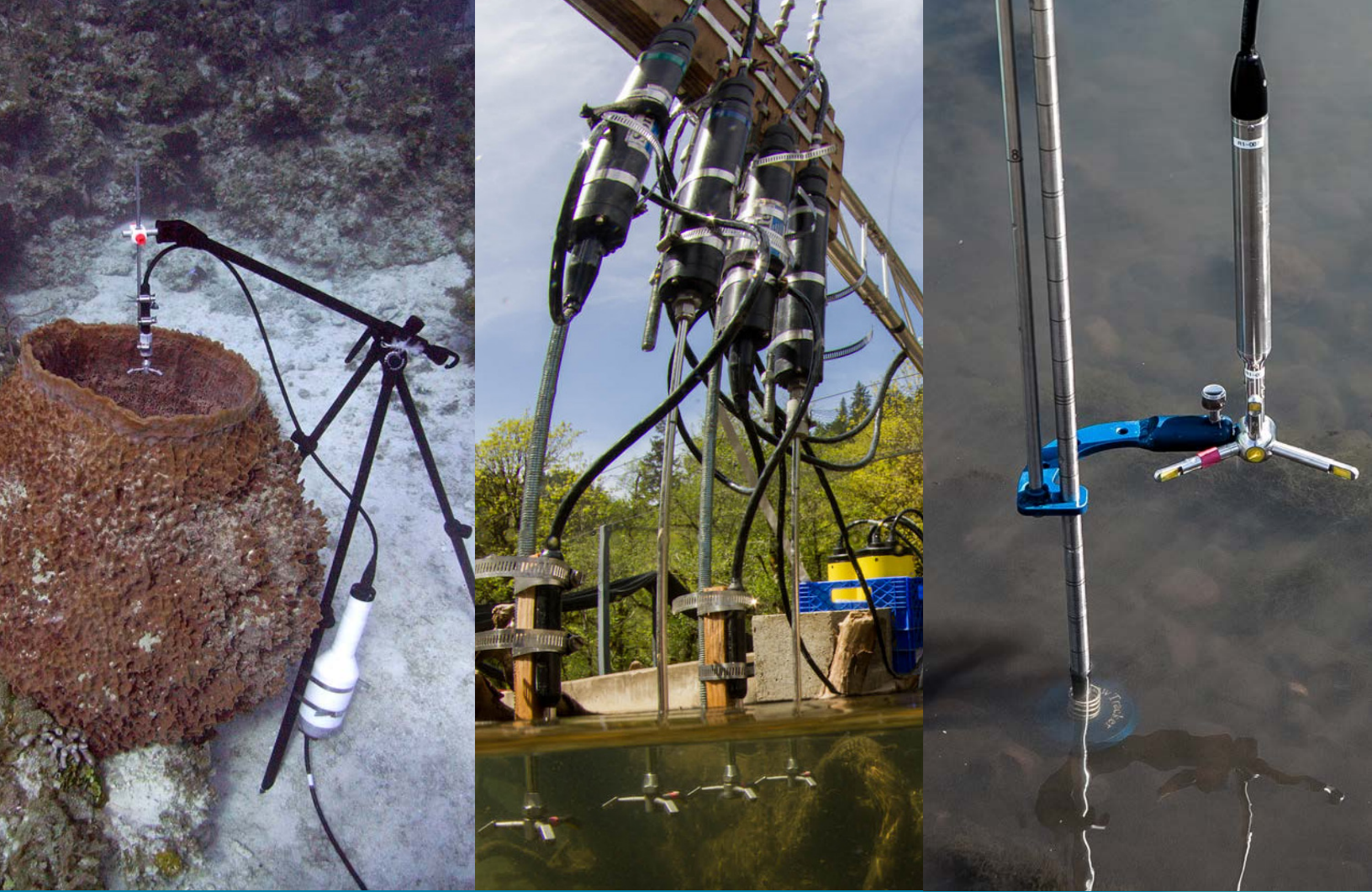


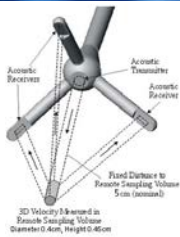


Acoustic Doppler Velocimeters (ADV[®])

ULTRA-PRECISE 3-D VELOCITY MEASUREMENT



a xylem brand



SonTek Acoustic Doppler Velocimeters (ADV), are among the most accurate and easy-to-use instruments for precise, high-resolution measurement of water velocity and related parameters. SonTek offers the widest range of models and configurations available for single point Doppler measurement, making it possible to tailor the instrument and its capabilities to the needs of your project.



