



# STARFIX GEOSOLUTIONS SERVICES LTD.

## EQUIPMENT BROCHURE



SUB-BOTTOM PROFILER

MULTIBEAM ECHOSOUNDER

MARINE GPS

MOTION REFERENCE UNIT

GYROCOMPASS

SINGLE BEAM ECHOSOUNDER

LAND SURVEY EQUIPMENT



# EdgeTech 3400

## Sub-bottom Profiling System



### Description

Building on the long running success of the EdgeTech sub-bottom profiler product line, the EdgeTech 3400 provides users many enhancements to current sub-bottom profiler systems.

The 3400 is a wideband Frequency Modulated (FM) sub-bottom profiler utilizing EdgeTech's proprietary Full Spectrum CHIRP technology. The system generates high resolution images of the sub-bottom stratigraphy in oceans, lakes, and rivers and provides excellent penetration in various bottom types.

The EdgeTech 3400 comes in a dual 2-16 kHz transducer configuration. The towfish is configured with new PVDF receiver arrays segmented for standard sub-bottom profiling operations or a unique "pipeliner" mode for optimal location and imaging of buried pipelines.

The system offers Real-Time Reflection Coefficient Measurements. This unique ability of the EdgeTech Sub-Bottom Profiler system allows users the ability to collect complex 'analytic' data using linear system architecture to measure sediment reflection and analyze sediment type determination.

### Key Features

- Enhanced Sub-bottom PVDF receivers
- Sub-bottom mode or pipeliner mode
- Dual 2-16 kHz transducers
- Towed or Pole-mount options
- Digital receiver on towfish with Ethernet telemetry and power
- Data display in multi-frequency bands

### Applications

- Mining/dredging surveys
- Buried pipeline & cable surveys
- Map, measure & classify sediment layers within the sea floor

# Technical Specifications

TOWFISH	
Frequency Range	2 - 16 kHz
Vertical Resolution	6 -10 cm (3 - 4 inches)
Penetration (typical) In coarse calcareous sand In clay	8 m (26 feet) 100 m (328 feet)
Transmission Type	Full Spectrum® FM Signal (CHIRP)
Length/Width/ Height	114 x 55 x 30 cm (45 x 21 x 12 inches)
Weight in Air	90 kg (198 lbs)
Weight in Water	53 kg (116 lbs)
Depth Rating	100 m
Tow Cable Length	50 m (maximum length)

TOPSIDE INTERFACE	
Hardware	Rugged, portable splash proof enclosure (or Rackmounted)
Recommended Operating System	Windows® 10
Display (Optional)	Splash resistant semi-rugged laptop
File Format	Native JSF, SEG-Y & XTF
Input/Output	Ethernet
Power Input	120/220 VAC Auto sensing

POLE MOUNT CONFIGURATION	
Length/Width/ Height	114 x 55 x 39 cm (45 x 21 x 15.35 inches)
Weight in Air	84 kg (185 lbs) – pole mounted configuration
Weight in Water	47 kg (103 lbs) – pole mounted configuration
Deck Cable Length	20 m (50m max)

TOW CABLE	
Length/Width/ Height	14.9 mm (0.587 in)
Length/Width/ Height	15 cm (6 inches)

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# GeoSwath 4

## Multi-Beam EchoSounder



### Description

GeoSwath 4 offers industry-leading simultaneous swath bathymetry and side scan sonar mapping for shallow waters.

The turnkey solution comprises a dual transducer head with versatile mounting options.

The deck unit contains the highest complete sonar electronics together with a highspec PC running the latest dedicated GS4 version of the software. The software provides full acquisition, calibration, and data processing capabilities for producing the final bathymetry map and side scan mosaic.

The latest GS4 software comes included and has been exclusively developed for the GeoSwath 4.

The GS4 software which provides the complete project-based solution, and includes acquisition, storing and editing of sonar and ancillary data, data processing and advanced data gridding capabilities, side scan mosaicing and 3D data visualisation.

### Key Features

- Ultra high resolution wide swath bathymetry with increased data density
- Up to 12 times water depth seabed coverage
- Co-registered geo-referenced side scan
- Real time results
- Frequency versions: 125, 250, 500 kHz

### Components

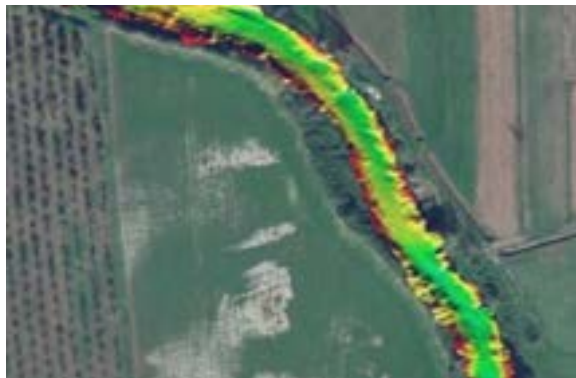
- Deck Unit -614;
- OTS Assembly, 250kHz Transducer, Seatex MRU - 810016, 40589
- Pair of 15m Transducer Cables - 5-03732, 5-03733



