# Coastal Surveyor 2

*Survey Vessel*


## SPECIFICATIONS

### Classification / Flag

| | |
|---|---|
| Flag | : Dutch |
| Trading area | : Coastal waters up to 15 nautical miles |
| Call sign / IMO | : PHKJ / - |
| Classification society | : Bureau Veritas |
| Class ship type | : Launch |
| Class notation | : I + HULL * MACH Seagoing Launch |

### Principal dimensions

| | |
|---|---|
| Length o.a. | : 20,28 m |
| Breadth o.a. | : 6,11 m |
| Draft | : 0,90 m |
| GRT | : 75 |
| NRT | : 22 |

### Machinery / Propulsion

| | |
|---|---|
| Maximum speed | : 8,5 knots |
| Bollard pull | : 0 ton |
| Power output | : 280 kW / 380 hp |
| Propulsion | : Twin fixed pitch propellers & bow thruster |
| Main engines | : Daf DK 1160 |
| Marine gears | : Twin Disc MG 5061 |
| Auxiliary engines | : 65 kVA |

### Miscellaneous

| | |
|---|---|
| Anchor winch | : |
| Hydraulic deck crane | : 1 ton at 4,8 m |

### Tank capacities

| | |
|---|---|
| Fresh water | : 5000 ltr |
| Fuel | : 5000 ltr |

### Accommodation

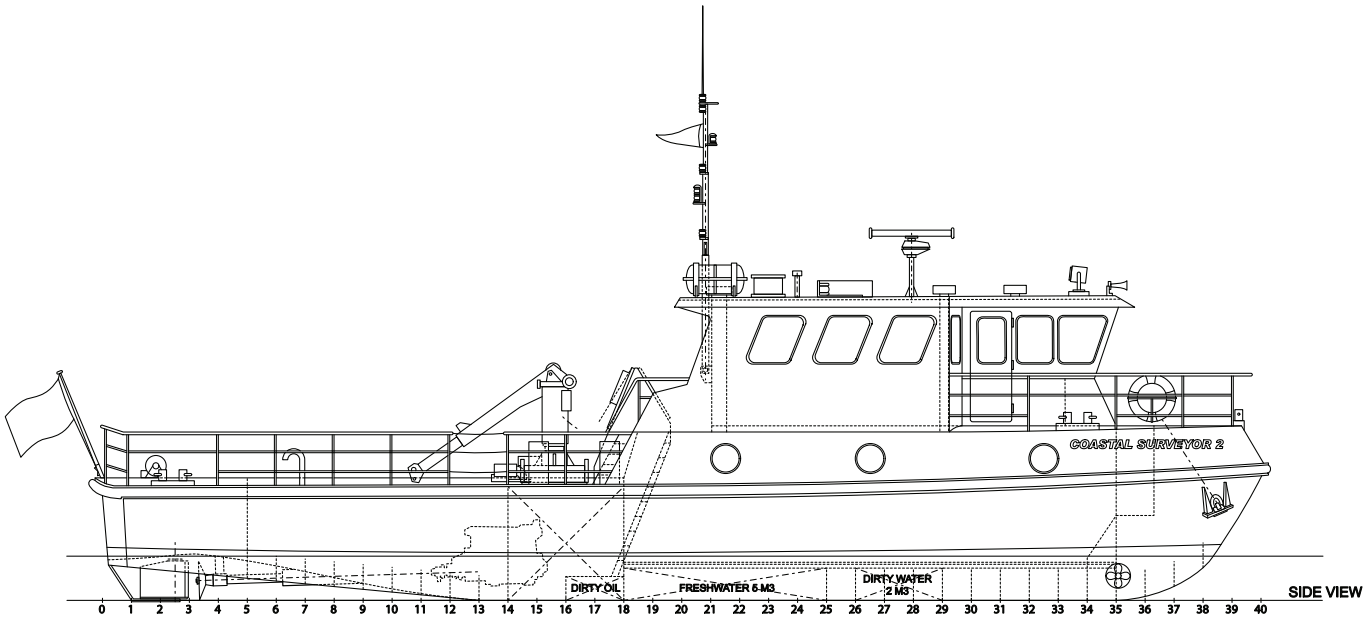
Fully aironditioned, survey room, messroom, galley, sanitary facilities & 3 double berth cabins.

