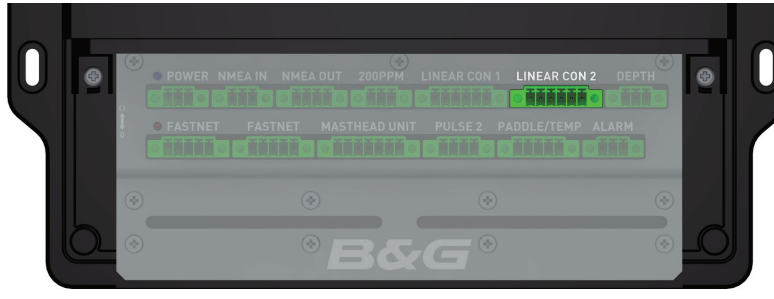
AIR TEMP & BAROMETRIC PRESSURE SENSOR

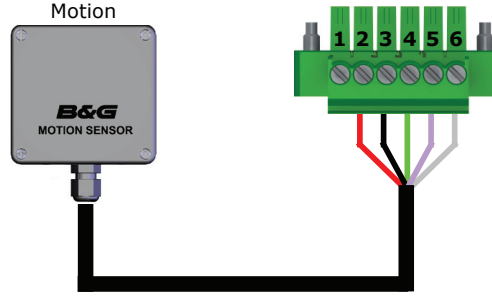


AIR TEMPERATURE -LINEAR CON 1		
TERMINAL	**COLOUR**	**FUNCTION**
1	RED	6.4 Volts DC Supply
2	BLUE	Ground
3	GREEN	Air Temperature Input

BAROMETRIC PRESSURE - LINEAR CON 2		
TERMINAL	**COLOUR**	**FUNCTION**
1	RED	12 Volts DC Supply
3	BLUE	Ground
4	GREEN	Barometric Pressure Input

MOTION SENSOR





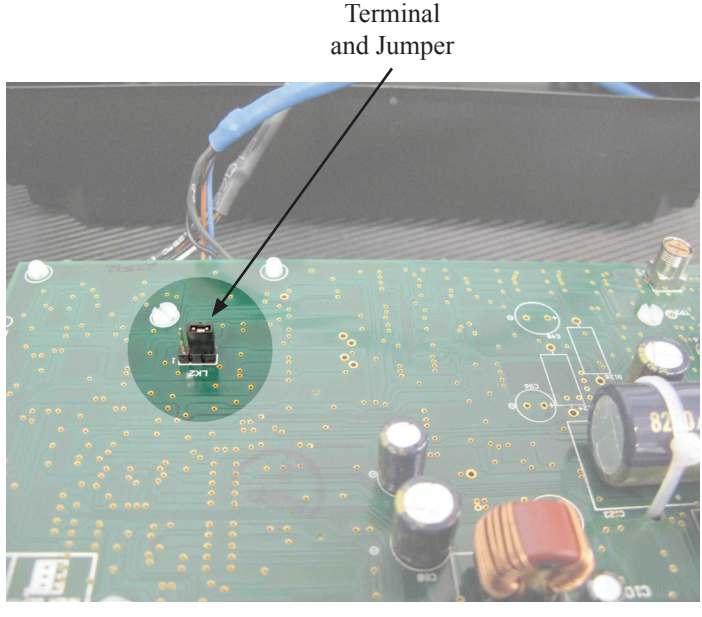
MOTION SENSOR - LINEAR CON 2		
TERMINAL	**COLOUR**	**FUNCTION**
2	RED	6.4 Volts DC Supply
3	BLACK	Ground
4	GREEN	Roll Rate
5	VIOLET	Pitch Rate
6	SCREEN	Screen

Adjusting the jumper to use USB or RS232

Caution: *It is recommended that an approved B&G technician performs this operation.*

