



h 2000 range

- simply sophisticated



Full function displays



Pilots



Analog displays



Digital displays



Integrated Systems

web: www.BandG.com



A Simrad Company

Hydra & Hercules - simply sophisticated...



h2000 - record after record...

B&G have been making leading edge systems for almost 50 years. Our products are dependable and accurate, so much so, that B&G dominates ocean racing.

Some recent Winning B&G boats:

- 1st Antigua Sailing Week - "Lolita"
- 1st Nautor's Swan Europeans - "Aqua Equinox"
- 1st Americas Cup - "Alinghi"
- 1st Admiral's Cup - "Wild Oats"
- Top 10 Rolex Fastnet 2003 boats
- 1st Defi-Atlantique - Mike Golding - "Ecover"
- 1st Rolex Sydney Hobart 2003 Yacht Race - "Skandia"

The list goes on - B&G... the choice of winners!

From the cruising sailor to the Race navigator relying on accurately calibrated data - h2000 series delivers world beating performance in every arena.

Flexible system configuration allows the Hydra and Hercules systems to accommodate almost any application, from the navigator's priority of receiving accurate data to the Superyacht skipper requiring fully integrated systems information such as wind speed & direction, performance targets, position, tidal information, rig loads and tank levels. All available at multiple fixed or mobile stations around the yacht.

As instrument systems evolve B&G continue to understand the need for accurate, rugged and reliable systems that users can rely on to perform 24 hours a day, 365 days a year in any conditions - which is why the world's best sailors choose B&G.



Hydra 2000 Full Function Display, Hercules Pilot and Analog 360° Wind Display. A wide choice of displays is available to suit any application.

Winning strategies at your fingertips

B&G has the only complete system that satisfies the demands of yacht racing and performance cruising skippers, navigators and tacticians. The B&G RaceVision2 is an industrial tablet PC which enables wireless on-deck navigation, you can now have all available information at your fingertips wherever you need it.



Every winner in every top boating competition has made use of B&G. Around the buoys or around the world.

B&G - The choice of the champions...

Hydra systems, chosen for super yachts and blue water cruisers, for reliability, elegance and flexibility. Hercules systems dominate ocean and class racing because accurate, fast, information wins more races.

Hydra features:

- *Faster, more accurate data than ever before*
- *Heel and trim input to wind calculations*
- *Speed over ground (SOG) as boat speed input*
- *Keylock, prevents accidental key presses*
- *Apparent wind angle, apparent wind speed, measured wind angle and measured wind speed calculations*

The Hercules Main Processor provides the powerful computing behind Hercules' fast, highly accurate data.

Hercules features:

- *Faster refresh rates provide real time data*
- *Wind is calculated and displayed at 4Hz*
- *New race timer with sync function*
- *AWA/AWS re-calculated*
- *Heel and trim compensation of wind angles*
- *User settable TWA for TWS corrections*
- *Tack to tack boatspeed offset*
- *Boatspeed heel compensation table*
- *Boatspeed linear offset table*
- *User settable SOG as boat speed source*



Expansion Processor

- *Provides additional analog display outputs and linear sensor inputs*

Ultrasonic Speed Sensors

- *No paddlewheel to foul or create drag*
- *Low maintenance, very reliable, outstanding performance*
- *Measures speed outside the boundary layer*



Hydra and Hercules Pilots are essential, especially on long trips or when short-handed. Performance proven in gale force winds and heavy seas, the NEW h2000 series Pilots are faster, more responsive and more accurate..

Pilot Display

- *Easy to read displays (red/green backlighting)*
- *Soft touch, backlit buttons for fingertip control*
- *Alter course in increments of 1 or 10 degrees*
- *Interface with GPS via NMEA communications*
- *Execute smart tacks, smart gybes*
- *Steer to apparent / true wind angle*
- *Steer to optimum wind angle*

Steer to Optimum Wind Angle (requires Performance Processor)



Rudder Reference Unit

- *Measures rudder angle to adjust for accurate course keeping*
- *Rotary Rudder Reference Unit (industry standard)*
- *Linear Feedback Sensor (occupies less space)*

NEW Pilot ACP (Advanced Control Processor)

- *More powerful microprocessing analyses your yacht's behaviour for optimum control*
- *Smart functions improve response and control*
- *Auto Response and Recovery auto-switching modes deliver additional control when most needed*
- *Enhanced rudder algorithms, evolved with solo racers, increase responsiveness, safety, control and comfort*
- *Advanced Gyro Stabilised Technology uses yaw, pitch and roll rate to improve steering, especially down wind*



Hydraulic linear drive unit with Linear Feedback sensor.

