

Argonaut-ADV®

ULTRA-PRECISE 3-D VELOCITY MEASUREMENT



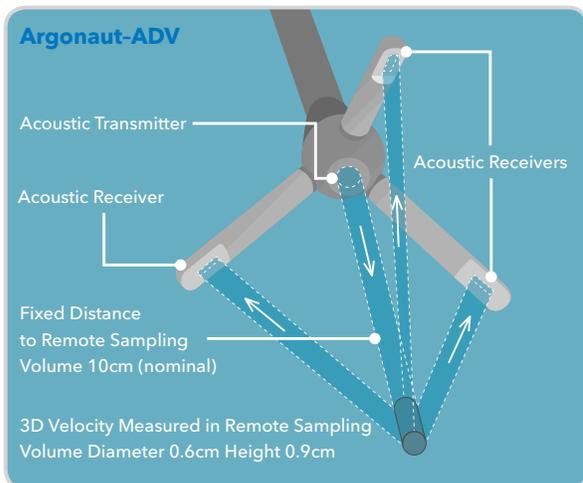
Robust and Always Reliable

The Argonaut-ADV takes SonTek's renowned ADV technology and makes it practical and affordable for deployments in lakes, streams or along the coast. Also, its low velocity/shallow water capability make it the ultimate solution for marsh and wetland studies.

The unique Auto-velocity range scaling feature eliminates the need to pre-set the velocity range - it's all done automatically by the instrument. A built-in recorder, SDI-12 interface, and battery enable you to either deploy the Argonaut-ADV for autonomous operation, or connect it to a data logger for real-time data reporting.

For use in:

- Wetlands & Marshes
- Bedform monitoring
- Shallow streams
- Coastal studies
- Lake studies
- Aquaculture
- Fisheries
- Springs



- ✔ Low velocity with resolution of 0.0001 m/s
- ✔ Shallow water (down to 2-3 cm with 2-D probe option)
- ✔ RS-232 and SDI-12 output standard
- ✔ Auto-velocity range capability
- ✔ Distance-to-boundary monitoring
- ✔ High battery capacity for long deployments



a xylem brand

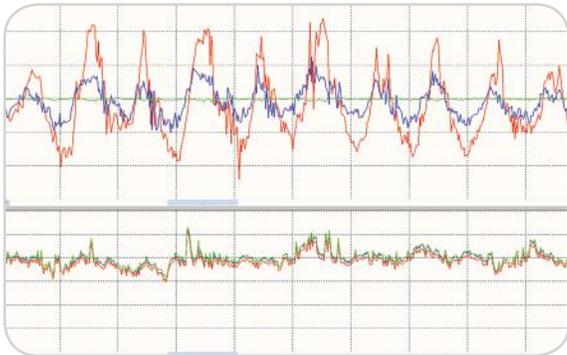
Argonaut-ADV®

Standard Features

- SonTek Auto-velocity range capability
- 3-D down looking probe
- Remote sampling volume of 0.25 cc located 10 cm from center transducer
- Temperature sensor
- Distance to boundary (acoustic altimetry)
- Internal 4 MB recorder
- Internal battery pack
- ViewArgonaut Windows software for data analysis, processing and exporting
- Solid state compass/tilt sensor
- RS-232/SDI-12 output

Optional Features

- 2-D side-looking ADV probe for shallow water (as little as 2-3 cm) deployments
- RS-422 output
- Pressure sensor

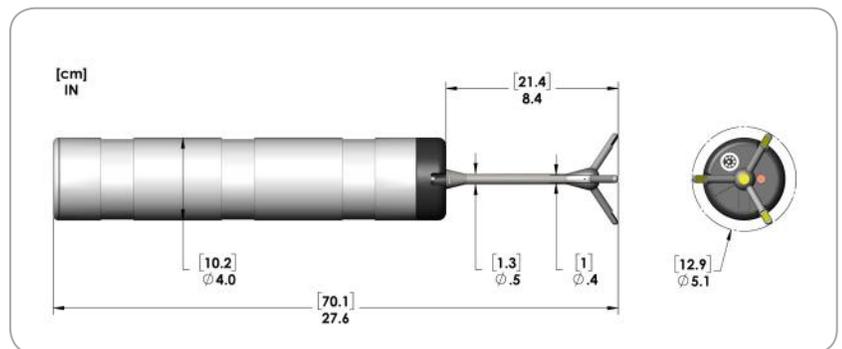


Example of Argonaut-ADV software



2-D side-looking version deployed for marsh study in Louisiana.