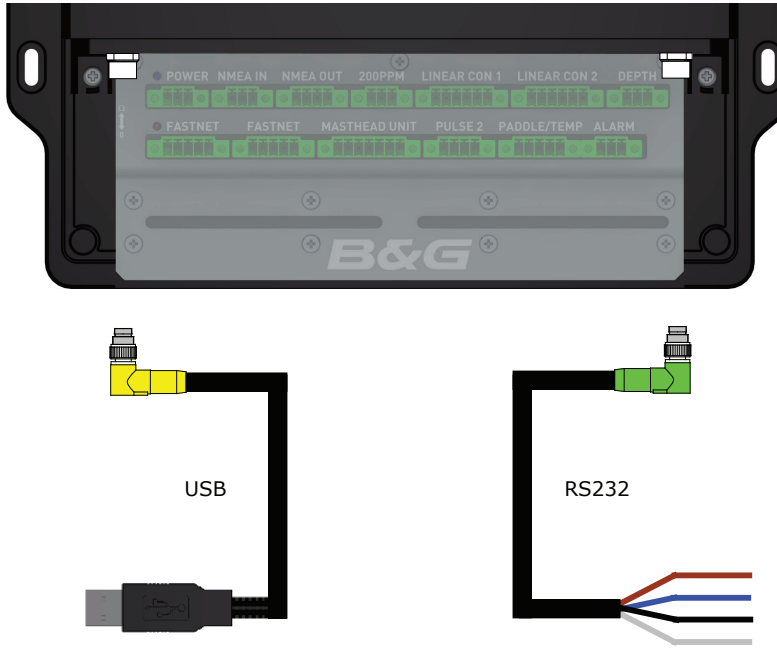
- Remove terminal cover – 2 x screws
- Remove top case to expose PCB – 4 x screws
- Slide off terminal jumper shown below by pulling up.
- Replace jumper bridging the desired terminals as shown below by pushing down.

Note: *The factory default has the jumper set to the position shown below this is the USB position. To change to RS232 move as described.*



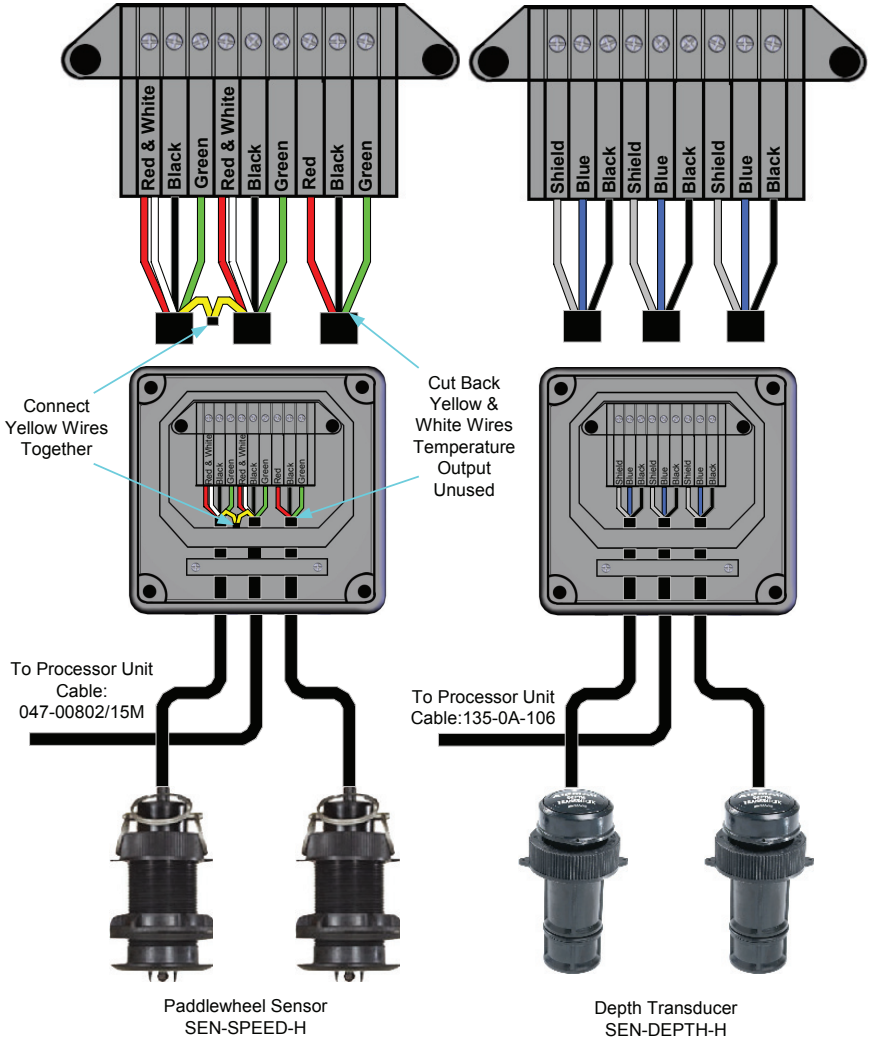
	RS232: Remove terminal jumper and place over centre and left pin.
	USB: Terminal jumper as standard bridges between centre and right pin