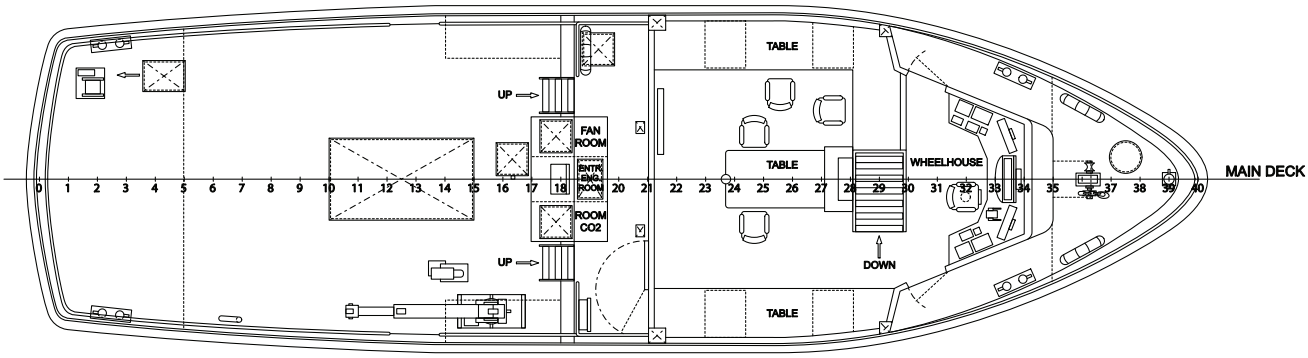
### Navigation and communication systems

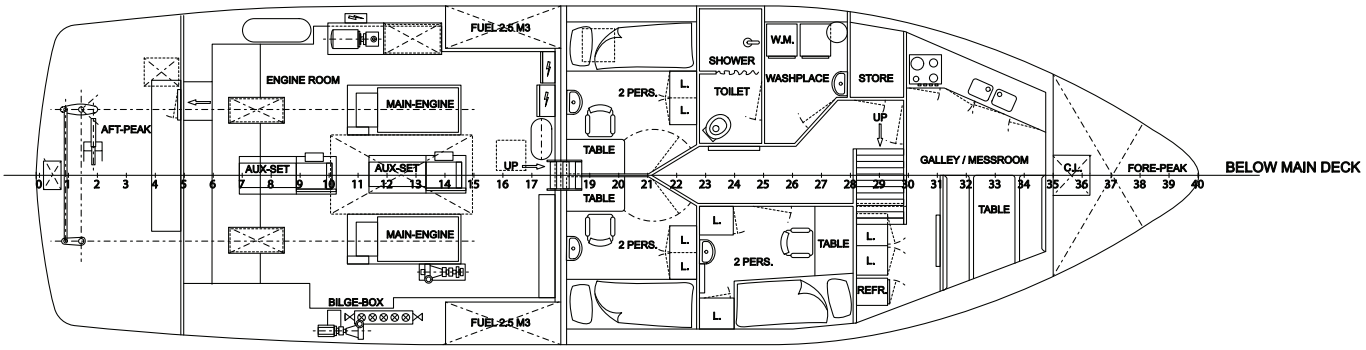
- AIS JRC JHS-182
- Autopilot Alphapilot MFC
- Echosounder Alphatron Alphadepth MF
- Echosounder JRC FF60
- EPIRB Mcmurdo E5
- FU tiller Alphatron Alphatiller
- GPS JRC JHS-7500
- Intercom Alphatron Alphacall
- Magnetic Compass Observator Pilot MK3
- Navtex JRC NCR-333
- Radar JRC JMA-5312-6
- Sart Jotron Tronsart
- Satellite Compass JRC JLR-20
- VHF Sailor RT2048
- VHF DSC JRC JHS-770S
- VHF GMDSS handheld Sailor SP3520

## GENERAL ARRANGEMENT

# Coastal Surveyor 2




Acta Marine

Het Nieuwe Diep 39D
1781 AE Den Helder
The Netherlands
Phone: +31-223-615666
Fax: +31-223-614360
Web: http://www.actamarine.com
E-mail: info@actamarine.com

# FROG GNSS

SEABED

## The FROG family

The FROG III is a lightweight and compact GNSS system, developed for topographic and hydrographic survey purposes. The FROG III system thanks its unique name to its amphibian capabilities.
The basic concept for the FROG III GNSS encompasses top quality components. It is flexible, easy to use and has multiple applications.