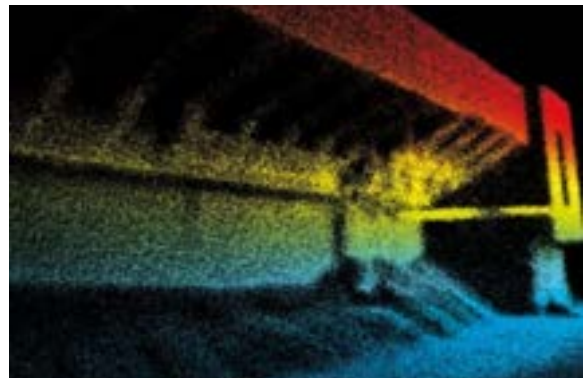
# Technical Specifications

GeoSwath 4	125 kHz	250 kHz	500 kHz
max Water Depth Below Transducers	200 m	100 m	50 m
max Swath Width	780 m	390 m	190 m
max Coverage	up to 12 x depths		
Depth Resolution	6 mm	3 mm	1.5 mm
Two Way Beam Width (Horizontal)	0.85°	0.75°	0.5°
max Swath Update Range	30 per second (simultaneous port and starboard)		
Transducer Head Dimensions	661 x 411 x 325 mm	360 x 352 x 150 mm	330 x 109 x 75 mm
Transducer Head Weight appr, including Peripherals	44 kg	20 kg	16.8 kg

GeoSwath 4 Deck Unit	
Dimensions	Height: 137 mm with feet, 131 mm rack mount (3U) Width: 427 mm, 490.5 mm including 19" rack support Depth: 495 mm including handles, 700 mm including transducer cables
Weight	11.5 kg
Power	100 V to 240 V AC, 50/60 Hz, 250 W; DC outlet 24 VDC for peripheral sensors max. 55 W
Environment	Operation 0°C to 40°C, Storage -20° to 70°C, Ingress protection: IP50 front, IP20 back Humidity: operation 95% non-condensating, storage < 55%



**GS4 at 250kHz**



**GS4 at 500kHz**

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# Meridian Gyrocompass

Marine Navigation Systems



## Description

The Meridian Gyrocompass product range is suitable for the ever-changing needs of the modern bridge system. This includes highly accurate performance and system flexibility. Due to the Meridian's small size and fast settle time of less than 45 minutes, there are no limits to the type of vessel for which it is suitable.

The Meridian Gyrocompass can be installed as a stand-alone unit or, together with any of the TSS range of repeaters and ancillaries, it becomes a single, dual or triple gyro system. The Meridian can also be used as a retrofit unit.

The Meridian Standard provides a dynamic heading accuracy of 0.30deg secant latitude RMS and a static heading accuracy of 0.10deg secant latitude RMS. Whereas, the higher performance Meridian Surveyor provides a dynamic heading accuracy of 0.20deg secant latitude RMS and a static heading accuracy of 0.05deg secant latitude RMS.

## Key Features

- MED Type approved
- High dynamic heading accuracies
- Versatile range of repeaters and ancillaries
- Economical Use
- Fast initial settle time
- Small, lightweight and versatile
- One-Box Solution