USB & RS232



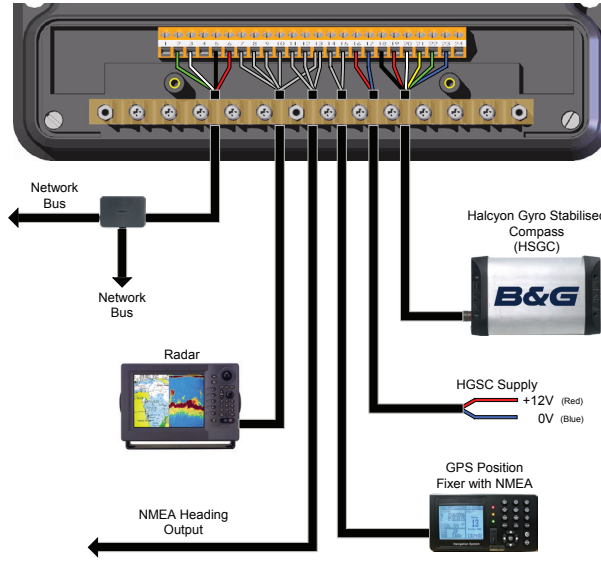
RS232	
COLOUR	**FUNCTION**
BROWN	Tx
BLUE	Rx
BLACK	Ground
SCREEN	Screen

CHANGE OVER SWITCH



HALCYON GYRO PROCESSOR

GYRO PROCESSOR & GYRO STABILISED COMPASS



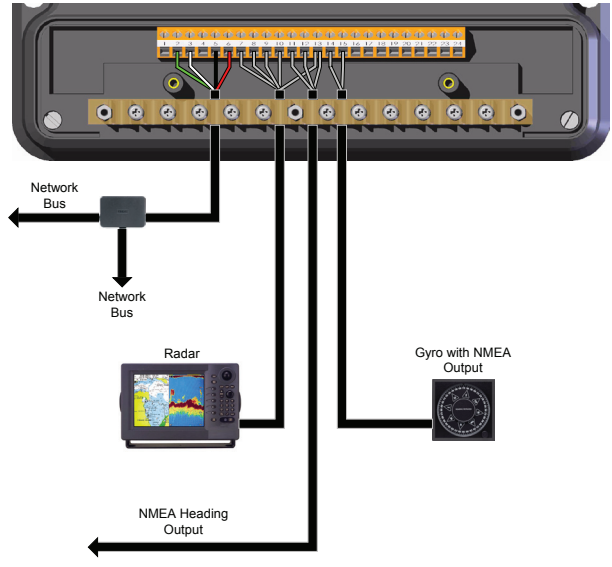
Note:

- All screened wires must have their screen attached to the clamp bar across the front case.

- The Halcyon Gyro Stabilised Compass (HGSC) has a separate supply and does not take power from the Network Bus. The HGSC sensor supply must be taken from a source rated at 2A.