Benthic Boundary Layer and Surf Zone

Turbulence • Waves • Sediment transport • Acoustic altimetry

ADV data are ideal for turbulence, shear stress, bed stress, sediment concentrations, sediment settling velocities, and wave analysis, while the acoustic altimetry feature can monitor sediment erosion/deposition. The ADV can be integrated into a larger platform, or SonTek's autonomous "Hydra" configuration can serve as a standalone data collection platform, integrating certain external sensors. The rugged 5 MHz ADVOcean is a particularly good fit in these environments.



Wetlands and Estuaries

Very low flows • Sediment transport • Habitat monitoring • SDI-12 networks

Nothing can compete with the ADV's signature high resolution velocity data and flexible sampling schemes for resolving low and/or variable flows. The ADV's factory calibration is invariant and is unaffected by biofouling, against which it is often more robust than other sensor technologies. The 2D and 2D/3D probe geometries are particularly well-suited to shallow (down to 2-3 cm) water.



Ecological and Biological Studies

Habitat studies • Pollutant/nutrient fluxes • Impact studies • Sediments

Water velocity data are increasingly needed to make sense of the complex variables at play in biological and ecological studies. The ADV's small sample size is ideal for placing next to animal habitat features, or even the animals themselves. The extremely small 16 MHz MicroADV sensor is particularly adept in unusual, confined, or hard-to-reach spaces, while the streamlined, lightweight Argonaut®-ADV is easy to transport and deploy.



Laboratory and Hydraulic Research

Coastal and hydraulic modeling • Flumes • Wave tanks • Ocean engineering

The traditional forte of the ADV, laboratory settings and hydraulic modeling come with exacting requirements. The ADV's remote sampling volume and high-resolution data, combined with its status as a well-accepted, well-documented measurement method, continue to make it an ideal tool for data acquisition and for verification of other methods and instrumentation.



Aquaculture

Fish tanks • Fish cages • Mussel/oyster rafts • Long term or spot-sampling

For efficient farm management, ADVs quickly and conveniently provide data for planning, modeling, or long-term monitoring. ADV-derived waves, tides, currents, and circulation patterns will help determine suitability of a location for aquaculture, strategy for management of nutrients and pollutants, and environmental and regulatory reporting.



Rivers, Streams, Canals, and More!

River discharge • Fish screens • Calibration of flumes/weirs.

Wherever there is flowing water, the easy-to-use ADV is a robust tool under a wide range of conditions. Models such as the handheld FlowTracker2 and Argonaut-ADV come with field-friendly features such as auto-velocity ranging and low power requirements. Even canal operators and municipalities rely on ADVs to calibrate flumes, weirs, and other in-situ instruments.