Pump drive unit.



Greater sensitivity, faster response...



- Electronic Compass Sensor
- Heading • Off Course • Head/Lift trend
 - Dead Reckoning course and distance
 - Tidal set and drift • True wind direction

Halcyon 2000 Fluxgate Compass

- Fully gimballed in oil • 'Auto-Swing' stores your deviation tables
- Accurate heading data at all normal angles of heel and trim

Halcyon Gyro Stabilised Compass

- Exceptionally fast data for heading derived functions
- Accurate, high speed, heading data enhances pilot performance
- Accurate heel and trim data enhances accuracy of calculated wind data
- Rugged and reliable with solid state rate sensors

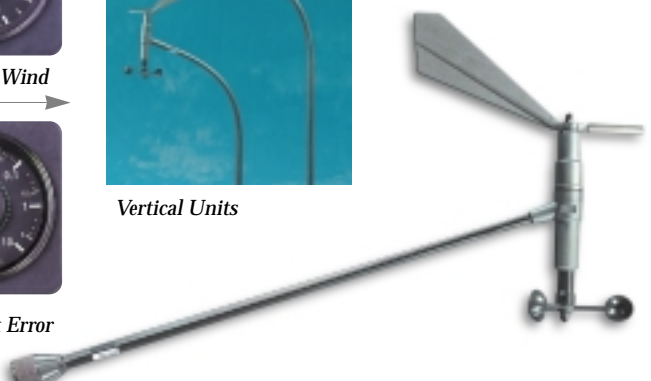


Photo: Swan

Classic Analogs - a choice of 8 instruments



Vertical Units



Masthead Units

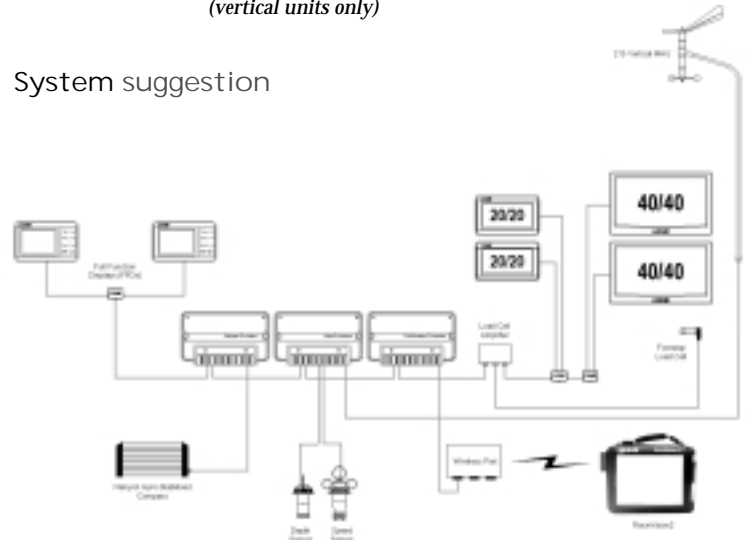
- Standard or Vertical unit (available in four sizes)
- Vertical units raise the wind sensor
- Highly accurate values for TWS, TWA, performance functions
- High modulus, autoclave cured, carbon fibre construction (vertical units only)

B&G's Classic Analogs add a distinctive sophistication to any system - these easy to read displays can be sighted anywhere they are required to provide the helmsman and the crew with necessary performance and information.