The FROG III GNSS features colored LEDs which indicate the receiver status (satellite, communication and modem status) at a glance. The beating heart of the FROG III GNSS consists of a NovAtel 72 channel, triple frequency receiver that is capable of using the positioning signals from both GPS and GLONASS constellations for maximum flexibility and enhanced positioning in challenging environments.

The FROG III GNSS is equipped with an internal GPRS modem which enables it to receive NMEA RTK correction signals.
The FROG III GNSS supports GPS L2C. Future firmware upgrades will enable the system to track the upcoming GPS L5 signal as soon as it becomes available, which means your investment will have long-lasting results.
The receiver can operate with SBAS, DGPS and OmniSTAR L-band correction signals.

## Utilisation

- Hydrographic and topographic surveying
- Positioning of vessels, cranes and other objects
- NovAtel ALIGN heading solutions

## Benefits / Features

- Lightweight, compact aluminum housing;
- Usable as a static base as well as a roving unit;
- Easy access to SIM card holder;
- Solid and reliable RTK performance;
- Improved positioning in challenging environments;
- Offers superior multipath detection, thus eliminating close-in multipath and to flag poor signal quality;
- Windows©-based configuration software.



## FROG GNSS system specifications

### Performance[1]

**Channel Configuration**
- 14 L1, 14 L2, 6 L5 GPS
- 12 L1, 12 L2 GLONASS
- 2 SBAS
- 1 L-band

**Horizontal Position Accuracy (RMS)[2]**

| | |
|---|---|
| - Single Point L1 | 1.8 m |
| - Single Point L1/L2 | 1.5 m |
| - SBAS[2] | 0.6 m |
| - CDGPS[2] | 0.6 m |
| - DGPS | 0.45 m |
| - OmniSTAR VBS[2] | 0.7 m |
| - OmniSTAR XP[2] | 0.15 m |
| - OmniSTAR HP[2] | 0.1 m |
| - RT-20™ [3] | 0.2 m |
| - RT-2® | 1 cm+1ppm |

**Measurement Precision**

| | |
|---|---|
| - L1 C/A Code | 4 cm RMS |
| - L1 Carrier Phase | 0.50 mm RMS (differential channel) |
| - L2 P(Y) Code | 8 cm RMS |
| - L2 Carrier Phase | 1 mm RMS (differential channel) |

**Data Rate[4]**

| | |
|---|---|
| - Measurements | 1 - 50 Hz |
| - Position | 1 - 50 Hz |
| - OmniSTAR HP | 1 - 20 Hz |

**Time to First Fix**

| | |
|---|---|
| - Cold Start[5] | 60 s |
| - Hot Start[6] | 35 s |

**Tracking**
20 Channel Dual Constellation (DC) GPS/GLONASS L1/L2

| | |
|---|---|
| Cold start: | < 60 seconds |
| Warm start: | < 10 seconds |
| Reacquisition: | < 1 second |

**Signal Reacquisition**

| | |
|---|---|
| - L1 | 0.5 s (typical) |
| - L2 | 1.0 s (typical) |

| | |
|---|---|
| **Time Accuracy[7]** | 20 ns RMS |
| **Velocity Accuracy** | 0.03 m/s RMS |
| **Dynamics** | Velocity 515 m/s |

### Physical & Electrical

| | |
|---|---|
| **Size** | 240 x 180 x 60 mm |
| **Weight** | 1400 gr |
| **Power:** Input Voltage: | 9 to 30 V |

**Antenna LNA Power Output**
- Output Voltage +5 VDC
- Maximum Current 100 mA

**Communication Ports**
- 2 RS-232

**Input/output connectors**

| | |
|---|---|
| - Power | 4pin LEMO |
| - Antenna Input | TNC female |
| - External Oscillator | BNC female |
| - COM1 | DB-9 male |
| - COM 2 | DB-9 male |

**Environmental**
Temperature

| | |
|---|---|
| - Operating | -40°C to + 75°C |
| - Storage | -45°C to + 95°C |

**Interface front**
- On/Off Button
- GPS status
- GPS error status
- Modem status
- Status: COM 1, COM 2, COM 3
- Satellite status
- Power status

