



# Bathyswath-3 ALPHA (B3A)

The innovative Bathyswath-3 technology embedded in ALPHA subsea unit

*Integrated with GNSS, SVS & INS*



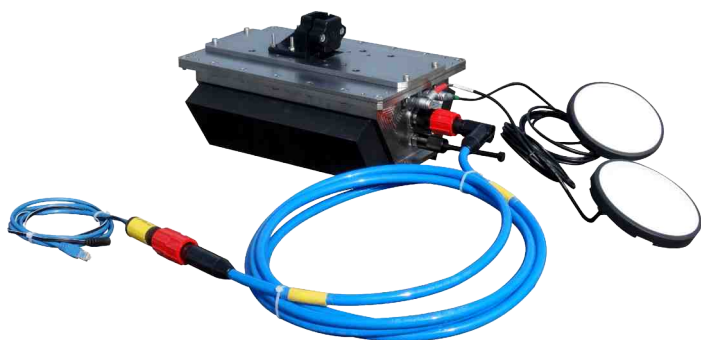
# WIDE SWATH BATHYMETRY

*Each Bathyswath system is a multibeam echosounder using phase differencing technology which allows users to get both sidescan imagery and a wide swath during their 3D bathymetric acquisition. Bathyswath systems are Phase Differencing Bathymetric Sonars (PDBS)*

## Performance & Quality

Bathyswath-3 ALPHA gives significant performance & good data quality in a fully integrated system.

- Wideband (chirp) sonar technology.
- 3 sonar frequencies simultaneously, in bathymetry and sidescan.
- Integrated system for a simplified set-up: sonar electronics, motion sensor (INS), GNSS receiver, Sound Velocity Sensor and embedded computers inside the same ALPHA housing.



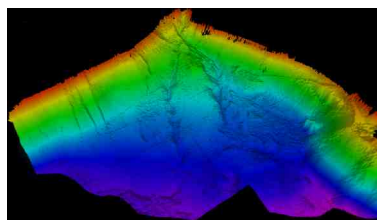
- Bathyswath-3 provides more data under the boat and better data quality at the swath edge than previous Bathyswath-2 version.
- Low-power consumption.
- With its 3 frequencies Chirp Technology in a complete integrated system, Bathyswath-3 gives you great signal processing, more flexibility, easy use and much less possibilities of errors (i.e. fixed settings and lever arms, fully compatible ancillary devices, etc.).

## Integrated ALPHA subsea unit

- One optional motion sensor (3 possibilities),
- One optional dual-antenna GNSS receiver for heading and positioning (3 possibilities),
- Sound Velocity Sensor,
- One or two embedded computers (one for sonar data acquisition and one for any specific applications).

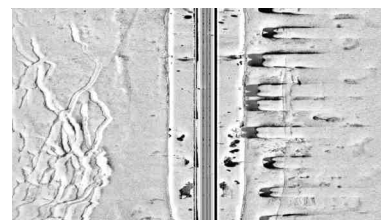
## Integrated transducers

- 250, 500 and 1000 kHz acoustic staves in each transducer.
- 1000 kHz dedicated to high resolution sidescan data.

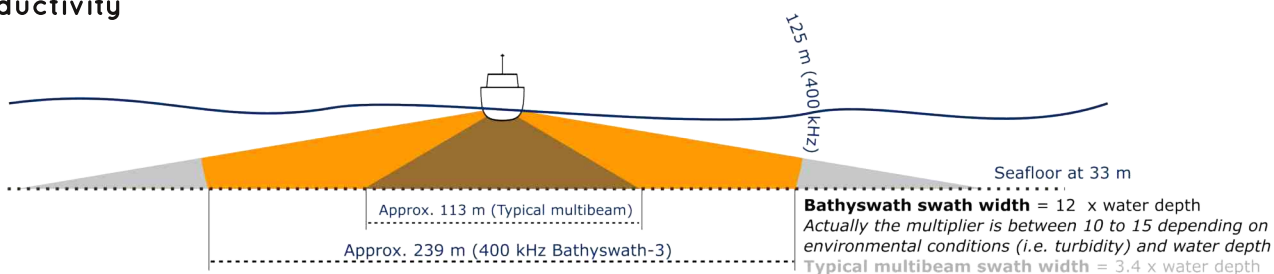


## Software, 3D bathymetry & sidescan data

- Included in package price,
- Fully-functional survey software (for sonar, position, sound velocity and motion data acquisition) and post-processing software (for 3D rendering and digital terrain models),
- Bathyswath sonar is also compatible with most usual commercial software packages.