## Applications

- Survey vessels
- Commercial shipping
- Ferries, Yatches and Workboats
- Barges

# Technical Specifications

Performance	Heading accuracy	Static	0.10° secant latitude RMS
		Dynamic	0.30° secant latitude RMS
	Roll & pitch accuracy		N/A
	Settle time		<45 minutes to within 0.7° from +/-30° initial heading offset
	Angular rate		~200°/s
	Settle point error		0.25° secant latitude
	Settle point repeatability		0.25° secant latitude
	Compensation	Latitude	80°N to 80°S
Speed		0 - 90 knots	
Power	Power supply		24Vdc (19 - 36Vdc)
	Power consumption		>3A at power on / 1.3A in ready mode
Interface	Outputs	S'type	1 x Step by Step (5V TTL), 6 steps per degree
		Synchro	1 x 26V 400Hz sector value 360°(1:1 ratio) 11.8Vline-to-line
		Serial data	11 x RS422, NMEA 0183 (IEC 61162-1/2)
			5 x RS232, NMEA 0183
	1 x printer port, NMEA 0183		
	Status / Alarm	Alarm - 5V TTL and potential free relay	
		Potential free status and alarm relays	
		Potential free status and alarm relays	
Inputs	Latitude	Automatic - via RS232 or RS422, NMEA 0183 from GPS or manual	
	Speed	Automatic - via RS232 or RS422, NMEA 0183 from log or pulse/contact closure at 100, 200 or	
		400/NM from log or manual	
Physical Characteristics	Dimensions		344mm (h) x 267mm (w) x 440mm (d)
	Weight in air		15.5kg
	Weight in water		N/A
	Rating		N/A
Environmental and EMC	Operating temperature		0°C to +45°C (-15°C to +55°C with reduced accuracy)
	Storage temperature		-25°C to +80°C
	Environmental		Meets or exceeds IEC 60945
	EMC		Meets or exceeds IEC 60945
	Gimbal limits		±45° roll and pitch
	MTBF		>30,000 hours (calculated); >100,000 hours (in service data)
	Shock (survival)		10g
Options	An extensive range of gyrocompass repeaters and ancillaries available		
Compliance	Remote control mounting kit		
	Standards		
	Export	UK	IMO A424(XI), IMO A821(19), IMO A694(17), MSC 191(79), ISO 8728, ISO 16328, IEC 60945, IEC 62288, IEC 61162, US Coast Guard MRA, Marine Equipment Directive 96/98/EC
		USA	ECCN 7A103.a.1
Warranty	ECCN 7A994		
	24 months international warranty including parts and labour		

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# MRU 3000 Subsea

Norwegian Subsea Norsub MRU

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## Description

Norwegian Subsea Norsub Motion Reference Units (MRU) are high performance, compact and affordable. Norsub MRUs use state-of-the-art MEMS technology and advanced sensor fusion algorithms. This results in accurate and reliable roll, pitch, yaw, surge, sway, heave and velocity measurements.

They use state-of-the-art MEMS technology and advanced sensor fusion algorithms. This results in accurate and reliable roll, pitch, yaw, surge, sway, heave, and velocity measurements.

The Norwegian Subsea MRU 3000 Subsea is ideal for any application that requires accurate and robust subsea motion measurements. The Subsea Motion Reference Unit is a very small and compact motion sensor that is depth rated to 6000m. The small size and footprint make it easy to install almost anywhere.

## Key Features

- High performance 6 DoF motion sensor
- Tailor-made for subsea use
- Easy interfacing
- User-Friendly Configuration Software



# Technical Specifications

PERFORMANCE	
Roll & Pitch	+/- 0.05°
Heave (Real-time)	5.0 cm or 5.0%
Heading (Optional)	+/- 0.5°
Rotation speed range	+/- 150°/s
Length/Width/ Height	114 x 55 x 30 cm (45 x 21 x 12 inches)
Acceleration range	+/- 3 g
Output frequency	0-100 Hz

POWER & INTERFACE	
Power consumption	6 W
Supply voltage	9-36 V DC
Internal storage	32 GB
Ports	Ethernet, RS-232, or RS-485 (422)
Connector	SubConn 8 pins
Protocols	NMEA, ASCII, Binary, Atlas, Gyrocompass, SMCC, TSS1 ++

PHYSICAL CHARACTERISTICS	
Weight	1.6 kg
Footprint (L X B)	7.6 cm X 7.6 cm
	16.5 cm
	6000 m
Other options	2 wire RS-485 is available.
Application examples	Riser monitoring, BOP monitoring, ROV/AUV, Subsea surveys, etc.

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# PULSAR

## High Resolution Side Scan Sonar



### Description

PulSAR acquires high resolution acoustic images of the seabed by using a rugged tow fish that can be easily operated with a water protected deck unit and small cable hand reel. Large areas can be surveyed efficiently revealing small objects and structures in great detail. The system is ideal for search and recovery operations, underwater inspection as well as engineering and scientific surveys.

The system operates in a frequency range of 550 kHz to 1 MHz. Within this bandwidth source signals, both FM and CW, can be selected in order to optimise the range and resolution for the given survey task. The set-up comprises a compact stainless steel towfish, which is towed from a 100 m long soft tow cable.

The cable can be paid out from a compact hand reel, which uses slip rings so that it stays connected to the deck unit via a dedicated deck cable during operation. Optionally various soft tow and armoured cables, up to 300 m length, are available. The deck unit has been designed for use on small vessels like open RIBs and is therefore water protected (IP64) and can be battery or mains powered, 24 VDC or 110/230 VAC respectively.

It has an integrated GPS system that provides positioning information with SBAS differential corrections. Alternatively an external positioning system can be connected via a serial port.