### Includes Accessories

- VDC Power cable
- GPRS modem
- Mounting bracket
- Null-modem serial cable

### Optional Accessories

- GPS-700 series antennas
- ANT-500 series antennas
- RF Cables - 5,100 and 30 m lengths
- AC adapters - International and North American
- Heading, pitch and roll application

1 Typical values. Performance specifications subject to GPS system characteristics, US DOD operational degradation, ionospheric and tropospheric conditions, satellite geometry, baseline length, multipath effects and the presence of intentional or unintentional interference sources.
2 GPS only
3 Expected accuracy after static convergence.
4 Slower data rates are expected for API customers.The maximum data rate is dependent on the size of the application.
5 Typical value. No almanac or ephemerides and no approximate position or time.
6 Typical value. Almanac and recent ephemerides saved and approximate position and time entered.
7 Time accuracy does not include biases due to RF or antenna delay.
8 Export licensing restricts operation to a maximum of 514 metres per second
9 While operation without an external IMU, the FROG can accept an input voltage between +9 and +30 V.
10 When running a GPS-only model.

**All specifications are subject to change without prior notification.**

## Contact us

For more information please call +31(0)206368443 or visit our website, www.seabed.eu

SEABED

# ROVINS

## INERTIAL NAVIGATION SYSTEM FOR SUBSEA VEHICLES

**ROVINS** is a combined survey-grade full featured Inertial Navigation System (INS) for water depths up to 3,000m. Designed specifically for offshore survey and construction works, **ROVINS** improves the efficiency of all operations where accurate position, heading, 3D speeds and attitude are key benefits.

## FEATURES

- All-in-one 3D positioning with heading, roll, pitch and heave
- Fiber-Optic Gyroscope (FOG), unique strap-down technology
- Multiple aiding options (DVL, USBL, LBL, RAMSES, GPS, depth sensor)
- DVL Ready option available
- RAMSES Synthetic Baseline Positioning System option available
- OCTANS footprint compatible

## BENEFITS

- Accurate georeferenced position and attitude for all subsea vehicles at high frequency
- No spinning element hence maintenance free
- Flexible and scalable configuration for all deployment scenarios
- Immediate availability and performance for all vehicles
- Ultimate sub-metric performance using sparse array transponders and on-the-fly calibration
- Immediately compatible

## APPLICATIONS

• ROV/AUV positioning • Multibeam sonar motion reference • Subsea construction

Courtesy of Ifremer


Courtesy of Bluewater

IXBLUE
DEEP INSIGHT. SHARPER SENSES.

# ROVINS
TECHNICAL SPECIFICATIONS

Ethernet

## PERFORMANCE

| | |
|---|---|
| **Position accuracy** [1] | |
| With USBL/LBL | Three times better than USBL/LBL accuracy |
| With DVL | 0.2% of traveled distance |
| No aiding for 1 min/2 min | 1.5 m/6 m |
| **Heading accuracy** [2][3] | |
| With GPS/USBL/LBL/DVL | 0.05 deg secant latitude |
| **Roll and Pitch accuracy** [2] | 0.01 deg |
| **Heave accuracy** [4] | 2,5 cm or 2,5% (whichever is greater) |

## OPERATING RANGE / ENVIRONMENT

| | |
|---|---|
| Operating/Storage Temperature | -20 to 55 °C / -40 to 80 °C |
| Rotation rate dynamic range | Up to 750 deg/s |
| Acceleration dynamic range | ± 15 g |
| Heading/Roll/Pitch | 0 to +360 deg / ±180 deg / ±90 deg |
| MTBF (computed/observed) | 40,000 hours/80,000 hours |
| No warm-up effects | |
| Shock and Vibration proof | |

## PHYSICAL CHARACTERISTICS

| Depth rating (m) | Material | Weight in air/water [kg] | Housing dimensions (Ø x H mm) | Connector | Mounting |
|---|---|---|---|---|---|
| 3000 | Titanium | 15/6,2 | 213 x 375 | 5 x SEACON MI-CON | 6 Ø 6.6 holes |
| 3000 « DVL Ready » | Titanium | 32.6/16.3 (WHN300K3,WHN600K3)<br>29.2/13.6 (WHN1200K3) | 225/298 x 629 | 5 x SEACON MI-CON | 6 Ø 11 holes |