Specifications	
Maximum sample rate	1 Hz
Sample volume distance	10cm
Sample volume size	0.25cc
Maximum velocity	4.5 m/s
Acoustic altimetry limit	30cm
Auto-velocity range	Yes
Maximum depth	60m
Available sensor geometries	3D down, 2D side
Stem configuration	15 cm stem
Recorder Size	4MB
Pressure Sensor	Piezoresistive strain gauge (0.1% accuracy)
Operating Temperature	-5 to 40 °C
Storage Temperature	-10 to 50 °C
Temperature Accuracy	+/- 0.1 °C
Temperature Resolution	0.01 °C
Velocity Accuracy	+/- 1% of measured velocity, +/- 0.25cm/s
Velocity Resolution	0.01 cm/s
Compass/Tilt Heading Accuracy	+/- 2°
Compass/Tilt Heading Resolution	0.1°
Compass/Tilt Tilt Accuracy	+/- 1°
Compass/Tilt Tilt Resolution	0.1°
Power Input Voltage	7-15 VDC
Power Consumption	0.2-0.5W
Battery Pack Capacity	200 WH (internal) 500 WH (external)



SonTek, a Xylem brand
 9940 Summers Ridge Road
 San Diego, CA 92121
 Tel +1 858.546.8327 (US)
 inquiry@sontek.com

SonTek, Argonaut, and ADV are trademarks of Xylem or one of its subsidiaries.
 © 2019 Xylem. S11-02 1119



Quick access to the video and training resources you need at sontek.com/videos

sontek.com/argonaut-adv



Argonaut-XR

MULTI-CELL DOPPLER CURRENT PROFILER

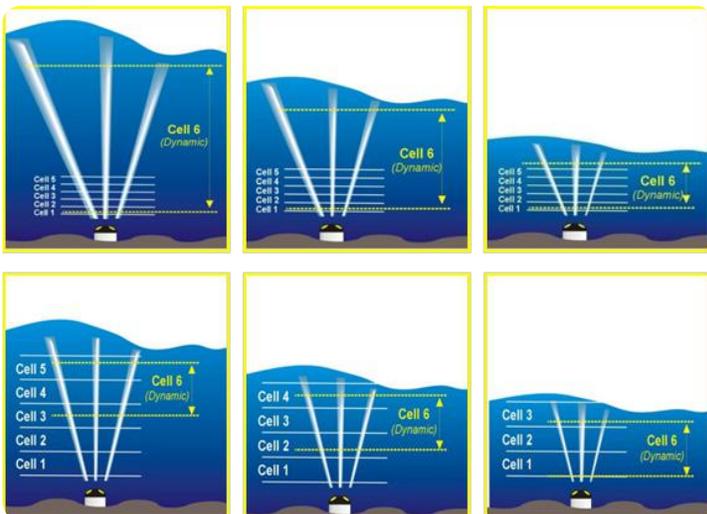
A Practical Solution to Current and Wave Measurement

The Argonaut-XR offers exceptional value for current profiling applications. Its small size, rugged build quality, and flexible programming options make the Argonaut-XR very attractive for both real-time operation as well as autonomous deployments.

With a main measurement cell that is independent of the velocity profile, an Argonaut-XR can be a single-cell current meter, profiler, or both. For example, the system can be programmed for a velocity profile in addition to a dynamic measurement cell which can be fixed in size and location anywhere in the water column, or configured to change its size or location as the water level changes (the Auto-Tide feature).

The basic autonomous configuration includes an external battery, internal recorder, compass/tilt sensor, pressure and temperature sensors.