Terminal	Function	Wire Colour	Cable
2	Network Data (-)	Green	135-0A-130 4 Cores/Screen
3	Network Data (+)	White	
5	Supply Ground	Black	
6	Supply +ve (12V nom.)	Red	
7	AD10 Clock Low (-)		
8	AD10 Clock High (+)		
9	AD10 Data Low (-)		
10	AD10 Data High (+)		
13	Ground		
11	NMEA Out - (v2.0)	Blue	135-0A-098 2 Cores/Screen
12	NMEA Out +(v1.5 and 2.0)	Red	
13	Ground	Blue	
14	NMEA In +	Red	135-0A-098 2 Cores/Screen
15	NMEA In -	Blue	
16	HGSC Power in +	Red	135-0A-098 2 Cores/Screen
17	HGSC Power in -	Blue	
18	HGSC Supply -	Black	BGH063001
19	HGSC Supply +	Red	
20	HGSC Data in +	White	
21	HGSC Data In -	Yellow	
22	HGSC Data Out +	Green	
23	HGSC Data In -	Blue	

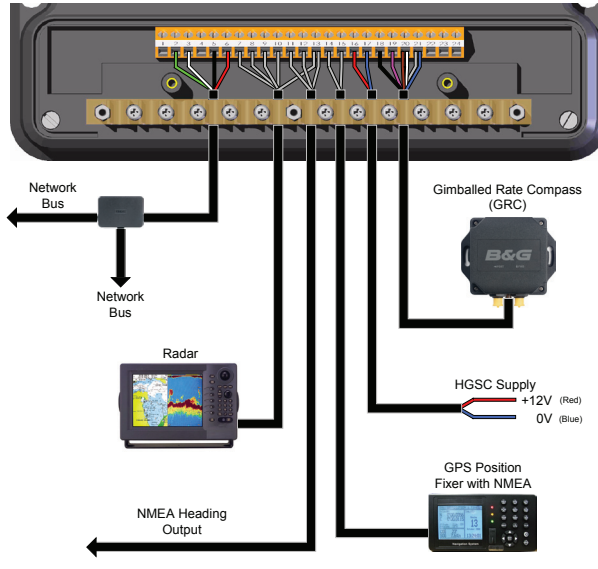
HALCYON GYRO PROCESSOR WITH NMEA INPUT



Note: *All screened wires must have their screen attached to the clamp bar across the front case.*

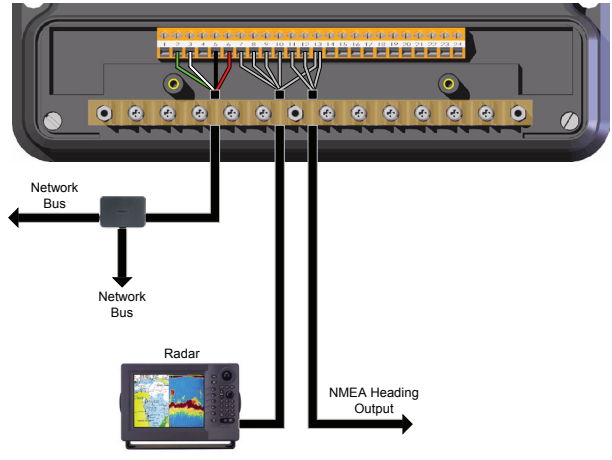
Terminal	Function	Wire Colour	Cable
2	Network Data (-)	Green	135-0A-130 4 Cores/Screen
3	Network Data (+)	White	
5	Supply Ground	Black	
6	Supply +ve (12V nom.)	Red	
7	AD10 Clock Low (-)		
8	AD10 Clock High (+)		
9	AD10 Data Low (-)		
10	AD10 Data High (+)		
13	Ground		
11	NMEA Out - (v2.0)	Blue	135-0A-098 2 Cores/Screen
12	NMEA Out +(v1.5 and 2.0)	Red	
13	Ground	Blue	
14	NMEA In +	Red	135-0A-098 2 Cores/Screen
15	NMEA In -	Blue	

GYRO PROCESSOR & GIMBALLED RATE COMPASS



Terminal	Function	Wire Colour	Cable
18	GRC Supply -	Black	GRC Sensor Cable
19	GRC Supply +	Pink	
20	GRC Data +	Brown & White	
21	GRC Data -	Grey & Blue	

HALCYON GYRO PROCESSOR AS OUTPUT INTERFACE



Note: *All screened wires must have their screen attached to the clamp bar across the front case. Heading source must be either a Halcyon 2000 or B&G autopilot.*