## INTERFACES

| | |
|---|---|
| Serial RS232/RS422 port | 5 inputs / 5 outputs / 1 configuration port |
| Ethernet port [5] | UDP / TCP Client / TCP server |
| Pulse port [6] | 3 inputs / 2 outputs |
| Sensors supported | GPS, USBL, RAMSES, LBL, DVL, DEPTH, CTD/SVP |
| Intput/Output formats | Industry standards: NMEA0183, ASCII, BINARY |
| Baud rates | 600 bauds to 115.2 kbaud |
| Data output rate | 0.1 Hz to 200 Hz |
| Power supply | 24 VDC |
| Power consumption | < 20 W |

(1) CEP: 50 % circular Error Probability. DVL aiding position accuracy is dependent on DVL performances.
(2) RMS values
(3) Secant latitude = 1 / cosine latitude
(4) Smart Heave™
(5) All input /output serial ports are available and can be duplicated on Ethernet ports
(6) Input of GPS PPS pulse for accurate time synchronization of ROVINS
Specifications subject to change without notice

2012-02-PS-ROVINS

www.ixblue.com • EMEA +33 1 30 08 88 88 • AMERICAS : +1 781 937 8800 • APAC : +65 6747 4912

IXBLUE
DEEP INSIGHT. SHARPER SENSES.

High Resolution Multibeam Systems for:

**Hydrography**

**Offshore**

**Dredging**

**Defense**

**Research**

# SONIC 2024

## Multibeam Echo Sounder

### Features:

- 60kHz Wideband Signal Processing
- Focused 0.5° Beam Width
- Selectable Frequencies 200-400kHz
- Selectable Swath Sector 10° to 160°
- System Range to 500m
- Embedded Processor/Controller
- Equiangular or Equidistant Beams
- Roll Stabilization
- Rotate Swath Sector

### Applications:

- Hydrographic Survey
- Offshore Site Survey
- Pre & Post Dredge Survey
- Defense & Security
- Marine Research

### System Description:

The Sonic 2024 is the world's first proven wideband high resolution shallow water multibeam echo sounder. With proven results and unmatched performance, the Sonic 2024 produces reliable and remarkably clean data with maximum user flexibility through all range settings to 500m.

The unprecedented 60 kHz signal bandwidth offers twice the resolution of any other commercial sonar in both data accuracy and image. With over 20 selectable operating frequencies to chose from 200 to 400 kHz, the user has unparalleled flexibility in trading off resolution and range and controlling interference from other active acoustic systems.

In addition to selectable operating frequencies, the Sonic 2024 provides variable swath coverage selections from 10° to 160° as well as ability to rotate the swath sector. Both the frequency and swath coverage may be selected 'on-the-fly', in real-time during survey operations.

The Sonar consists of the three major components: a compact and lightweight projector, a receiver and a small dry-side Sonar Interface Module (SIM). Third party auxiliary sensors are connected to the SIM. Sonar data is tagged with GPS time.

The sonar operation is controlled from a graphical user interface on a PC or laptop which is typically equipped with navigation, data collection and storage applications software.

The operator sets the sonar parameters in the sonar control window, while depth, imagery and other sensor data are captured and displayed by the applications software.

Commands are transmitted through an Ethernet interface to the Sonar Interface Module. The Sonar Interface Module supplies power to the sonar heads, synchronizes multiple heads, time tags sensor data, and relays data to the applications workstation and commands to the sonar head. The receiver head decodes the sonar commands, triggers the transmit pulse, receives, amplifies, beamforms, bottom detects, packages and transmits the data through the Sonar Interface Module via Ethernet to the control PC.

The compact size, low weight, low power consumption of 50W and elimination of separate topside processors make Sonic 2024 *very well suited* for small survey vessel or ROV/AUV operations.