### Key Features

- Easy deployment and operation
- Portable and rugged towfish
- Compact and water protected deck unit (IP64)
- Frequency 550 kHz - 1000 kHz
- Wide bandwidth FM and CW pulses
- Integrated GPS module (SBAS corrections)
- Tow cable
- Hand reel and deck cable (optional)
- Acquisition and processing software



# Technical Specifications

## Performance

- Max range (per side)
- 550 kHz - 100 m CW
- 550 kHz - 150 m FM

## Beam pattern (typical)

- 50° x 0.5° - 0.4°

## Pulse repetition rate

- 25 pulses at 30 m range
- 5 pulses at 300 m range

## Pulse length

- automatic

## Max resolution (across track)

- 10 mm

## Max resolution (along track)

- 0.07 m at 10 m range
- 0.35 m at 50 m range
- 0.69 m at 100 m range

## Tow cable length 100 m

- (optional up to 300 m)

## Deck Unit

### Power requirements

- 10-30 VDC 43 W max
- 110/230 VAC, 50-60 Hz, 50 W max
- Dimensions: 30 cm W x 20 cm D x 8.5 cm H.
- Weight: 5 kg
- Temperature: storage: -20 to 70° C, operating: 0 to 40° C
- Humidity: 10% to 90% RH, non-condensing

Connections: Power input, AC and DC, Tow cable connector, USB, Ethernet, GPS

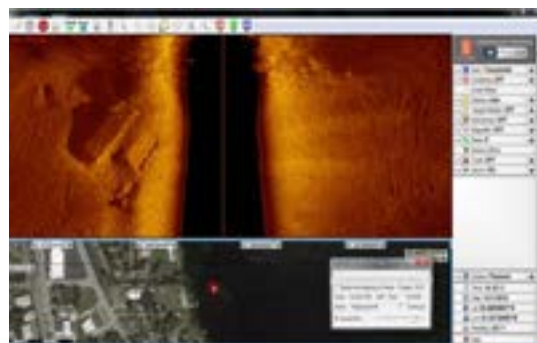
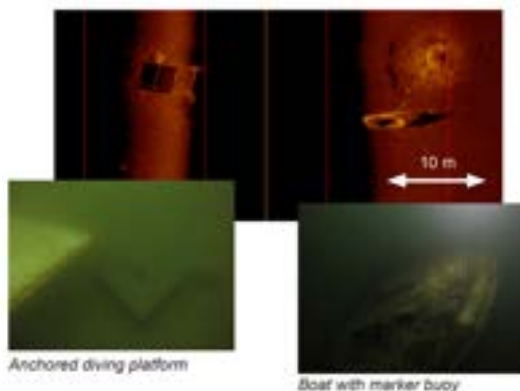
Laptop available for interfacing to system

### Tow fish

- Stainless steel body with shear release carry handle/tow point
- Plastic nose cone
- Dimensions: 9 cm D x 110 cm L, 3 fins on tail protrude 7.5 cm
- Tow speed: 1 to 12 knots
- Weight: 16.5 kg

### Power requirements

- Composite technology.
- Source level: 223 ± 3 dB re 1 µPa @ 1m
- Sensitivity: -190 dB re 1V/µPa
- Depression angle: 0°, mounting angle 30°



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# Z Axis-2F Dual Frequency

## Single Beam Echo Sounder



### Description

The ZA2F stands out in the market as the only system capable of reliably operating (Including on the low frequencies) in water as shallow as 1 foot.

As such, it pairs very well with boats which are commonly used in shallow water environments. In addition to exceptional shallow water performance, it also has very narrow beamwidth on both the high and low frequencies (5 and 3.5 degrees) meaning it will work in most environments, including sloping contours.

Determination of siltation thickness and mud location in navigation channels can be obtained from the differences between depths calculated from the high and low frequencies.

The ZA2F does not have to rely on "area averaging" pseudoscience. Accurate high/low data will be received for each ping, at each location, with no to minimal post processing required.

### Key Features

- F1: 200 Khz.
- F2: 30, 28, 24, 18, 12, or 10 Khz. (Field Selectable)
- Maximum Depth: 100 meters (330 feet)
- Minimum Depth: 0.24 meters. (0.8 feet)
- Ping Rate: 5, 10, or 20 hz. (User selectable)
- Hands-Off Operation
- Narrow Acoustic Beam Widths
- Best horizontal spatial resolution of any survey echosounder on the market
- Direct support in both our SimpleSCAN 30i and HarborScout 55i; with full hydromagic and hypack compatibility
- Seamless Sea Bottom Tracking

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# LD900 Receiver

Precise Positioning Quad-Band GNSS receiver for marine operations.