Terminal	Function	Wire Colour	Cable
2	Network Data (-)	Green	135-0A-130 4 Cores/Screen
3	Network Data (+)	White	
5	Supply Ground	Black	
6	Supply +ve (12V nom.)	Red	
7	AD10 Clock Low (-)		
8	AD10 Clock High (+)		
9	AD10 Data Low (-)		
10	AD10 Data High (+)		
13	Ground		
11	NMEA Out - (v2.0)	Blue	135-0A-098 2 Cores/Screen
12	NMEA Out +(v1.5 and 2.0)	Red	
13	Ground	Blue	

EXPANSION PROCESSOR

The Expansion Unit can be connected to the H3000 system via the Fastnet to provide 12 extra analogue inputs. Once the Expansion processor is connected a new menu will automatically appear on all of the GFDs on the system. Up to 12 linear functions may be displayed numbered LINEAR 5 to LINEAR 16. Initially only LINEAR 5 is shown.

LINEAR 5 has four calibration values, other linear functions have three calibration values found by selecting CALIBRATE on the appropriate linear function. Any one of the Linear inputs 1 – 4 on the Main Processor may be set to the same function as any one of the Linear 5 to 18 inputs.

Calibration value 4 is only available on Linear 5 and this displays a value between 05 and 16. This setting determines the number of linear inputs that are available. For example, changing this value to 10 would display a maximum of 10 linear inputs. The default value is 05.

Note: Extra functions selected and then removed remain in the display menu but with no data shown. These will not disappear until the system is switched off and then back on again. Linear functions will always be shown if selected by CAL VAL 4 on Linear 5. They will show no data if the CAL VAL 1 is set to 1 or 2.

Expansion Processor Wiring

Terminal	Function	Wire Colour
14	Network Data -ve	Green
15	Network Data +ve	White
16	Network Screen	Screen
17	Battery Supply Ground	Black
18	Battery Supply 12V	Red
19	Battery Volts Sense	Link to 18
21	Ground	Blue
22	Sensor Supply +6.5V	Red
23	Linear 5 Input	Green
24	Linear 6 Input	Green
25	Linear 7 Input	Green
26	Linear 8 Input	Green

27	Linear 9 Input	Green
37	Linear 10 Input	Green
39	Linear 11 Input	Green
40	Linear 12 Input	Green
41	+12V Switched Supply	Red
42	Linear 13 Input	Green
43	+6.5V Sensor Supply	Red
44	RPM Input	Green
45	Ground	Blue
46	Linear 14 Input	Green
47	Linear 15 Input	Green
48	Linear 16 Input	Green

Note: *Terminals that are not listed above are not connected.*

Sensor Input Configuration

Additional sensors can be added to the system connecting to one of the four linear inputs on the CPU. 12 extra linear inputs are available with the addition of an Expansion Processor. These can be configured to take many different sensors. If you connect the sensor to the linear input that B&G have anticipated then you need take no action beyond the connection itself, since the default linear input configuration will be the right one. The default settings for the four inputs are as follows:

Linear 1	Heel Angle (4)
Linear 2	Trim Angle (5)
Linear 3	Barometric Pressure (6)
Linear 4	0 to 1000 Format (1)

Should you wish to connect one of the other sensors, then you will have to reconfigure the input linear channel that you are connecting it to.

SETUP ▶ CALIBRATION OTHER CALIBRATION MISC (Select Linear 1-4) ▶ Type ▶ Set No. ↵ ◀▼ Minimum (Set Value) ↵ ◀▼ Maximum ▶ (Set Value) ↵

The number you enter to CAL VAL1 should correspond to the sensor you are connecting. (See Linear n, in operating functions)

Note: *Do not select the same number on more than one linear input, otherwise the selection will be ignored (no function can be connected to more than one input except the Normal Linear input which is not limited).*

ROUTINE MAINTENANCE

GENERAL MAINTENANCE

Through-hull housings

Keep the screw threads of through-hull housings well greased with silicone or water pump grease. Ensure that the outer surfaces of the housing are properly coated with anti-fouling paint.