**R2Sonic LLC**
1503-A Cook Pl.
Santa Barbara
California,
USA 93117

T: 805 967 9192
F: 805 967 8611

www.r2sonic.com

# Sonic 2024 Multi Beam Echo Sounder

## Systems Specification:

| | |
|---|---|
| Frequency | 200kHz-400kHz |
| Beamwidth, across track | 0.5° |
| Beamwidth, along track | 1.0° |
| Number of beams | 256 |
| Swath sector | Up to 160° |
| Max Range | 500m |
| Pulse Length | 10µs-500µs |
| Pulse Type | Shaped CW |
| Ping Rate | Up to 60 Hz |
| Depth rating | 100m |
| Operating Temperature | 0°C to 50°C |
| Storage Temperature | -30°C to 55°C |

## Electrical Interface

| | |
|---|---|
| Mains | 90-260 VAC, 45-65Hz |
| Power consumption | <50W |
| Uplink/Downlink: | 10/100/1000Base-T Ethernet |
| Data interface | 10/100/1000Base-T Ethernet |
| Sync In, Sync out | TTL |
| GPS | 1PPS, RS-232 |
| Auxiliary Sensors | RS-232 |
| Deck cable length | 15m |

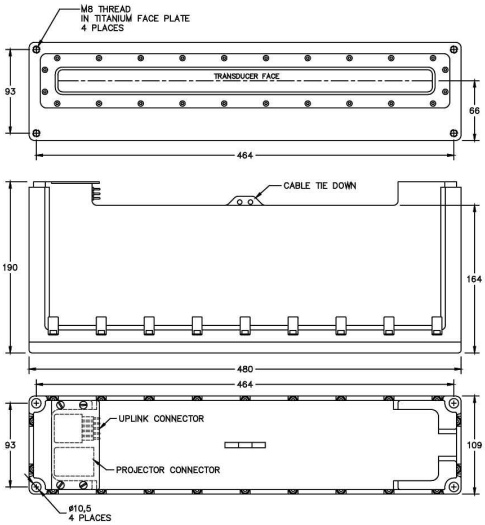
## Mechanical:

| | |
|---|---|
| Receiver Dim (LWD) | 480 x 109 x 190 mm |
| Receiver Mass | 12 kg |
| Projector Dim (LWD) | 273 x 108 x 86 mm |
| Projector Mass | 6 kg |
| Sonar Interface Module Dim (LWH) | 280 x 170 x 60 mm |
| Sonar Interface Module Mass | 2.4 kg |

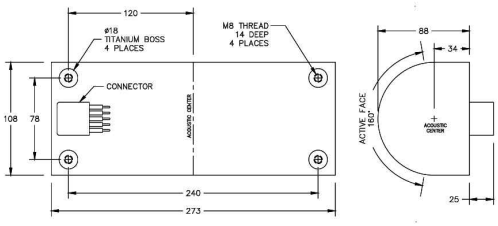
## Sonar Options:

Snippets Imagery Output
Switchable Forward Looking Sonar Output
Mounting Frame & Hardware
Over-the-side Pole Mount
Sound Velocity Probe & Profiler
Extended Sonar Deck Cable, 25m or 50m
3000m Depth Immersion Depth

**Sonar Interface Module**




**Sonic 2024 Receiver**




**Sonic 2022 Projector**

High Resolution Multibeam Systems for:

**Hydrography**

**Offshore**

**Dredging**

**Defense**

**Research**


**R2Sonic LLC**
1503-A Cook Pl.
Santa Barbara
California,
USA 93117

T: 805 967 9192
F: 805 967 8611

www.r2sonic.com

EdgeTech
An Affiliate of ORE Offshore

# 4125
## SIDE SCAN SONAR SYSTEM

### FEATURES

- Ultra high resolution images
- Lightweight for one person deployment
- Standard heading, pitch, roll & pressure sensors
- Choice of dual simultaneous frequencies
- Runs on AC or DC
- Pole mount option for shallow water use

### APPLICATIONS

- Hydrographic Surveys
- Geological Surveys
- Search & Recovery
- Channel/Clearance Surveys
- Bridge/Pier/Harbor Wall Inspection
- Hull Inspections


EdgeTech's 4125 Side Scan Sonar System was designed with both the Search & Recovery (SAR) and shallow water survey communities in mind. The 4125 utilizes EdgeTech's Full Spectrum® CHIRP technology, which provides higher resolution imagery at ranges up to 50% greater than non-CHIRP systems operating at the same frequency. This translates into more accurate results and faster surveys, thus cutting down on costs.

Two dual simultaneous frequency sets are available for the 4125 depending on the application. The 400/900 kHz set is the perfect tool for shallow water survey applications, providing an ideal combination of range and resolution. The 600/1600 kHz set is ideally suited for customers that require ultra high resolution imagery in order to detect very small targets (SAR).