Adding options such as the SonWave package, or a CT/TS sensor, make the Argonaut-XR the centerpiece of a complete oceanographic system.



The additional dynamic cell adjusts with changing water level.



a xylem brand

Argonaut-XR ACCESSORIES AND SPECIFICATIONS



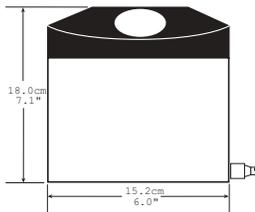
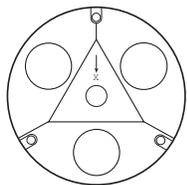
Pyramidal housing protects the Argonaut-XR from damage in busy ports, as shown here in Brazil.*



The Argonaut-XR on mounting plate with optional battery pack.



An XR and battery pack installed in an optional trawl-resistant mount.



Argonaut-XR Characteristics								
Frequency	Profiling Feature			Main Measurement Cell				
	Max Profiling Range	Min Cell Size	Min Blanking Distance	Cell Begin (CB)		Cell End (CE)		Min CE-CB
				Min	Max	Min	Max	
1.5MHz	20.0m (66.0ft)	0.40m (1.2ft)	0.50m (1.6ft)	0.50m (1.6ft)	19.5m (63.4ft)	1.50m (4.9ft)	20m (66.0ft)	1.00m (3.28ft)
750 kHz	40.0m (131.0ft)	0.80m (2.5ft)	0.80m (2.5ft)	0.80m (2.5ft)	46.5m (152.6ft)	4.30m (14.1ft)	50m (164.0ft)	3.50m (11.5ft)

Velocity	Main measurement cell plus up to 10 cells in profiling feature
- Range	±6 m/s
- Resolution	0.1 cm/s
- Accuracy	±1% of measured velocity, ±0.5 cm/s
Compass/Tilt Sensor	
- Calibration Procedure	Built-in, compensate for ambient magnetic fields
- Resolution	0.1°
- Heading Accuracy	±2°
- Pitch, Roll Accuracy	±1°
Temperature	
- Resolution	0.01°C
- Accuracy	±0.1°C
Pressure	Piezoresistive strain gauge, 0.1% accuracy
Recorder Size	4MB
Environmental	
- Pressure Rating	200m (pressure sensor dependent)
- Operating Temperature	-5° to 40°C
- Storage Temperature	-10° to 50°C
Physical	
- Housing	Delrin plastic
- Weight in Air	2.5 kg 5.5 lb
- Weight in Water	-0.3 kg -0.7 lb
- Dimensions	15.2cm x 18.0cm 6.0 in x 7.1 in
Power	
- Input Power	7-15 V DC
- Typical Power Consumption	0.2 to 0.5 W Continuous; 0.01 W Stand-by
Communications	RS232, SDI-12
Additional Features	
- External Battery Housing (500 WH)	Optional
- Real Time Waves (Height, Period, Spectra)	Optional
- RS422 Output	Optional
- Integrated CT sensor	Optional



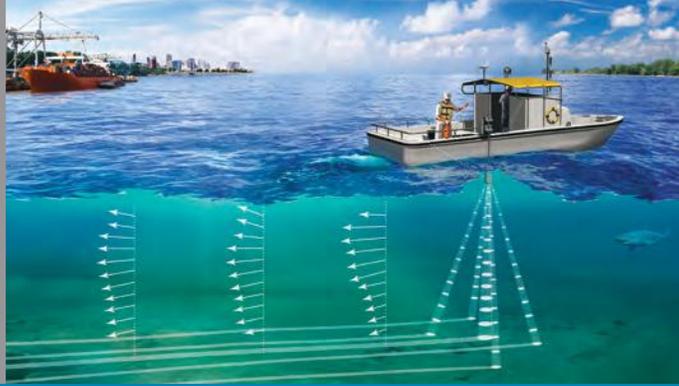
SonTek, a Xylem brand
 9940 Summers Ridge Road
 San Diego, CA 92121
 Tel +1 858.546.8327(US)
 inquiry@sontek.com