## Description

The LD900 is a quad-band GNSS receiver, capable of tracking GPS, GLONASS, BeiDou, Galileo and QZSS constellations to provide reliable and accurate positioning. Access to multiple GNSS signals allow for better satellite availability and reduce the impact of satellite masking or blockage.

LD900 also receives L-Band signals on multiple channels providing access to the world-wide independent correction links and services provided by VERIPOS. With correction data available simultaneously from up to three correction satellites, the impact of satellite masking can be minimized to ensure reliable reception of correction data. Using the independent L-Band RF input on the LD900 allows the connection of a dedicated L-Band antenna ensuring optimal reception of correction services, especially at high latitudes.

The intuitive color display and navigation menu makes setup, configuration and system status monitoring simple. The display also helps troubleshoot issues with the LD900 allowing faults to be quickly diagnosed and resolved. The LD900 can also be configured remotely through the VERIPOS Quantum software

VERIPOS provides accurate and reliable positioning for all marine applications via their redundant positioning and multi-frequency Precise Point Positioning (PPP) Apex and Ultra services. The Apex5 correction service utilizes all GNSS constellations delivering 5cm positioning accuracy.

## Key Features

- NovAtel® OEM7® marine positioning engine
- Simultaneously track up to 3 VERIPOS correction service satellites
- Independent L-band RF input
- Automatic 72-hour rolling data log for incident support
- Spoofing and interference detection provided by GRIT (GNSS Resilience and Integrity Technology)

## Benefits

- Supports decimeter-level multi-constellation positioning with VERIPOS Apex and Ultra PPP correction services
- Designed for marine operations such as seismic exploration, offshore construction, survey and dynamic positioning
- Advanced signal filtering mitigates the effects of interference from other transmitters

# Technical Specifications

## Primary GNSS Module

### Channel Configuration

555 Channels

### Signal Tracking

GPS	L1 C/A, L1C, L2C, L2P, L5
GLONASS	L1 C/A, L2 C/A, L2P, L3, L5
BeiDou	B1I, B1C, B2I, B2a, B3I
Galileo	E1, E5 AltBOC, E5a, E5b, E6
NavIC (IRNSS)	L5
SBAS	L1, L5
QZSS	L1 C/A, L1C, L2C, L5, L6

### Horizontal position accuracy (RMS)

Single point I1	1.5 m
Single point I1/I2	1.2 m
SBAS4	1 m
VERIPOS DGNSS5	1 m
VERIPOS PPP5	5 cm
RTK	1 cm + 1 ppm
Initialization time	< 10 s
Initialization reliability	> 99.9%

### Maximum Data Rate

Measurements	up to 20 Hz
Position	up to 20 Hz

### Time to first fix

Cold start	< 39 s (typical)
Hot start	< 20 s (typical)

### Signal reacquisition

L1	< 0.5 s (typical)
L2	< 1.0 s (typical)

Time accuracy 20 ns RMS

Velocity accuracy < 0.03 m/s RMS

Velocity limit 515 m/s

## Secondary GNSS Module

### L-band module

Channels	5 Channels
Frequency range	1525 to 1560 MHz

### Beacon module (option)

Channels	2 Channels
Frequency range	283.5 to 325.0 kHz
Channel spacing	500 Hz
Demodulation	Minimum Shift Keying (MSK)

### Communication ports

3 RS-232/RS-422	up to 460,800bps
3 RS-232/RS-422(expansion)	up to 460,800bps
1 USB 2.0 (host)	HS
2 Ethernet	10/100 Mbps
1 PPS output	pulsewidth 1 to 500ms

### Channel Configuration

555 Channels

### Signal Tracking

GPS	L1 C/A, L1C, L2C, L2P, L5
GLONASS	L1 C/A, L2 C/A, L2P, L3, L5
BeiDou	B1I, B1C, B2I, B2a, B3I
Galileo	E1, E5 AltBOC, E5a, E5b, E6
NavIC (IRNSS)	L5
SBAS	L1, L5

### Time to first fix

Cold start	< 39 s (typical)
Hot start	< 20 s (typical)

### Signal reacquisition

L1	< 0.5 s (typical)
L2	< 1.0 s (typical)

Time accuracy 20 ns RMS

Velocity accuracy < 0.03 m/s RMS

Velocity limit 515 m/s

## Physical and electrical

Dimensions	300 x 200 x 80 mm
with mounting plate	300 x 200 x 80 mm

Weight	3.8 kg
with mounting plate	4.8 kg

### Power

Power consumption	13 W (typical)
Input voltage	+12 to 24 VDC

### Antenna LNA power outputs

Output voltage	12 VDC $\pm$ 5%
Maximum current	300mA

### Display

3.5" QVGA TFT Color Display

## ALIGN® GNSS heading accuracy

Baseline	Accuracy (RMS)
2 m	0.08 degrees
2 m	0.08 degrees

## Span Technology

GNSS+INS integration with marine profile for hydrographic survey applications.