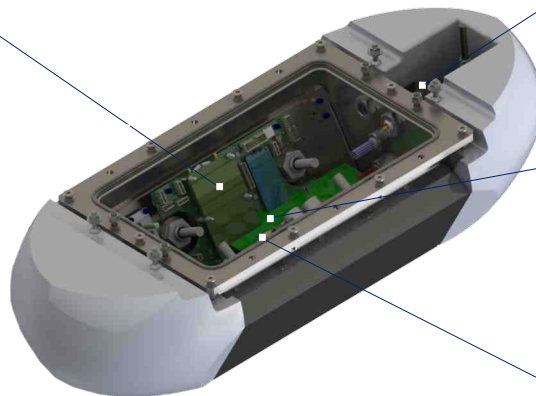
## Productivity



# SUBSEA UNIT CONFIGURATION

## Navigation Communication & Power Board (NCPB)

- Optional Embedded GNSS compass board (*Vega™ 40* or Trimble BD992 w/ or w/o INS) and Navsight processing unit (for Ekinox).
- Embedded Raspberry Pi CM3+ single board computer for sonar data acquisition.



## Optional Velocity Sensor

MiniSVS OEM

## Optional Motion Sensor

Ellipse-E or Ekinox-I-B

## Bathyswath-3 electronics

# TECHNICAL SPECIFICATIONS

## Sonar specifications

Simultaneous frequencies	250 kHz	500 kHz	1000 kHz
Operational slant range (m)	240	120	60
Maximum slant range (m)**	310	185	90
Horizontal beam width, two-way**	0.5°	0.25°	0.25°
Spatial resolution limit (mm)	3	1.5	0.8
Subsea unit dimensions (mm)	642 x 220 x 477 mm		
Subsea unit weight (kg)	18.3		
Pressure depth rating (m)	20		

\*\* Refer to our Bathyswath technical information document (pdf) available on [www.iter-systems.com](http://www.iter-systems.com).

## Optional integrated ancillary devices

GNSS :	<ul style="list-style-type: none"><li>▪ Hemisphere Vega 40 GNSS Compass board.</li><li>▪ Trimble BD992 Dual Antenna, positioning and heading.</li><li>▪ Trimble BD992-INS.</li></ul>	GPS, GLN, GAL, QZSS, BDS, L-Band (Atlas), IRNSS, heading (0.04° @ 2m baseline), L1/L2, RTK 1cm, rover, 20 Hz (opt.), 0.5° pitch & roll.
INS/IMU :	<ul style="list-style-type: none"><li>▪ Trimble embedded INS (BD992-INS)</li><li>▪ Ellipse-E INS</li><li>▪ Navsight Ekinox-I-B INS</li></ul>	GPS, GLN, GAL, BDS, L-Band (RTX or OMNISTAR), heading (0.09° @ 2m baseline), L1/L2/L5/E6, RTK 1cm, rover, 50 Hz.  GPS, GLN, GAL, BDS, L-Band (RTX/OMNISTAR), heading (0.09° @ 2m baseline), L1/L2/L5/E6, RTK 1cm, rover, 100Hz, 0.1° pitch & roll.  0.1° pitch & roll  0.1° pitch & roll (0.05° RTK), 1° heading (compass), 5 cm R/T heave.  0.02° pitch & roll, 0.05° heading (w/ GNSS), 5 cm real-time heave.
SVS :	<ul style="list-style-type: none"><li>▪ MiniSVS OEM</li></ul>	1375 - 1900m/s, accuracy: ±0.020m/s (25mm sensor size)
Computer :	<ul style="list-style-type: none"><li>▪ Raspberry Pi CM3+ (not optional)</li></ul>	32 Gb eMMC, 1Gb SDRAM (+32Gb SD card), Cortex A53 (ARM) 64-bits.
Power :	<ul style="list-style-type: none"><li>▪ Power supply or battery</li></ul>	+12 to 36 VDC

## Other package options

Bathyswath-3 is available in two other package options

- Bathyswath-3 SIGMA: the sonar electronics is integrated with a single compact 2-in-1 pod, for use on very small vehicles and vessels, including man-portable Unmanned Surface Vehicles (USVs),
- Bathyswath-3 OEM: sonar electronics and transducers as parts for integration inside clients' systems or vehicles (i.e. AUVs, USVs, etc.).

*"The quality of the data collected during the trial was high both in terms of coverage and resolution."*

*- Neil Crossouard - HR Wallingford survey specialist*

## FROM A TO Z



Sonar systems engineering.



Training on client's site or on lake in front of our premises.

Software development for our own products or for new interfaces with customers systems.

Remote technical support.

## A WIDE RANGE OF APPLICATIONS



Marine services



Research



Environment



Natural resources



Archeology



Military REA

## Bathyswath a brand of the company ITER Systems

ITER Systems is one of the world's most experienced team of developers of interferometric sonars. Its products are direct descendants of the world's first commercially available interferometric swath sonar system, developed into SWATHplus, which renamed Bathyswath in 2013. Bathyswath-2 was released in 2015, and Bathyswath-3 in early 2022 will give yet another significant advance in performance and usability.

ITER Systems provides innovation, quality product at an affordable price, for the international market with high quality technical support. A team of specialized engineers are located in France and in England to answer all your needs.

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