*Photos courtesy Xylem representative, HidroMares.
 SonTek and Argonaut are trademarks of Xylem or one of its subsidiaries. All rights reserved.
 © 2019 Xylem. S27-01 0301



Quick access to the video and training resources you need at sontek.com/videos

sontek.com/argonaut-xr



SonTek HydroSurveyor™ Software and Hydrographic Surveying ADCP

THE PRACTICAL SOLUTION TO VELOCITY, POSITION, AND DEPTH MEASUREMENT

Skip the complicated set-up, expensive equipment and complex software packages. With the new HydroSurveyor, enjoy access to today's most sophisticated bathymetric technology in a single package, and at a fraction of the cost.

Flexible and Fast. Water sound speed corrections are interpolated in both space and time with the fully integrated CastAway™ CTD, delivering agility and accuracy to your surveys.

All Inclusive. Full water column velocity mapping, exclusive 5-beam depth sounding and acoustic bottom tracking (for speed over ground when GPS is lost) provide comprehensive data for a complete solution within a single package.

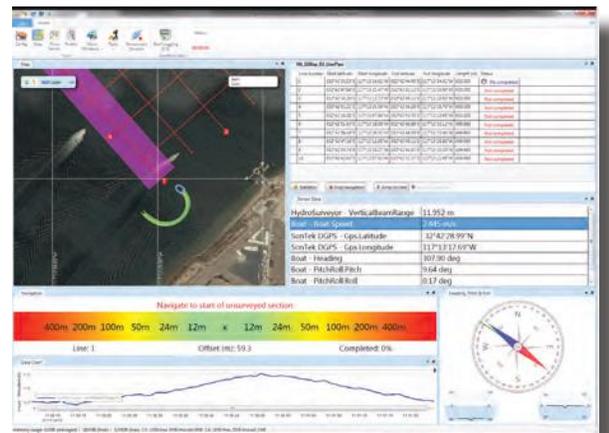
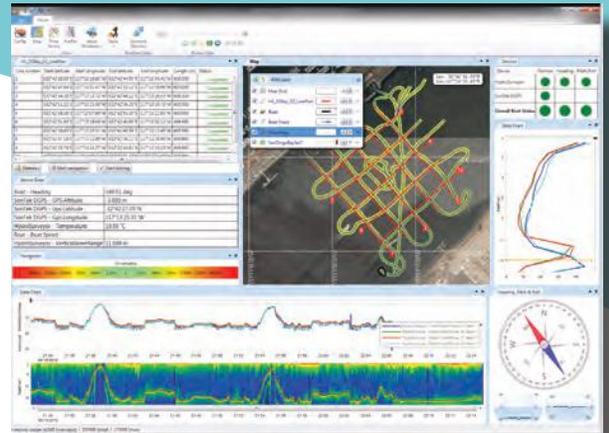
Software Centric. With built-in automatic data gridding and interpolation, even intricate surveys won't require specialized complex software, saving you time and money.

Additional Features Include:

- Sound speed integration and interpolation (with CastAway-CTD)
- Speed over ground (Acoustic Bottom Tracking)
- 5-beam depth soundings (50° swath)
- Water column velocity mapping
- Automatic data gridding and interpolation
- 360° compass and two-axis tilt sensor
- Interface for customer-supplied GPS and/or heading sensor

Additional options:

- CastAway-CTD
- Upgrade for existing RiverSurveyor M9 systems
- SonTek RTK GPS or DGPS
- Delrin/aluminum boat mount
- Bluetooth/spread spectrum telemetry



a xylem brand

HydroSurveyor HYDROGRAPHIC SURVEYING SOFTWARE AND ADCP



The addition of the SonTek RTK-GPS or DGPS makes the HydroSurveyor a complete package.



Seamless integration with the CastAway-CTD, allows sound speed corrections to be done right in the field.



Custom designed Delrin/aluminum fixture to facilitate mounting the HydroSurveyor over the side of a boat.