### Supported IMUs:

IMU-ISA-100C

IMU-uIMU-IC

### Attitude & velocity performance

Refer to IMU product sheets for values

### Heave performance

Instantaneous Heave	5 cm or 5%
Delayed Heave	3.5 cm or 3.5%
Post-Processed Heave	3.5 cm or 3.5%

## Environmental

### Temperature

Operating -15°C to +55°C

Humidity EN60945

## Compliance

FCC, CE, UKCA, RoHS, REACH, WEEE, EN60945 (Protected Equipment), EN/IEC62368

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# Trimble BX992

## Dual Antenna GNSS Receiver



### Description

The Trimble BX992 dual antenna GNSS receiver is a triple frequency receiver with integrated inertial sensors on the same module offering robust high accuracy positions and orientations in all environments.

The BX992 supports triple frequency for the GPS, GLONASS, BeiDou and Galileo constellations, delivering the most reliable and quickest RTK initializations for cm positioning. If cm accuracy is not required, high accuracy DGNSS and GNSS positions are delivered in the most challenging environments by the integrated GNSS-Inertial engine.

The BX992 can utilize OmniSTAR or RTX services to deliver different levels of performance without the use of a base station – even up to cm level.

The Trimble BX992 was designed for easy integration and the intuitive 3D interactive graphical web page allows dynamic and graphic models for various vehicle types to be selected with easy input of lever arms. A variety of dynamic models are supported through a single interface protocol and intuitive web interface.

### Key Features

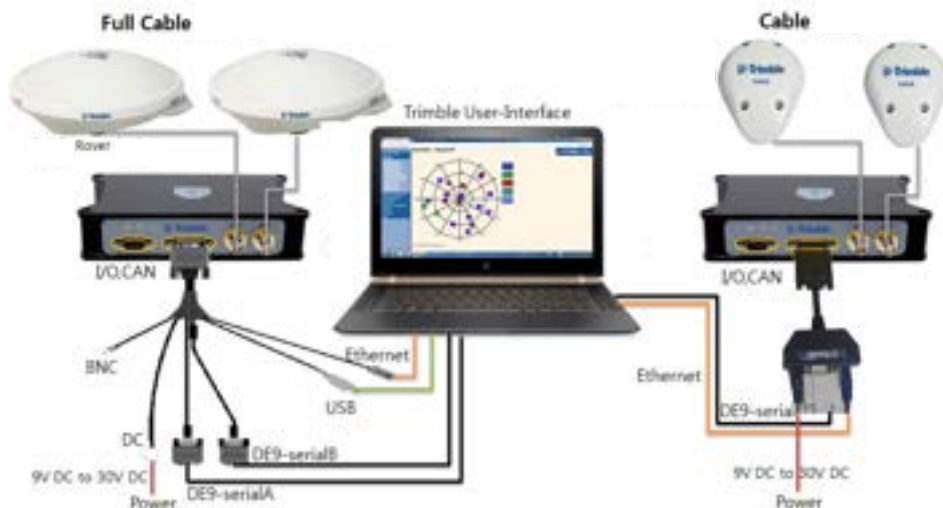
- 2 x 336 Channels for multi-constellation GNSS support
- Marinestar/CenterPoint RTX support
- Compact design for mobile applications
- Flexible RS232, USB and Ethernet interfacing
- Scalable accuracies to Centimeter level positions
- Advanced RF Spectrum Monitoring
- Rugged IP67 Enclosure

### Benefits

- GNSS and inertial tight integration
- Robust centimeter accurate solutions
- Trimble Maxwell 7 Technology
- Flexible RS232, USB, And Ethernet Interfacing

## Technical Specifications

Tracking Channels per antenna:	336
GPS:	L1 C/A, L2E, L2C, L5
BeiDou:	B1, B2, B3
GLONASS:	L1 C/A, L2 C/A, L3 CDMA
Galileo:	E1, E5A, E5B, E5AltBOC, E6
QZSS:	L1 C/A, L1 SAIF, L1C, L2C, L5, LEX
SBAS:	L1 C/A, L5
IRNSS:	L5
MSS L-Band:	OmniSTAR, Trimble RTX
Input voltage:	9V DC to 30V DC
Power consumption:	Typical 3.0 W (L1/L2 GPS + L1/L2 GLONASS)
Size:	185 mm x 93 mm x 43 mm
Weight:	0.75 kg
Operating temperature:	-40 °C to +75 °C
Storage temperature:	-55 °C to +85 °C
Vibration:	MIL810F, tailored Random 6.2 gRMS operating Random 8 gRMS survival



Ideal Trimble BX992 Setup

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# Trimble GA830

## GNSS Antenna



### Description

The Trimble GA830 can be used for both heading and position applications, and has excellent Mobile Satellite Services (MSS) and RTK performance. It is optimized for delivering improved signal to noise ratios and tracking low elevation satellites.

