Ping DSP

www.pingdsp.com

3DSS-iDX *Integrated INS Shallow Water Mapping/Imaging System*

- *3DSS-iDX Sonar*
- *integrated AML Sound Velocity Sensor*
- *integrated INS (SBG IMU and Septentrio GNSS)*
- *ultra-compact and portable*

SUPERIOR SHALLOW WATER HYDROGRAPHY

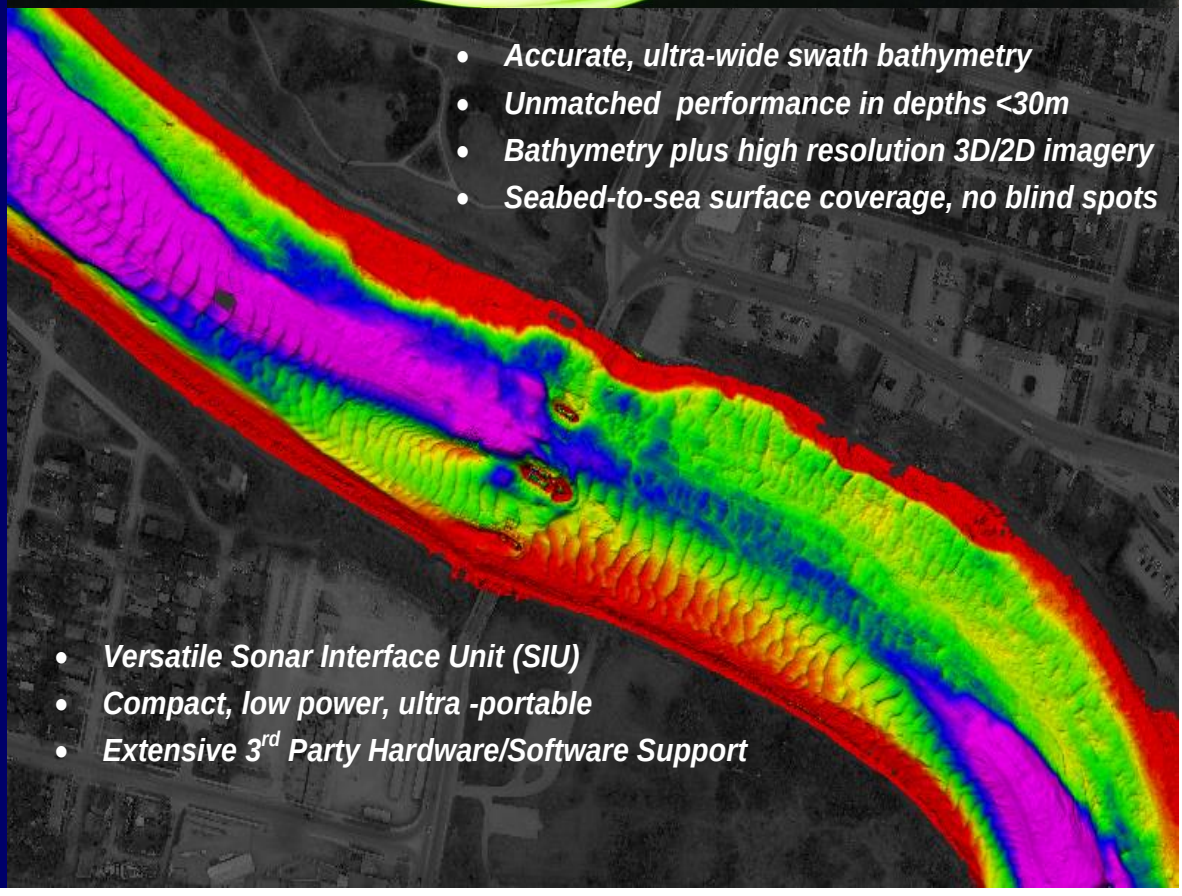
Accurate, high resolution, ultra-wide swath echo-sounding and 3D/2D imagery, with integrated real-time surface sound velocity, high accuracy INS position / attitude and optional RTK, PPK, PPP provide the best available hydrographic survey and imaging performance in shallow water.

SIMULTANEOUS REAL-TIME 3D IMAGERY

Geometrically correct, co-located 3D Sidescan imagery augments bathymetry and extends 2D sidescan resolution to three dimensions. ***3DSS*** real-time 3D software displays, captures and allows accurate measurement in three dimensions of features on the seabed and in the water-column including pipes, cables, pilings, wrecks, subsea structures hazards, ecological habitats, and other features not well defined in bathymetry or 2D sidescan.

COMPACT, ULTRA-PORTABLE, VERSATILE

A versatile Sonar Interface Unit provides ultra-portable, easy turnkey operation with just a laptop and a battery on small boats, USV's, and dedicated survey launches.



- *Accurate, ultra-wide swath bathymetry*
- *Unmatched performance in depths <30m*
- *Bathymetry plus high resolution 3D/2D imagery*
- *Seabed-to-sea surface coverage, no blind spots*

- *Versatile Sonar Interface Unit (SIU)*
- *Compact, low power, ultra -portable*
- *Extensive 3rd Party Hardware/Software Support*

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For more information please contact ***Ping DSP Inc***. at: ***info@pingdsp.com***

PATENTED ARRAY SIGNAL PROCESSING TECHNOLOGY

3DSS-iDX incorporates a patented signal processing methodology that extends the single angle-of-arrival principle used in interferometric systems to accommodate multiple simultaneous backscatter arrivals. When combined with the ***3DSS-iDX*** Multibeam Echo-Sounder Signal Processing Engine, the result is unsurpassed resolution and bathymetric accuracy over swath widths that can exceed 14 times water depth.