	5 MHz ADV Ocean	10 MHz ADV	16 MHz MicroADV	Argonaut-ADV	FlowTracker2
Max. sample rate	25 Hz	25 Hz	50 Hz	1 Hz	2 Hz
Sample volume distance	18cm	10cm	5cm	10cm	10cm
Sample volume size	2.0cc	0.25cc	0.09cc	0.25cc	0.25cc
Max velocity	5 m/s	3.6 m/s	3.6 m/s	4.5 m/s	4.0 m/s
Acoustic altimetry limit	100cm	45cm	25cm	30cm	N/A
Auto-velocity range	No	No	No	Yes	Yes
Max depth	400m	60m	60m	60m	10m
Available sensor geometries	3D down	3D down, 2D/3D side, 2D side	3D down, 2D side	3D down, 2D/3D side, 2D side	2D/3D side, 2D side
Stem configurations	N/A	25cm stem, 100cm cable	25cm stem, 40cm stem, 100cm cable	15 cm stem, 100cm cable	N/A
Probe cable lengths	3m, 10m, 20m, 30m	3m, 10m, 20m	3m, 10m	N/A	1.5m. 1.5m, 3.5m and 8.5m extensions available. 10m maximum length
Autonomous operation	Yes	Yes	Yes	Yes	No
Package design, available configurations	Two-piece, probe and electronics: Splash Proof, Underwater, Hydra	Two-piece, probe and electronics: Splash Proof, Underwater, Hydra	Two-piece, probe and electronics: Splash Proof, Underwater, Hydra	One-piece	Two-piece: probe and handheld
Pressure Sensor	Piezoresistive strain gauge (0.1% accuracy) RPT frequency (20m max. depth) (0.01% accuracy)			Piezoresistive strain gauge (0.1% accuracy)	
Wave Measurement	Yes	Yes	Yes	No	Yes*
Analog Output	Yes	Yes	Yes	No	No
External Sensors	Conductivity, Turbidity	Conductivity, Turbidity	Conductivity, Turbidity	N/A	N/A
Operating Temperature	-5 to 45 °C			-5 to 40 °C	-20 to 45 °C (alkaline) -20 to 50 °C (NiMH)
Storage Temperature	-10 to 60 °C			-10 to 50 °C	-22 to 70 °C
Temperature Accuracy Resolution	+/- 0.1 °C 0.01 °C				
Velocity Accuracy Resolution	+/- 1% of measured velocity, +/- 0.25cm/s 0.01 cm/s				
Compass/Tilt Heading Accuracy Heading Resolution Tilt Accuracy Tilt Resolution	+/- 2° 0.1° +/- 1° 0.1°				N/A N/A +/- 1° 0.1°
Power Input Voltage Power Consumption Battery Pack Capacity	12-24 VDC 2.5-4.0 W 1600 WH (two alkaline packs)			7-15 VDC 0.2-0.5W 200 WH (internal) 500 WH (external)	8-12 VDC 1.0 W N/A

Coastal ESTUARIES Lab RIVERS



10-MHz ADV

The SonTek 10 MHz ADV is a longtime standard for accurate, high-precision, 3-axis (3D) velocity measurements under a wide variety of flow conditions and research settings. ADV performance has been shown to compare favorably to other technologies costing ten times as much, yet still requires no post-factory calibration, can hold up to certain biofouling, excels in low flows, and allows direct calculation of turbulence parameters such as Reynolds stress.



ADVOcean/Hydra

Rugged build quality with high-end ADV performance is what the ADVOcean/Hydra is all about. Representing the ultimate solution to measuring precise 3D velocity in the most challenging environments, the ADVOcean/Hydra can be integrated with an array of external sensors for a complete oceanographic data collection system. This powerful system is able to sample both pressure and velocity at up to 25 Hz, making it the definitive solution for studying nearshore processes, waves, and other demanding environments. RPT pressure sensor is also an option.



MicroADV

Its higher acoustic frequency of 16 MHz and its 50 Hz maximum sample rate makes the MicroADV the optimal instrument not only for laboratory work but also for fine-scale field work. The MicroADV offers the smallest sampling volume of all ADVs and combined with the 5cm sampling volume distance, the system allows for sampling to occur extremely close to objects, boundaries, and even other ADV measurements with the greatest precision both spatially and temporally.



Argonaut-ADV

The Argonaut-ADV takes SonTek's renowned ADV technology and makes it user-friendly and affordable across wide-ranging environments. The lightweight, portable, housing contains both electronics and battery pack, and can be deployed cable-free. Lower power and data storage requirements make it ideal for long term deployments. Featuring Auto-velocity range scaling, the instrument automatically selects the best velocity range setting for each sample, for simple, worry free setup.



FlowTracker2

Imagine high accuracy ADV current measurements, from the palm of your hand! Highly portable and operating on standard AA batteries with no tools required, the FlowTracker2 can go just about anywhere you can. The color LCD screen displays numerous variables in real-time, GPS marks the position, and optional pressure sensor displays depth. *The 2 Hz data output will even allows collection of the parameters that can be used for wave analysis.

xylem
Let's Solve Water

SonTek, a brand of Xylem, manufactures acoustic Doppler instrumentation for water velocity measurement in oceans, rivers, lakes, harbors, canals, and estuaries. SonTek's sophisticated and proprietary technology serves as the foundation for some of the industry's most trusted data collection systems such as the hand-held CastAway-CTD, the SonTek-SL series and the HydroSurveyor bathymetric ADCP. Our employees bring a broad range of applications expertise with a strong focus on finding local solutions to the world's most challenging water problems.

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