Boat speed sensor (paddlewheel type)

Use a stiff brush to remove marine growth that may cause the paddlewheel to freeze, and then clean the surfaces with a very weak solution of household detergent. If fouling is very severe, push the paddlewheel axle out by using a small drift, and then very gently, wet sand the surface with a fine grade wet/dry paper.

Inspect the o-rings on both the sensor and the blanking plug and replace if necessary, and then lubricate with silicone lubricant or petroleum jelly (Vaseline®).

Boat speed sensor (sonic type)

Aquatic growth can accumulate rapidly on the transducer surface reducing performance. Clean the surface with a soft cloth and a very weak solution of household detergent. If fouling is severe, use a stiff brush or a putty knife. Take care not to cause scratches on the transducer face. Wet sanding using fine grade wet/dry paper is permissible to remove stubborn deposits.

Surfaces exposed to salt water must be coated with antifouling paint. Use only water-based antifouling paint. Solvent-based paints must not be used. Solvent-based paints contain ‘ketones’ which may attack the plastic surfaces and damage the sensor. Re-apply the antifouling paint every six months or at the start of each boating season.

Desiccators

Should any display window show signs of moisture having penetrated the seals e.g. misting of the glass or condensation, the instrument should be removed and returned to your national distributor for drying.

WINTER STORAGE/LAYING UP

Masthead unit

Storage of the masthead unit when the yacht is laid up afloat will increase the life of the transmitters. It should always be removed from the masthead before the mast is unstepped. It should be stored in its packing box with the vane and cups removed. The exposed socket and connector threads at the top of the mast should be smeared with silicone grease such as MS4 (Midland Silicones Ltd), and then protected with the plastic cap supplied with it.

The contacts in the masthead unit connector should be inspected for cleanliness and sprayed with a water inhibitor such as WD40. The outer casing of the connector should also be smeared with silicone grease.

The masthead unit must never be oiled. The bearings are of the sealed prefabricated type and any additional oil may cause chemical breakdown of the existing lubricant. Any scratch marks or corrosion on masthead unit spar should be rubbed clean with a soft cloth and lightly smeared with silicone grease. This should not be necessary if care is taken when hoisting or lowering the masthead unit, to protect it from collision against the rigging.

If the mast is un-stepped, care must be taken to ensure that the cable is not cut through, but disconnected at the junction box below decks. The bare ends of the cable should be smeared with silicone grease.

H3000 SYSTEM CALIBRATION RECORD

System Configuration Record

Function		Default Setting	User Setting
Heading Node		16 (Halcyon 2000)	
Halcyon Mode		0	
Linears	1	4 (Heel)	
	2	5 (Trim)	
	3	6 (Barometer)	
	4	1 (0-1000 Type)	
NMEA Chl		0	
Baud Rate		6	
Sea Temp Type		1	

Basic Calibration Record

Function	Calibration	Value
Meas W/A	Offset	
Meas W/S	Hz / Kt	1.04 (default)
	Offset	1.04 (default)
App W/A	Offset	
	Heel Correction	
App W/S	Hz / Kt	1.04 (default)
	Offset	1.04 (default)
Boat Spd	Single Hz / Kt	
	Stbd Hz / Kt	
	Port H /Kt	
Heading	Offset	
Depth	Datum	
Heel	Offset	
Trim	Offset	
Leeway	Coefficient	
Mast Angle	Offset	
Mast Height	Mast Height	15.0 Meters (default)
Rudder	Offset	

True Wind Speed Correction Table

Function	True Wind Speed					
	5	10	15	20	25	30
Correction º						
Correction Angle						

True Wind Angle Correction Table

Wind Angle	True Wind Speed					
	5	10	15	20	25	30
Upwind						
Reaching						
Downwind						

Boat Speed Correction Table

Heel Angle	Boat Speed (kt)					
	5	10	15	20	25	30
0º						
10º						
20º						

DAMPING RECORD

Function	Damping	Dynamic Damping
App W/A		
App W/S		
Heading		
Boat Spd		
Heel		N/A
Trim		N/A
Leeway		N/A
Mast Angle		N/A
Rudder		N/A
True W/A		
True W/S		
True Dir		N/A
Tide		N/A

SUPPORT RECORD

Date	Notes	Engineer / Dealer