With a ruggedized housing and reliable performance, the GA830 has been designed to be installed on marine vessels, cranes, pile driving rigs, construction barges and other dynamic marine platforms.

The effects of Iridium transmissions are reduced through high rejection 1614 – 1624 MHz RF filtering. These transmissions often cause GNSS signal loss on marine construction vessels.

As the unit is capable of using free differential corrections from SBAS and MSK Beacons, it is recommended for best MSS reception, including Fugro Marinestar, OmniSTAR and CenterPoint RTX.

### Key Features

- Comprehensive GNSS support
- Robust low-elevation satellite tracking
- OmniSTAR and Trimble RTX support
- Ruggedized enclosure for tough environments
- MSK beacon support
- Economical GNSS antenna
- Additional high rejection filtering 1614 – 1624 MHz to reduce interference from Iridium transmissions.

# Technical Specifications

Tracking	
GPS:	L1, L2, L5
GLONASS:	L1, L2, L3
Galileo:	E1, E5a, E5b, E6
BeiDou:	B1, B2, B3
QZSS:	L1, L2, L5, LEX
SBAS:	Yes
L-Band:	Yes

Physical	
Design Type:	Marine/Land/Vehicle
Size:	14.9ø x 9.9 cm
Weight	0.82 kg

Tracking	
Operating Temperature:	-40 °C to +70 °C
Storage Temperature:	-55 °C to +85 °C
Vibration:	9.8 gRMS, 24-2000 Hz
Humidity:	100% humidity proof, fully sealed



## HIGH PERFORMANCE

Trimble® antennas have been designed to support high accuracy air, land and marine applications. Multiple constellation support improves the number of satellites available for positioning, especially in obstructed environments. Trimble antennas are high-performance multiband GNSS antennas that are built with weather-resistant materials to allow operation in the most rugged of environments.

Website: [www.starfixgeo.com](http://www.starfixgeo.com)

Telephone: +234 807 032 2943, +234 803 332 1577

**Starfix Geosolutions Services Ltd.**

Plot 15E Muri Okunola Street,  
Victoria Island 100052,  
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 [info@starfixgeo.com](mailto:info@starfixgeo.com)

 StarFix Geosolutions

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# South N6+

Reflectorless Total Station



## Features

- 2" / 5" Accuracy
- Trigger Key, Hot key for faster operation
- Cable-Free Connection by Wireless Bluetooth or USB Stick
- Bigger internal memory, Save 96000 data block
- Longer operation Time up to 14 hours per battery

## Accessories

- Tracking pole
- Reflector prism
- Tripods



## Technical Specifications

Distance Measurement	Reflectorless	1000m/1500m
	Single Prism	5000m
	Accuracy: Non Prism	3+2ppm
	Accuracy: Prism	2+2ppm
	Sheet	2+2ppm
	Measurement Time	0.3s In Fine 0.1s In Tracking
	Atmospheric Correction	Manual Input, Auto Correction
	Prism Constant	Manual Input, Auto Correction
	Temperature Correction	Manual Input, Auto Correction
	Distance Reading	Max: 99999999.9999m Min: 0.1mm

Angle Measurement	Accuracy	N6 5": 5"
	Method	Absolute, Continuous
	Disk Diameter	79mm
	Detection Method	V: Dual, H: Dual
	Angle Reading	Min: 0.1"

Telescope	Image	Erect
	Tube Length	154mm
	Effective Aperture	45mm (EDM 50mm)
	Magnification	30x
	Field Of View	1°30'
	Resolving Power	3"
	Minimum Focus Distance	1.2m
	Multiple/Additive Constant	4 Brightness Levels

Keyboard And Display	Keyboard	Alphanumeric 24 Keys
	Display	Black & White
	Resolution	160*96 dpi
	Position	Face 1, Face 2

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# South Auto Level NLC32

## Specifications

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### Description

The South NL C32 auto level features excellent shockproof design and IPX6 protection against powerful water jets from all directions and can withstand a sudden shower or pouring rain. This advanced protection design not only prevents water from entering the instrument, but also deters clouding or condensation inside the telescope. This automatic level comes with a hard carrying case, plumb bob, hex wrench, adjusting pins, vinyl cover, cleaning cloth, lens cap.