SOFTSONAR™ TECHNOLOGY

At the heart of the ***3DSS-iDX*** sonar is Ping DSP's state-of-the-art ***SoftSonar™*** electronics technology with ultra-low noise, wide dynamic range receivers, state-of-the-art acoustic transducer arrays, Gigabit Ethernet, easy-to-use software interface, and integrated support for a wide range of third party survey software and hardware.

BROAD APPLICATION

- Coastal Hydrographic survey
- River and Lake surveys
- Dredge surveys
- Tailing Pond surveys
- Subsea structure surveying
- Search and localization
- Benthic habitat mapping
- Underwater archaeology

3DSS-iDX Sonar Specifications[1]

Sonar Configurations

Model	*Application*	*SVS*	*IMU*	*GNSS*
3DSS-iDX-BASE	Hydrography + 3D/2D Sidescan - 0.05° IMU, ext GNSS	AML Micro-X	SBG Ellipse2	External
3DSS-iDX-FULL	Turnkey Hydrography + 3D/2D Sidescan - 0.05° IMU	AML Micro-X	SBG Ellipse2	Septentrio AsteRx-m3 Fg
3DSS-iDX-PRO	Turnkey Hydrography + 3D/2D Sidescan - 0.02° IMU	AML Micro-X	SBG Navsight Ekinox	Septentrio AsteRx-m3 Fg

Sonar Specifications

Operating Frequency	450 kHz	Mech. Transducer Tilt (fixed)	20°
Transmit Waveforms	CW, Broadband	Electronic Transmit Tilt	-45° to 45°
Pulse Lengths	10 – 200 cycles	Max. Ping Rep. Rate	~45 Hz
Horizontal Beamwidth (2 way)	0.4°	Vertical Beamwidth (selectable)	19° - 125°

2D Sidescan (2D Imagery) Specifications

Data Output	Range and Amplitude
2D Imaging Swath Width	10 to 20 times sonar altitude, varies with sound velocity profile, geometry and seabed type
Max Range	200m per side
Max Range Resolution	1.67cm

3D Sidescan (3D Imagery) Specifications

Data Output	Range, Angle, and Amplitude
3D Imaging Swath Width	8 to 14 times sonar altitude, varies with sound velocity profile, geometry and seabed type
Max 3D Imaging Range per Side	100m per side
Max Resolution	1.67cm

Bathymetry Specifications

Data Output	Sounding Range, Angle, and Amplitude
Bathymetry Swath Width	8 to 16 times sonar altitude, varies with sound velocity profile, geometry and seabed type
Max Bathymetry Range	120m per side
Min. Sounding Depth	0.5m
Max. Sounding Depth	75m (reduced swath width)
Sounding Accuracy	Exceeds IHO Special Order, meets or exceeds Dutch Norm 1A and Canadian Exclusive Order
Multibeam Eq. Mode Settings	Beamwidth (0.25°-5°), Sector (90°-220°), Beams (3-1024), Mode (Equidistant, Equiangle, Hybrid)
Legacy Mode Settings	Bin Count (3-1440), Bin Width (5cm – 200cm)

Integrated Sensor Specifications

SVS (-BASE, -FULL, -PRO)	AML MicroX[2]	1375 – 1600m/s SV range, 20ms resp, 0.025m/s accuracy
IMU (-BASE,-FULL)	IMU SBG Ellipse2[3]	pitch,roll 0.05°(RTK), hdg 0.2°(2m baseline), heave 5cm
IMU (-PRO)	SBG Navsight Marine Ekinox[3]	pitch,roll 0.02°(RTK), hdg 0.08°(2m baseline), heave 2cm
GNSS (-FULL, -PRO)	Septentrio AsterRx-m3 Fg[4]	dual recvr,, GPS, GLONASS, Galileo, BeiDou, QZSS, SBAS, L-band Rx, fully unlocked for RTK, PPK, PPP, 0.6/1cm vert/horiz. accuracy (RTK)

Interface Specifications

Control Input / Data Output	Gigabit Ethernet, sonar software provides control GUI and TCP data server
Time Reference	Time aligned to GNSS time
Additional Communication Ports	RS-232 or Ethernet, for external MRU, GNSS or INS,
Additional Inputs	PPS (SMA), Ext.Trigger (SMA)
Computer Requirements	PC (Quad Core, 16GB, Discrete GPU (e.g. Nvidia), MS Windows 7,8, 10 (64 bit)
3rd Party Software Support	Hypack, SonarWiz, QINSy, PDS, BeamWorx, Caris HIPS/SIPS

Physical Specifications

Voltage Requirements	12-28 VDC
Power Consumption	25W (***-BASE***), 28W (***-FULL, -PRO***)
Sonar Head Dimensions	61 cm (24") long x 9.8cm (3.88") diameter
Sonar Head Weight in Air, Water	8.5 kg (18.7 lbs), 5 kg (11 lbs)
Sonar Interface Unit Dimensions	25.5cm (10.04") wide x 15.5cm (6.10") deep x 5.8cm (2.28") tall
Pole Mount Adapter Diameter	1.49" (fits standard thickwall 1.5" I.D. Aluminum pipe), Flange mount adapter also included
Ambient Operating Temp.	-5° C – 45° C
Depth Rating	10 m

Notes:

1. Specifications subject to change without notice.
2. See www.amloceanographic.com for complete specifications.
3. Specifications given for integrated 3DSS-INS operation and RTK corrections, see www.sbg-systems.com for full specifications.
4. See www.septentrio.com for complete specifications.