- 20/20 displays
- Big numbers! (42mm high)
 - Clear viewing from the cockpit
- 40/40 displays
- (4 x the size of a 20/20)
 - Biggest numbers! (85mm high)
 - The largest, sharpest, clearest digital display available

System suggestion



Functions and system requirements

• Standard • Option



Displayed Functions	Main Processor (4)	Performance Processor	FFD	Pilot	Halcyon Display	20/20 Display	40/40 Display
Speed							
Speed, kts, kph, mph:	•		•			•	•
Average Speed:	•		•			•	•
Velocity Made Good:	•		•			•	•
Trip Log:	•		•				
Stored Log:	•		•				
Dynamic Speed damping:	• (1)		•				
Heel/Linearity Speed correction:	• (1)						
Wind							
Measured Wind Speed/Angle:	•		•			•	•
Apparent Wind Speed/Angle:	•		•			•	•
True Wind Speed/Angle:	•		•			•	•
True Wind Direction:	•		•			•	•
True Wind Calibration:	•		•				
Head/Lift:	•		•		•	•	•
Dynamic Wind damping:	• (1)		•				
Depth							
Depth m, fthms, ft:	•		•			•	•
Navigation							
Heading, °M, °T:	•		•	•		•	•
Dynamic Heading damping:	• (1)				•		
Tide Set and Rate:	•		•			•	•
Off Course:	•		•		•	•	•
Opposite Tack Heading:	•		•			•	•
Dead Reckoned Course/Distance:	•		•			•	•
Leeway °:	•		•			•	•
Course, °M, °T:	•		•			•	•
Performance							
Polar Speed, kt:	•	•	•			•	•
Target Speed, kt:	•	•	•			•	•
Target TWA:	•	•	•			•	•
Optimum Wind Angle:	•	•	•			•	•
Next Leg Apparent Wind:	•	•	•			•	•
Polar Performance %:	•	•	•			•	•
VMG Performance %:	•	•	•			•	•
Meteorological							
Sea Temperature, °C, °F:	•		•			•	•
Air Temperature, °C, °F:	•		•			•	•
Barometric Pressure & Trend, mB:	•		•			•	•
Time							
Time, local:	•		•				
Time, UTC:	•		•				
Race Timers:	•		•			•	•
Boat Monitoring							
Loadcells:	•		•			•	•
Tank monitoring:	•		•			•	•
Mast Angle (with W/A Correction):	•		•			•	•
Rudder Angle:	•		•	•		•	•
Heel Angle:	•		•			•	•
Trim Angle:	•		•			•	•
Supply Voltage:	•		•			•	•
Pilot							
Steer to Compass:	•			•			
Steer to Wind (TWA,AWA):	•			•			
Steer to Waypoint:	•			•			
Power Steer:	•			•			
Pilot Course:	•		•	•		•	•
Rudder Angle:	•		•	•		•	•
Pilot Off Course:	•			•			
Pilot Off Course Alarm:	•			•			
Pilot Watch Alarm:	•			•			
GPS functions (2)							
Position:	•	•	•				
Speed Over Ground:	•	•	•			•	•
Course Over Ground: °M, °T:	•	•	•			•	•
Bearing to Waypoint GC: °M, °T:	•	•	•			•	•
Bearing to Waypoint RL: °M, °T:	•	•	•			•	•
Distance to Waypoint GC: nm:	•	•	•			•	•
Distance to Waypoint RL: nm:	•	•	•			•	•
Estimated Time of Arrival:	•	•	•			•	•
Cross Track Error (XTE): nm:	•	•	•			•	•
VMG to Waypoint:	•	•	•			•	•

Notes:

FFD = Hydra or Hercules Full Function Display (inc. NMEA Full Function Display)
 Pilot = Hydra or Hercules Pilot system notes:

- (1) Hercules Main Processor required
- (2) Compatible NMEA 0183 input via NMEA FFD or Performance Unit required
- (3) Alarms are visual, an audible alarm sounder is available
- (4) All functions are dependent on the installation of suitable sensors

specifications

Pilot - ACP Types 1 & 2

dimensions: 207 x 136 x 90mm (8.2 x 5.4 x 3.5") weight: 3.1Kgs (6.8lbs)
case construction: zinc casing
power supply (electronics): 12v dc nominal (10 - 16v) via Fastnet
power supply (drive): 12-24v dc nominal (12 - 32v)
power consumption (electronics): 100mA (approx)
maximum current (drive): 25A (ACP1), 40A (ACP2)
operating temperature range: -10 to +55°C (+14 to +130°F)
storage temperature range: -25 to +70°C (-13 to +158°F)
humidity range: up to 95% rh compass safe distance: 100mm (3.9")