¹Depends on multipath environment, antenna selection, number of satellites in view, satellite geometry, and ionospheric activity.
²Contact SonTek for details about RTK GPS performance and specifications.

Depth Measurement

- Range (Vertical Beam): 0.2m to 80m
- Range (Slanted Beams): 0.2m to 40m
- Accuracy: 0.02m (sound speed corrected)
- Resolution: 0.001m
- Vertical Beam Angle: 8°
- Velocity Beam Angle: 3°
- Swath Width: 50°

Velocity Measurement

- Profiling Range (Distance): 0.06m to 40m
- Profiling Range (Velocity): ± 10 m/s
- Accuracy: Up to ± 1.0%, ± 0.2 cm/s
- Resolution: 0.001 m/s
- Number of Cells: Up to 128
- Cell Size: 0.02m to 4m

Acoustic Bottom Tracking

- Range: ± 10 m/s
- Altitude: 0.2 - 40m

GPS Options

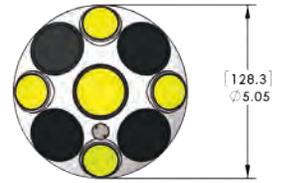
- SonTek RTK GPS: (Base-Rover Distance 2km)
- Horizontal Precision^{1,2} (Repeatability): <0.03m

SonTek DGPS:

- SBAS GPS Horizontal Accuracy¹: <1.0m

Other

- Transducer Configuration: 8-beam Janus (4 x 1MHz; 4 x 3MHz) and 1 Vertical Beam (0.5 MHz)
- Temperature Sensor Resolution: ± 0.01°C
- Temperature Sensor Accuracy: ± 0.1°C
- Compass Type: Solid State type, with Built-in Inclinometer
- Compass Range: Full 360°
- Compass Heading Accuracy: ± 2°
- Compass Tilt Accuracy: ± 1°
- Power: 12-18 vdc
- Operating Temperature: -5 °C to 45 °C
- Storage Temperature: -10 °C to 70 °C



Founded in 1992 and advancing environmental science globally, SonTek manufactures acoustic Doppler instrumentation for water velocity measurement in oceans, rivers, lakes, harbors, canals, estuaries, industrial pipes and laboratories. SonTek's sophisticated and proprietary technology serves as the foundation for some of the industry's most trusted flow data collection systems. SonTek is headquartered in San Diego, California, and is a division of Xylem Inc.

www.sontek.com

SonTek
 9940 Summers Ridge Road
 San Diego CA 92121
 Tel +1.858.546.8327
 Fax +1.858.546.8150
www.sontek.com

YSI, Inc.
 1700/1725 Brannum Lane
 Yellow Springs, Ohio 45387
 Tel +1.937.767.7241
 Fax +1.937.767.9353
www.ysi.com

Xylem, Inc.
 1133 Westchester Avenue
 White Plains, NY 10604
 Tel +1.914.323.5700
 Fax +1.914.323.5800
www.xyleminc.com



RiverSurveyor[®]

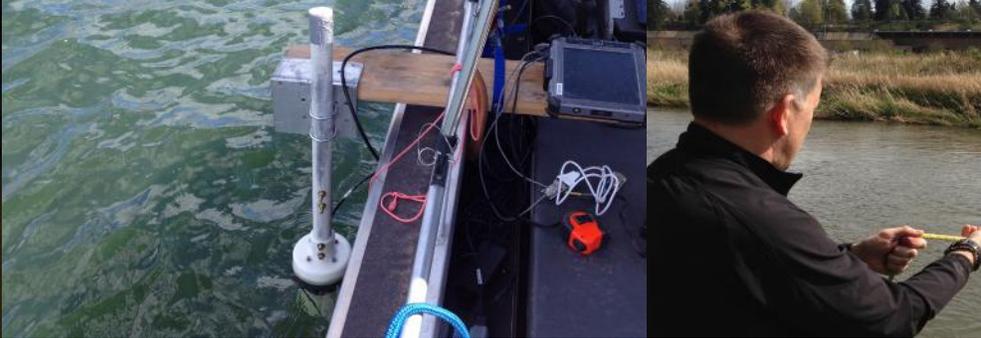
DISCHARGE, BATHYMETRY AND CURRENT PROFILING