There are two towfish options for the system; one with telemetry and one without. The towfish with added telemetry provides the ability to operate over longer tow cable lengths for operation in deeper waters. Both frequency sets are available for either towfish.

The 4125 system can be powered by both AC and DC for added versatility and is delivered in portable rugged cases for ease of transport from site-to-site. As is standard with all of EdgeTech's towed side scan systems, the 4125 comes with a safety recovery system which will prevent the loss of a towfish if it becomes snagged on an obstacle during a survey.

A standard 4125 System comes with a choice of towfish and a portable water resistant topside processor with a splash-proof, drop & shock resistant laptop computer including EdgeTech's easy-to-use Discover acquisition software. A 50m Kevlar tow cable is included as standard with customer-specified lengths also available. Multiple options are available such as a v-fin depressor, keel weight, pole mount and hull scan bracket for added versatility.

**For more information please visit EdgeTech.com**

**info@EdgeTech.com | USA 1.508.291.0057**

EdgeTech
An Affiliate of ORE Offshore

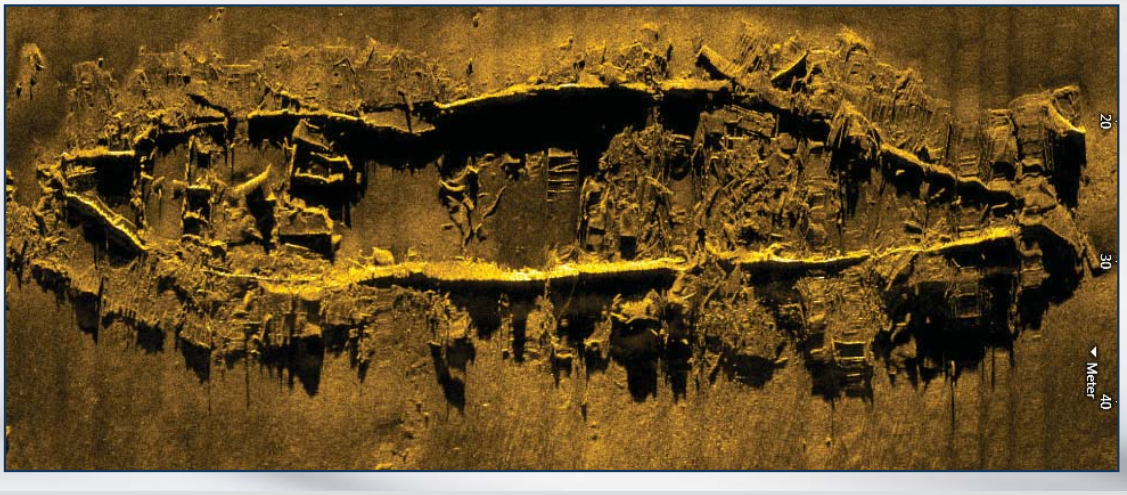
# 4125
## SIDE SCAN SONAR SYSTEM

## KEY SPECIFICATIONS

| SONAR | | |
|---|---|---|
| Frequencies (Dual Simultaneous) | Choice of either a 400/900 kHz or 600/1600 kHz towfish | |
| Pulse Type | EdgeTech's Full Spectrum® CHIRP (user-selectable CW pulses also included) | |
| Operating Range | 150m @ 400 kHz, 75m @ 900 kHz; 120m @ 600 kHz, 35m @ 1600 kHz | |
| Horizontal Beam Width | 0.46° @ 400 kHz, 0.28° @ 900 kHz; 0.33° @ 600 kHz, 0.20° @ 1600 kHz | |
| Vertical Beam Width | 50° | |
| Resolution Across Track | 400 kHz: 2.3 cm, 900 kHz: 1.5 cm, 600 kHz: 1.5 cm, 1600 kHz: 0.6 cm | |
| **TOWFISH** | **4125 Towfish** | **4125 Towfish with added telemetry*** |
| Diameter | 9.5 cm (3.75 inches) | 9.5 cm (3.75 inches) |
| Length | 97 cm (38 inches) | 112 cm (44 inches) |
| Weight in Air | 15 kg (34 pounds) | 20 kg (44 pounds) |
| Tow Cable Type | Multi-conductor up to 150m max length (will provide a typical operational depth down to 50m) | Coaxial up to 600m max length (will provide a typical operational depth down to 200m) |
| Max Depth Rating of Towfish | 200m | |
| Material | Stainless Steel | |
| Standard Sensors | Heading, Pitch, Roll, Pressure (Depth) | |