Pilot drive unit - rams Type 0, 1, 2

type: electrically driven hydraulic ram with reversible DC pump
suitability: wheel steered yachts and power boats
connection: to rudder stock
basic dimensions: type 0: 101 x 728mm (4.0 x 28.6") / type 1: 101 x 728mm (4.0 x 28.6") / type 2: 125 x 728mm (4.9 x 28.6")
weight: type 0: 5.8Kgs (12.7lbs) / type 1: 7.5Kgs (16.5lbs) / type 2: 7.5Kgs (16.5lbs)
supply voltage: type 0: 12v dc / type 1: 12v dc / type 2: 12 or 24v dc (specify at time of order)
peak thrust: type 0: 300Kgs (660lbs) force / type 1: 425Kgs (935lbs) force / type 2: 680Kgs (1496lbs) force
peak current: type 0: 20A @ 12v / type 1: 20A @ 12v / type 2: 25A @ 12v
maximum stroke: type 0: 203mm (8") / type 1: 254mm (10") / type 2: 254mm (10")
coupling radius: (typical): type 0: 178mm (7.0") / type 1: 214mm (8.4") / type 2: 214mm (8.4")
max torque: type 0: 545Nm (4800lb.ins) / type 1: 892Nm (7867lb.ins) / type 2: 1427Nm (12574lb.in)
power consumption: 2-4A (typical)

Pilot drive unit - rams Type 3

type: electrically driven hydraulic ram with reversible DC pump
suitability: wheel steered yachts and power boats
connection: to rudder stock
basic dimensions: pump 82 x 252mm (3.2 x 9.9") / ram 101 x 537mm (4.0 x 21.2")
weight: 10.3Kgs (22.7lbs)
supply voltage: 24v dc
peak thrust: 1062Kgs (2342lbs) force
peak current: 17A @ 24v dc
maximum stroke: 305mm (12.0")
coupling radius: 257mm (10.1") for +/-35deg rudder angle
max torque: 2688Nm (23780 lb.ins)
power consumption: 2-4A (typical)

Pilot drive unit - rams Type 4

type: electrically driven constantly running pump with twin hydraulic rams
suitability: wheel steered yachts and power boats
connection: to rudder stock
weight: 25Kgs (55lbs) approx.
supply voltage: 24v dc nominal
peak thrust: 2000Kgs (4400lbs) peak current: 30A @ 24v dc
maximum stroke: 305mm (12.0")
coupling radius: 257mm (10.1") for +/-35° rudder angle
max torque: 5232Nm (46140lbs.in)
power consumption: 8-12A (typical)

Pilot drive unit - pumps Type 1, 2, 3

type: electrically driven reversing hydraulic pump
suitability: hydraulically steered yachts and power boats
connection: to existing hydraulic steering system
supply voltage: type 1: 12v dc / type 2: 12v dc / type 3: 24v dc
weight: type 1: 3Kgs (6.6lbs) / type 2: 4Kgs (8.8lbs) / type 3: 4Kgs (8.8lbs)
cylinder capacity (suitability): type 1: 100-300cc (6.1-18.3 cu in) / type 2: 275-550cc (16.8-33.6 cu in) / type 3: 525-750cc (32.0-45.8 cu in)

Pilot remote control

construction: waterproof ABS moulded casing
cable: 10m (33ft) straight section plus coiled length extending 1-3m (3-9ft) approx.

Depth sensor

dimensions: 94mm (housing), 129mm (total), dia: 75mm flange, 51mm tube
construction: housing: plastic / bronze, sensor: plastic
frequency: 170KHz
range: 0.7-200m (2-600ft), when connected to Hydra/Hercules Main Processor

Sonic speed sensor

control box size: 230.5 x 126.5 x 56mm (9.1 x 5.0 x 2.2")
weight: 1.2Kgs (2.65lbs)
construction: ABS moulded casing
transducer: 0.3Kgs (0.66lbs) with 5m (16ft) cable
supply voltage: 12v dc nominal current: 90mA

Ultrasonic speed sensor (with built-in sea temperature sensor)

dimensions: 94mm (housing), 139mm (total), dia: 75mm (flange), 51mm (tube)
weight: 1.3Kgs (2.8lbs)
ultrasonic frequency: 4.5MHz pulse repetition frequency: 5.7KHz (fixed)
data update rate: 2Hz

supply voltage: 10 -15v dc current consumption: 155mA @ 12v dc
temperature range: operating 0-40°C (+32 to +140°F)
accuracy: approx. 2% +0.1 knot / min speed: 0.1 knot - max speed: 60 knots
speed measurement: 80-130mm (3-5") from transducer
transducer cable: 10m (33ft) / power cable: 3m (10ft) / junction box cable: 6m (20ft)