### Accessories

- tripods
- 2 staffs

### Benefits

- 32 x magnifications
- Accurate, and stable air compensator
- excellent shock proof design
- all weather dependability
- ultra-short 20cm focusing
- endless fine horizontal adjustments

## Technical Specifications

Image	Erect
Magnification	32X
Effective objective aperture	40mm
Field of view	1°20'
Minimum focus	0.3m
Multiplication constant	100
Additive constant	0
Waterproof	Yes
Compensator range	±15'
Compensator setting accuracy	±0.3"
Sensitivity of bubble	8'/2mm
Circle graduation	1° or 1 gon
Standard deviation for 1km double-run leveling	1.0mm
Instrument net weight	1.8kg
Centre size of tripod	M16 or 5/8"



**tripod**



**staff**

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# South G7 Base and Rover

## Specifications



### Description

The ZA2F stands out in the market as the only system capable of reliably operating (Including on the low frequencies) in water as shallow as 1 foot. As such, it pairs very well with boats which are commonly used in shallow water environments.

In addition to exceptional shallow water performance, it also has very narrow beamwidth on both the high and low frequencies (5 and 3.5 degrees) meaning it will work in most environments, including sloping contours. This means you won't have to rely on "area averaging" pseudoscience - you will receive accurate high/low data for each ping, at each location, with no to minimal post processing required.

Differences between depths calculated from the high and low frequencies can be used to determine siltation thickness and locate "liquid mud" in navigation channels.

### Accessories:

- Tribach
- Adaptor
- External Radio
- External Pole
- Controllers and cables
- Carbon fiber pole

### Features

- Ultimate Portability
- Innovative Design
- Long range radio link
- Barrier free measurement
- Outstanding GNSS performance

# Technical Specifications

## Tracking:

GPS:	L1, L2, L5
GLONASS:	L1, L2, L3
Galileo:	E1, E5a, E5b, E6
BeiDou:	B1, B2, B3
QZSS:	L1, L2, L5, LEX
SBAS:	Yes
L-Band:	Yes

## Physical

Design Type:	Marine/Land/Vehicle
Size:	14.9ø x 9.9 cm
Weight:	0.82 kg

## Environmental

Operating Temperature:	-40 °C to +70 °C
Storage Temperature:	-55 °C to +85 °C
Vibration:	9.8 gRMS, 24-2000 Hz
Humidity:	100% humidity proof, fully sealed

## WiFi

Modem	802.11 b/g standard
WiFi hotspot	Receiver broadcasts its hotspot form web UI accessing with any mobile terminals
WiFi datalink	Receiver can transmit and receive correction data stream via WiFi datalink

## Communications

I/O Port	5PIN LEMO external power port + Rs232 7PIN LEMO +external USB(OTG)+Ethernet 1 UHF antenna interface 1 GPRS antenna interface (internal and external antenna switchable) SIM card slot (standard)
Internal UHF	Radio receiver and transmitter, 1W/2W/3W switchable 410-470MHz
Frequency range	Farlink, Trimtalk450s, SOUTH, SOUTH+,SOUTHx, HUACE, Hi-target, Satel
Communication protocol	Typically 15km with Farlink protocol
Communication range	Advanced 5G network communication module, downward compatible with 4G/3G
Cellular mobile network	Bluetooth 4.0 standard, Bluetooth 2.1+EDR
Bluetooth	Realizing close range (shorter than 10cm) automatic pair between receiver and controller(controller requires NFC wireless communication module else)
NFC Communication	

## Data Storage/Transmission

Storage	64GB SSD internal storage Automatic cycle storage (The earliest data files will be removed automatically while the memory is not enough) Support external USB storage The customizable sample interval is up to 50Hz
Data transmission	Plug and play mode of USB data transmission Supports FTP/HTTP data download
Data format	Differential data format: CMR+, SCMRx, RTCM 2.1, RTCM 2.3, RTCM 3.0, RTCM 3.1, RTCM 3.2 GPS output data format: NMEA 0183, PJK plane coordinate, Binary code, Trimble GSOF Network model support: VRS, FKP, MAC, fully support NTRIP protocol

## User Interaction

Operating system	Linux
Buttons	2-button and visual operation interface
Indicators	2 LED indicators, data interaction indicator and Bluetooth indicator
LCD	1.54-inch HD color LCD touch screen with resolution 240*240
Web interaction	With the access of the internal web interface management via WiFi or USB connection, users are able to monitor the receiver status and change the configurations freely
Voice guidance	The intelligent voice technology provides status and operation voice guidance
Secondary development	Provides secondary development package, and opens the OpenSIC observation data format and interaction interface definition
Cloud service	The powerful cloud platform provides online services like remote manage, firmware update, online register and etc.

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# STARFIX GEOSOLUTIONS SERVICES LTD.

ENERGY AND SERVICES PROVIDER



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