



Integrated multibeam solution with IMU and SV probe



Sonic 2020



IMU: Integrated Inertial Navigation System (I2NS)



SV probe from Valeport or AML



Integrated solution packages in one Pelican™ case



Sonar Interface Module (SIM)

US Patent 10,132,924

This fully integrated solution includes:

- ▶ Wideband multibeam echosounder, the Sonic 2020
- ▶ Inertial Measurement Unit (IMU), the Integrated Inertial Navigation System (I2NS)
- ▶ Sound Velocity (SV) Probe, either from Valeport or from AML

This compact solution has everything you need in a 20x30 (cm) mount, making it easy to transport, mobilize and install.

The Sonic 2020 is a highly flexible and versatile multibeam sonar that can be upgraded remotely and anytime with a wide variety of options, such as Ultra High Resolution (UHR) and TruePix™.

The I2NS is an industry proven solution for vessel roll, pitch, heave, heading, position and velocity. It is easy to set up with the Applanix POSView, and can be operated and controlled through the monitoring window built in the Graphical User Interface (GUI). The I2NS provides continuous positioning information, even in areas where GPS reception is compromised by multipath effects and signal loss, making it ideal for vessels operating around structures and in high multipath environments such as ports and harbors.

All Sonic 2020 and I2NS data flow through a single Ethernet port, eliminating the need for additional processing modules and cabling, which makes for a neat, single cable interfacing solution.

The integrated Sonic 2020 solution exceeds IHO-S44 Special Order when installed following the instructions from the R2Sonic Manual.

Highly portable, for quick mobilization Modular



Easy to Pack



Easy to Maneuver



Easy to Check-in

- ▶ Easy to uninstall the IMU for maintenance and troubleshooting



Easy to Integrate on any platform



AUV



ROV



ASV/USV



Small Vessel

Easy to set up

- ▶ No need to measure offsets between the multibeam sonar and the IMU between mobilizations
 - Fast
 - Less room for error

Features of the Sonic 2020

- ▶ Ultra High Density (UHD) up to 1024 soundings per ping, resulting in greater resolution, particularly on the outer beams
- ▶ Selectable operating frequencies ‘on-the fly’ in steps of 1Hz so you can choose the best frequency for the job, while ensuring:
 - Constant ping rate
 - No along-track data loss
- ▶ Dynamic focusing, which is essential to ensure high resolution in very shallow waters
- ▶ ROBO mode

Features of the I2NS

- ▶ Seamless integration with the Sonic 2020
- ▶ Selectable accuracy configurations
- ▶ Inertial aided RTK (Real Time Kinematic) positioning
- ▶ High immunity to GNSS outages

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Integrated Multibeam Echosounder: Sonic 2020 & IMU & SV probe

Services

- ▶ Technical Support 24/7/365 wherever you are in the world
- ▶ Quick and high quality repairs performed by the team that engineered the multibeam sonar and the IMU
- ▶ 3-year warranty

Standard Technical Features

- Pipeline mode that enables users to survey alternatively at 400kHz and 700kHz, in one pass and using only one multibeam echosounder. This provides granular high resolution information on the pipeline or cable, as well as around the pipeline/cable
- Multispectral backscatter
- Multifrequency bathymetry designed for better bottom detect resolution

Options

- ▶ Upgradable with 4 technical modes:
 - Ultra High Resolution (UHR) that provides narrow beamwidth of 1°x1° at 700kHz
 - TruePix™ Compressed Water Column that simultaneously reports backscatter and water column imagery
- *Snippets is included with the TruePix™ option*
 - Forward Looking Sonar (FLS) allows users to easily switch from bathymetric profiling mode, which projects a narrow 1° along-track beam, to an imaging mode which projects a wide 22° vertical beam
 - Multispectral TruePix™ Compressed Water Column that consists of combining the capabilities of TruePix™ with R2Sonic's proprietary multifrequency mode
- ▶ Raw water column data
- ▶ 6-year warranty so you can mitigate your long-term risks
- ▶ 4000m immersion depth rated
- ▶ Theory & hands-on comprehensive and personalized training
- ▶ Software available: HYPACK®, QINSy™, SonarWiz 7, Fledermaus GeoCoder



Technical Specifications of the Sonic 2020

Selectable Frequencies	200kHz - 450kHz. Optional 700kHz
Minimum frequency increase	1Hz
Beamwidth, across track and along track	1° x 1° at 700kHz (optional) 1.8° x 1.8° at 450kHz 4° x 4° at 200kHz
Number of soundings	Up to 1024 soundings per ping
Max speed (vessel)	11.1 knots for full coverage (*)
Near-field focusing	Yes
Roll stabilized beams	Yes
Pitch stabilized beams	Yes
ROBO™ Automated Operation	Auto Power, pulse width, rangeTrac™, GateTrac™, SlopeTrac™
Saturation monitor	Yes
Selectable Swath Sector (also referred as Max Coverage)	10° to 130° User selectable in real-time
Sounding Patterns	Equiangular Equidistant single / double / quad modes Ultra High Density (UHD)
Sounding Depth	up to 200m+
Pulse Length	15µs - 1ms
Pulse Type	Shaped CW
Ping rate	up to 60Hz
Bandwidth	up to 60kHz
Immersion Depth	100m Optional 4000m FLS projectors are rated 4000m
Bottom Detect Resolution	3mm
Electrical Interface	
Mains	90-260VAC, 45-65Hz
Power consumption	20W avg
Uplink/downlink	10/100/1000Base-T Ethernet
Sync in, Sync out	TTL
Deck cable length	15m, optional 25m and 50m

Technical Specifications of the I2NS Type III

	DGPS	RTK	Accuracy During GNSS Outages
Position	0.5-2m depending on quality of differential corrections	Horizontal: 1cm or better Vertical: 1.5cm or better	-6m for 30 s total outages (RTK) -3m for 30 s total outages (IAPPK)
Roll & Pitch	0.04°	0.03°	0.05°
Heading	0.06° w/4m baseline 0.08° w/2m baseline	Same	0.2° (IAPPK, 60 s outages) 0.3° (RTK, 60 s outages)
Heave	5cm or 5% 2cm or 2% TrueHeave™	5cm or 5% 2cm or 2% TrueHeave™	5cm or 5% 2cm or 2% TrueHeave™

Inputs/Outputs

Ethernet Input Output	1000Base-T
Serial RS232	1 COM Ports bi-directional, user assignable to NMEA output 1 COM Ports connected directly to the internal GNSS receiver (for supplying corrections or firmware upgrades)
Base GNSS Correction Output	RTCM V2.x, RTCM V3.x, CMR and CMR+

The integrated solution is also available with the I2NS type II.
Please contact us or visit r2sonic.com/products/i2ns/ for more information

Mechanical Specifications

Dimensions Integrated Solution (LWH)	200 x 200 x 300 (mm)
Weight integrated solution (in air)	10.8kg
Dimensions Sonar Interface Module (LWH)	280 x 170 x 60 mm
Weight Sonar Interface Module	2.4kg

(*) The speed of the survey is primarily limited by the installation of the multibeam echosounder.

Specification Sheet 2021 version 1.2 subject to change without notice