S5

M9

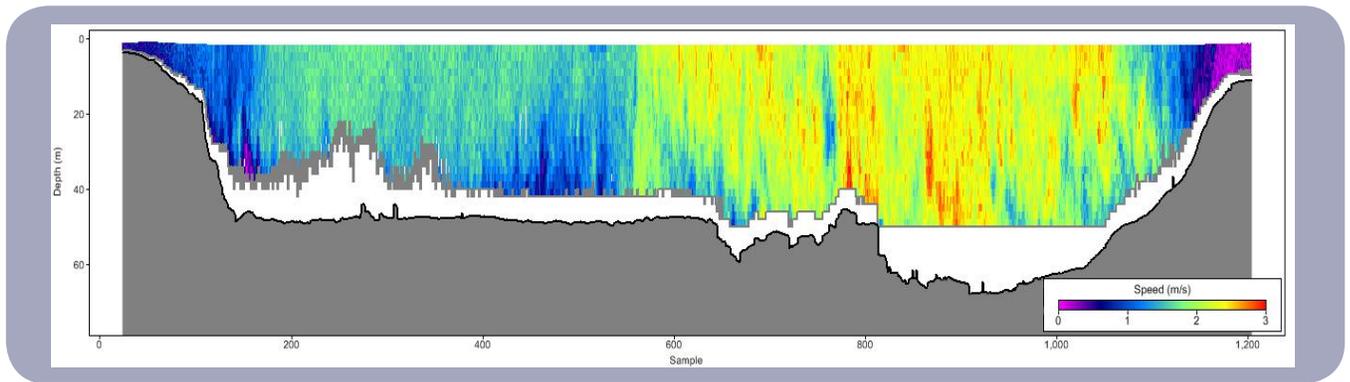


a xylem brand



Taken to Incredible Extremes.

The RiverSurveyor S5/M9 is a river discharge measurement system without the traditional limitations. Small, portable and easy to use, the patented and award-winning RiverSurveyor measures in extreme flood or drought situations within a single instrument, and without changing user settings. The results speak for themselves - the RiverSurveyor S5/M9 has revolutionized the way discharge is measured in rivers and canals.



“Meeting of the Waters” Amazon River near Manaus, Brazil

It’s a SonTek exclusive - multiple acoustic frequencies with SmartPulseHD® make for the most robust and continuous shallow-to-deep measurements ever. An array of four deterministic microcontrollers expertly apportion the proper acoustics, pulse scheme, and cell size so you can focus on the measurement - not the instrument setup. The system even has a vertical beam for accurate channel definition and it’s all designed to work intuitively. Slow to fast, shallow to deep, the RiverSurveyor S5/M9 handles it all on the fly.

Features	Benefits
Multi-band (Multiple acoustic frequencies) ^{1,2}	Balances the highest resolution with the greatest range of depths.
Vertical acoustic beam ¹	Superior channel definition for both bathymetric and discharge applications. Extends maximum discharge depth when bottom-tracking is out of range.
SmartPulseHD® ³	An intelligent algorithm that looks at water depth, velocity and turbulence, and then acoustically adapts to those conditions using pulse-coherent, broadband, and incoherent techniques. High-def cell sizes down to 2 cm.
Microprocessor computed discharge and secure data ¹	All discharge computations are simultaneously done both within the S5 or M9, and on the host computer. No lost data if communications drop out.
Standard 360° compass and two-axis tilt sensor	Compensates for vessel motion due to surface conditions.
Reverberation control with ping rates to 70Hz	High ping rates ensure extremely robust data collection.
Bottom-tracking	Acoustically track vessel speed over ground independent of DGPS. Also supplies redundant depth measurement.
RTK GPS (optional)	Ultra precise positioning as an alternative to bottom tracking in moving bed or other difficult situations.