** The 4125 Towfish with added telemetry is slightly larger to incorporate the electronics necessary to run over longer coaxial tow cables*

| SPLASH-PROOF TOPSIDE PROCESSOR | |
|---|---|
| Power Input | 12-24 VDC or 115/230 VAC, 50/60 Hz |
| Connections | AC, DC, Ethernet (to laptop), Towfish |
| Hardware | Ruggedized splash-proof, drop & shock resistant laptop |
| Operating System | Windows® XP |
| Acquisition Software | EdgeTech DISCOVER |
| **SYSTEM OPTIONS** | Keel weight, v-fin depressor wing, pole mount, quick change hull scan bracket |




**For more information please visit EdgeTech.com**

**info@EdgeTech.com | USA 1.508.291.0057**

Email: **offshore@ashtead-technology.com**
**www.ashtead-technology.com**

Ashtead TECHNOLOGY OFFSHORE DIVISION

# Geometrics G-882 SX Marine Magnetometer

## Key Features

- 2700m (9000 ft) depth rating
- Cesium vapour high performance
- Combine two systems for increased coverage
- Easy portability and handling
- Flash memory stores all parameters
- New streamlined design for tow safety
- Quick conversion from nose tow to CG tow

## Applications

- Shallow survey
- Deep tow through long cables
- Integration with Side Scan Sonar systems
- Monitorng of fish depth and altitude

The Geometrics G-882 SX Marine Magnetometer offers very high resolution Cesium Vapor performance in a low cost, small size system for professional surveys in shallow or deep water. High sensitivity and sample rates are maintained for all applications. The well proven Cesium sensor is combined with a unique new CM-221 Larmor counter and ruggedly packaged for small or large boat operation. Use your computer and standard printer with our MagLog Lite software to log, display and print GPS position and magnetic field data. The G–882 is the lowest priced high performance full range marine magnetometer system ever offered.

## Technical Specification

| Title | Values |
|---|---|
| Operating Principle | Self-oscillating split-beam Cesium Vapor (non-radioactive) |
| Operating Range | 20,000 to 10,000 nT |
| Operating Zones | The earth's field vector should be at an angle greater than 6° from the sensor's equator and greater than 6° away from the sensor's long axi |
| CM-221 Counter Sensitivity | 0.02 nT/ pHz rms. |
| Heading error | ± 1 nT (over entire 360° spin and tumble) |
| Absolute Accuracy | <2 nT throughout range |
| Output | RS-232 at 1,200 to 19,200 Baud |
| Sensor Fish | Additional collar weights are 14lbs (6.4kg) each, total of 5 capable |
| Tow Cable | Kevlar reinforced multiconductor tow cable. Breaking strength 3,600 lbs |
| Operating temperature | -30°F to +122°F (-35°C to +50°C) |
| Storage temperature | -48°F to +158°F (-45°C to +70°C) |
| Altitude | Up to 30,000ft (9,000m) |
| Water tight | O-Ring sealed for up to 9000 ft (2750 m) depth operation |
| Power | 24 to 32 VDC, 1.0 amp at turn-on and 0.5 amp thereafter |
| Standard Accessories | View201 Utility Software, operation manual and ship kit |
| MagLog Lite Software | Logs, displays and prints Mag and GPS dada at 10 Hz sample rate. Automatic anomally detection and single sheet Windows printer support |

GEOMETRICS Innovation - Experience - Results

## Dimensions

| Title | (mm) | (inch) | (kg) | (lb) |
|---|---|---|---|---|
| Sensor Fish | 1370 mm long x 70mm dia. with 279mm fin assembly | 4.5' long x 2.75 dia with 11" fin assembly" | 18kg with sensor, electronics and 1 main weight) | 40lbs with sensor, electronics and 1 main weight |
| Tow Cable | 12mm OD x 61m max | 0.48 OD x 200ft max" | 7.7kg with terminations | 17lbs with terminations |

Europe: **+44 (0)1224 771888** Asia: **+65 6545 9350**
Americas: **+1 281 398 9533**
**www.ashtead-technology.com**

Ashtead TECHNOLOGY OFFSHORE DIVISION