213 masthead unit

construction: sealed electronic housing in injection moulded conductive plastic for electrostatic discharge protection incorporating heavy weather skirt. Bracket mounted with a high quality connector via a black painted aluminium spar
sealing: to IP66 spar length: 530mm (20.9")
weight: 0.4Kgs (0.88lbs)

Halcyon 2000 compass sensor

construction: robust ABS casing with multi-way connector base
compass type: fluxgate sensor, auto-calibration facility

Halcyon gyro stabilised compass

processor construction: moulded ABS with screw terminals
processor dimensions: 235 x 140 x 80mm (9.25 x 5.5 x 3.0")
sensor construction: aluminium
sensor compass type: fluxgate sensor with 3-axis rate gyros for motion correction
performance: warm-up time: milliseconds
deviation compensation: automatic
accuracy: +/-1.0° typical
repeatability/resolution: +/-0.25°/0.1°
recovery time: milliseconds
gyro drift: none (auto-corrected)
pitch and roll range: +/-45°/sec
linearity: 1% of full scale
max acceleration: 0.5°G
zero point stability: +/-0.8°
max shock/performance: 20G, 11 msec
operating temperature: -13°F to +167°F (-25°C to +75°C)
storage temperature: -40°F to +185°F (-40°C to +85°C)
EMI/RFI (CE approved): IEC 945

Processors

construction: moulded ABS case with screw terminals
dimensions: 235 x 140 x 80mm (9.25 x 5.5 x 3.0")
supply voltage: 12v nominal (10v-16v)
operating current: Hydra/Hercules Main Processor: 160mA (without analogues)
operating current: Performance / Expansion Processor: 50mA
standby current: Hydra/Hercules Main Processor / Performance Processor: 4mA standby
current: Expansion Processor: 2mA

H-Series pilot, FFD, 20/20, 40/40 and analogue displays

Pilot, FFD and 20/20 (Hydra / Hercules)

construction: fully sealed assembly
dimensions: 165 x 110 x 43mm (6.5 x 4.25 x 1.5")
weight: pilot: 0.6Kgs (1.3lbs) with 3m cable / FFD: 0.6Kgs (1.3lbs) with 3m cable
20/20: 0.8Kgs (1.8lbs) with 5m cable
supply voltage: 12v nominal (10v-16v)
operating current: 13-90mA (backlight level dependent)
standby current: 2mA
backlighting: 3 levels for all visibility conditions

40/40 (Hydra / Hercules)

construction: fully sealed assembly dimensions: 310 x 208 x 20mm (12.2 x 8.0 x 0.8")
operating current: 50-120mA (backlight level dependent)
supply voltage: 12v nominal (10v-16v)
sealing: IP67
backlighting: 3 levels for all visibility conditions
options: single button remote control to cycle through display options

Analogue

construction: fully sealed assembly
dimensions: visible: 110 x 110 x 22mm (4.3 x 4.3 x 0.9"), total: 110 x 110 x 62mm (4.3 x 4.3 x 3.4"), barrel diameter: 66mm
weight: 0.7Kgs (1.54lbs)
operating current: 40-90mA (backlight level dependent)
lighting: controlled via FFD lights key
compass safe distance: 200mm

RaceVision 2

display: 10.4" transfective display dimensions: 260 x 202 x 38mm (10.2 x 8.0 x 1.5")
weight: 2Kgs (4.4lbs)
processor: 800 MHz Pentium II, system bus 133MHz
operating system: Microsoft WindowsXP Tablet PC edition
software: Deckman for Windows RV2 edition with C-Map digital vector charting
C-Map digital vector charting
battery life: 4 hours typical (usage and backlight dependent) battery charge to 85% capacity in less than 2 hours
optional accessories: port replicator operating temperature: 0-60°C (32-140°F)
system requirements: Hydra/Hercules, Performance Processor (RS232 port), 12v dc

web: www.BandG.com



A Simrad Company

For further information or your nearest B&G dealer call:
UK: +44 (0)1794 518448 - email: sales@BandG.com
US: +1 727 540 0229 - email: sales@bandusa.com