¹RiverSurveyor technology patent number 8,125,849

²RiverSurveyor technology patent number 8,411,530

³Patent Pending

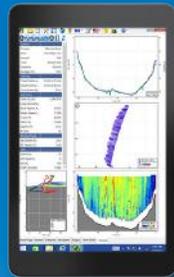
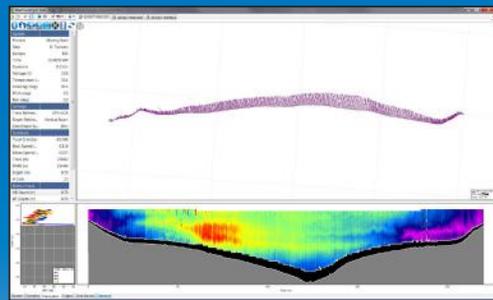


Display. Process. Analyze.

Exceed your expectations both during and after the measurement with the RiverSurveyor Live! software suite for both PC and mobile platforms. All programs take full advantage of SmartPulseHD and the intelligent software ensures no loss of data during telemetry dropouts. Easily switch between computer or mobile devices during mid-measurement. Several quality indicators and statistics with selectable graphics provide instant feedback on data collection. Multi-language support includes Afrikaans, Catalan, Chinese, English (UK & US), French, German, Hungarian, Italian, Japanese, Korean, Polish, Portuguese, Spanish and Turkish. Need your language? Let us know at inquiry@sontek.com.

Moving Boat

Standard with every system and used for underway measurements that calculate discharge from a moving vessel.

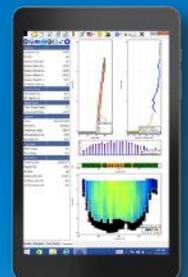
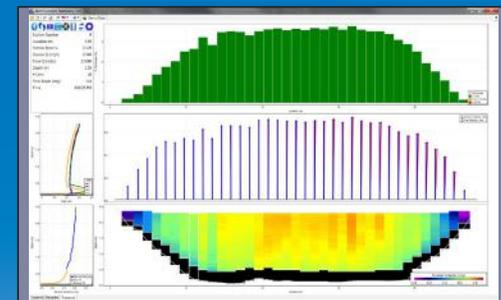


RiverSurveyor Live
Mobile Multi-language Display

- Enables you to efficiently transect from one bank to the other with a full contour plot of the water velocity profile and bottom bathymetry.
- View multiple data results (bottom-track, vertical beam, GPS-GGA, and GPS-VTG) simultaneously.
- Supports USGS Loop Correction Method and Stationary Moving Bed Analysis for moving bed conditions.

Stationary (Section-by-Section)

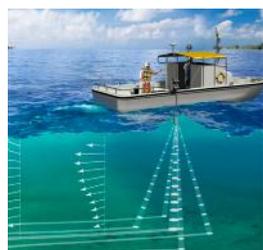
Optional add-on program that uses traditional USGS/ISO mid section or mean section methods.



RiverSurveyor Stationary Live
Mobile Display

- An alternative to moving boat method for highly turbulent areas or moving bed environments where GPS is unavailable.
- Supports discharge measurements through ice holes.
- Supports sections that are braided or have islands.

Get More Value.



The SonTek HydroSurveyor

Own a RiverSurveyor system, but need survey data as well? Upgrade your current M9 system and collect bathymetric, water column velocity profile, and acoustic bottom tracking data. The upgrade includes:

- Full water column velocity mapping,
- Exclusive 5-beam depth sounding
- Acoustic bottom tracking (for speed over ground when GPS is lost)
- Sound speed integration and interpolation (when using with the CastAway-CTD®)



The SonTek HydroBoard II.

One of the great sources of error in an ADP discharge measurement is excessive and irregular speed. The HydroBoard II's sleek and sturdy design provides the user with the platform to achieve the controlled speed and tracking conducive to quality ADP discharge measurements.

A dive-resistant, flexible body design allows the HydroBoard II to be used anywhere from low velocity irrigation canals to high-velocity mountain streams. Every HydroBoard comes equipped with reinforced mounting hardware, perfect for securing your instrument during unpredictable conditions.

