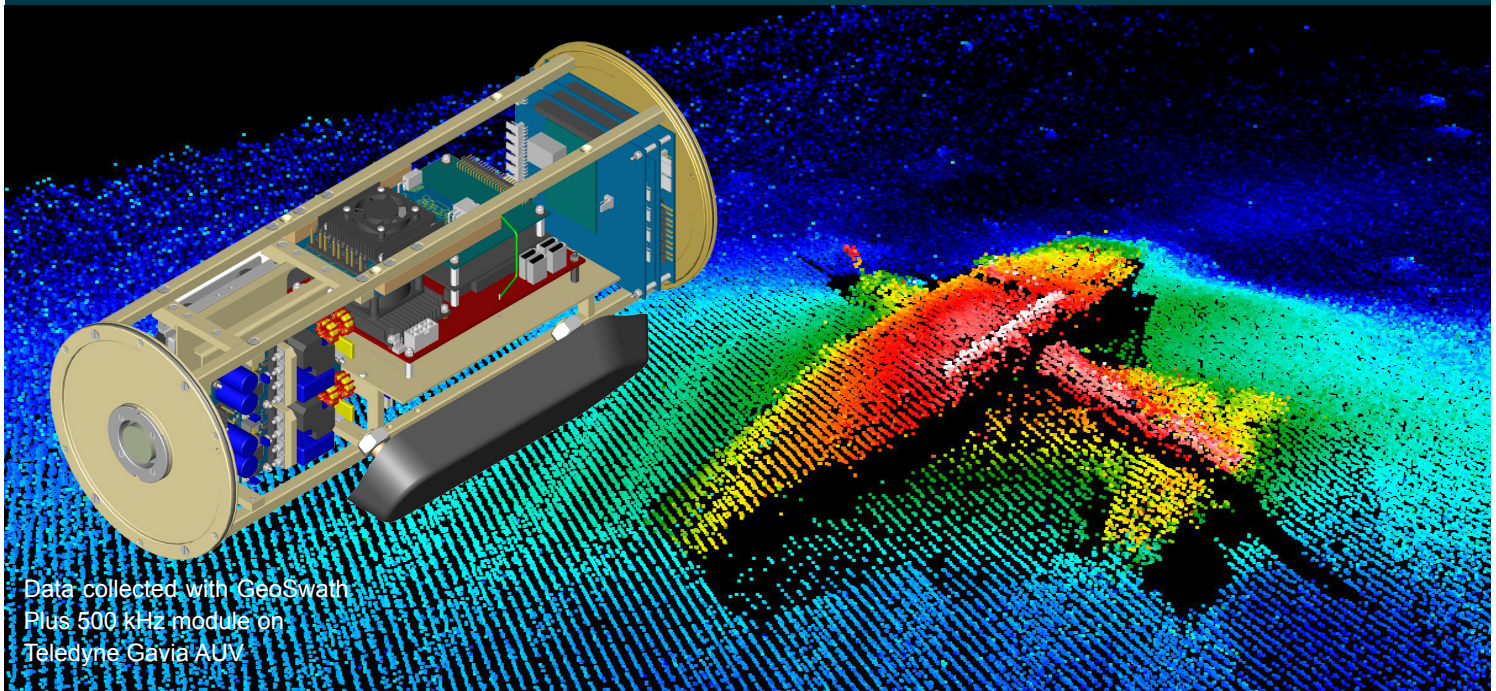# GEOSWATH PLUS AUV

Data collected with GeoSwath Plus 500 kHz module on Teledyne Gavia AUV

Jan 16

BATHYMETRY AND SIDE SCAN PAYLOAD FOR AUVS

The GeoSwath Plus phase measuring bathymetric sonar offers simultaneous swath bathymetry and side scan seabed mapping from a payload module readily integrated into any autonomous underwater vehicle (AUV). With a data coverage of up to 12 times the vehicle's fly height and its low power consumption it offers unsurpassed efficiency for all military and civil survey applications. Depth ratings of up to 4000 m are available.

System Components

The GeoSwath Plus AUV module contains the sonar electronics together with a high-spec small form factor PC, including local data storage, which can operate free running or interfaced to the AUV's control and peripheral sensors using Ethernet and Serial connections. The small size port and starboard transducers can be mounted directly to the module or onto an alternative position on the vehicle. The included GS4 software package provides full acquisition, calibration and data processing capabilities for producing the final bathymetry map and side scan mosaic data products.

Transducers

The rugged, passive, light weight and streamlined port and starboard transducers can be attached directly to the payload module or an alternative position on the AUV optimising their acoustic environment. They are available in three frequency options (125, 250, 500 kHz).

Sonar module

The compact module contains the sonar electronics as well as a high spec form factor PC including a local hard drive for data storrage. It can be manufactured to bespoke specifications. Accomplished integrations include the industry's smallest man-portable AUVs. Ancillary sensors can be interfaced to the module or the data can be merged with the sonar data using time stamping at a later stage. The clock can be synchronised using an available 1pps pulse. The module can be interfaced via an Ethernet connection to the AUV's control.

Software

GS4 replaced the GS+ software in 2015. The newly developed package provides a complete project based solution, including acquisition, storing and editing of sonar and ancillary data, grid-based patch test calibration, data processing with audit trail, advanced bathymetry data gridding and side scan mosaicing, data visualisation including 3D fly-through capability.

FEATURES

- Ultra high resolution swath bathymetry
- Co-registered geo-referenced side scan
- Frequency versions: 125, 250, 500 kHz
- Up to 12 times fly height coverage
- Compact and light weight module
- Low power consumption (50 W full operation, 20 W standby)
- Easy interfacing using Ethernet and Serial communiactions
- Full software solution included: data acquisition, processing, presentation
- Interfaces to all customary peripheral sensors
- Interfaces to all customary software packages

OPTIONS

- Hydroid Remus module
- Teledyne Gavia module
- increased depth ratings
- ROV and USV modules

TECHNICAL SPECIFICATIONS

GeoSwath Plus AUV	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)	0.85º	0.75º	0.5º
Transmit Pulse Length	128 µS to 896 µS	64 µs to 448 µS	32 µs to 224 µs
max Swath Update Rate	30 per second (range dependant)		
Transducer Dimensions	540 x 260 x 80 mm	375 x 170 x 60 mm	255 x 110 x 60 mm
Transducer Weight	11.6 kg (in air) 3.3 kg (in water)	3.8 kg (in air) 1.8 kg (in water)	1.5 kg (in air) 0.5 kg (in water)
Power Requirements	24 VDC, 50 W (at max ping rate), 20 W (standby).		
Max Depth Rating	standard 1000 m optional up to 4000 m		
Electronic Module Size	20 cm OD x 36.6 cm long.		
Electronic Module Weight	12 kg (in air), 3 kg (in water).		
Data Storage/Retrieval	120 GB hard drive, 10/100/1000 BaseT Ethernet link		
Interface to AUV	Ethernet (2 x 1 Gbit Ethernet ports available), RS232 for ancillaries		

Specifications subject to change without any further notice.