



SOUND VELOCITY PROFILES FROM A MOVING VESSEL

The Oceanscience UnderwaySV offers vertical sound velocity (SV) profiles in minutes, without ever having to stop the survey vessel. The latest Valeport digital sound velocity measurement technology is combined with the innovative Oceanscience underway sensor deployment system to generate a revolutionary new tool for hydrographic surveying. Easy to use, portable, compact and affordable, the UnderwaySV saves survey time and promotes a better understanding of sound speed variability for optimum survey results.

VALEPORT FREEFALL SOUND VELOCITY PROFILER

The Valeport-designed sound velocity profiler is tethered to the UnderwaySV winch mounted on the survey vessel by up to 2km of high strength line. The profiler is simply released from the winch and falls through the water column at up to 5m/s until the target depth is reached. The winch is then engaged to recover the probe without any change in vessel speed throughout the deployment procedure. Upon recovery, profiles are downloaded using a Bluetooth link and the profiler is ready for re-deployment.

DEEP WATER PROFILING OPTION

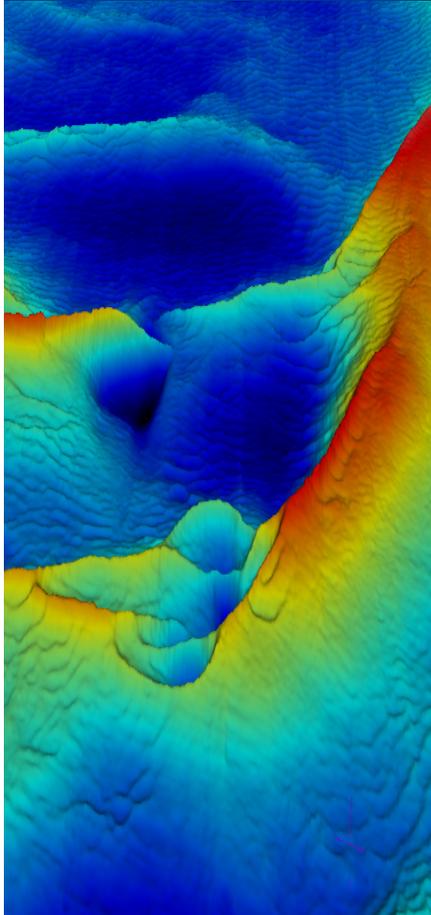
For sound speed profiles deeper than 350-450m, the UnderwaySV system can be expanded to include the tail spool rewinder. The rewinder pre-loads line from the main winch onto a special tail spool attached to the profiler. Upon deployment, line spools off the tail as the profiler drops, with casts down to 700m possible at a survey speed of 8kts.

MAXIMIZE BATHYMETRIC SURVEY DATA QUALITY

The UnderwaySV is ideal for surveys where fluctuations in temperature or freshwater intrusion may create highly complex sound speed patterns. The rapid profiling afforded by the UnderwaySV minimizes downtime and costs to quantify these sound velocity features.

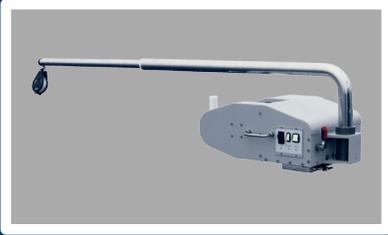
USE NO EXPENDABLE COMPONENTS

Operating costs for the UnderwaySV are minimal. The system requires little maintenance and the profiler returns to the ship after every cast, leaving no trace in the environment.



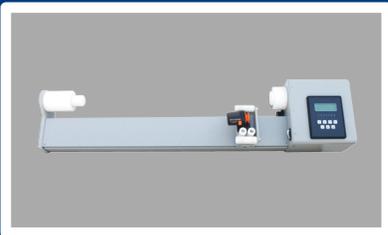
UNDERWAYSV COMPONENTS

MAIN WINCH



The UnderwaySV winch features a large capacity reel with a high-torque DC drive unit and motorized levelwind, for fast and safe probe deployment and retrieval. The reel holds up to 2000m of high strength line for maximum profiling flexibility. The main winch not only pays out line during deployment as the probe drops through the water column, but is rotated to provide line for re-spooling onto the probe tail using the rewinder for deep profiling. A compact 1500 W power supply (110/220 VAC, 50/60 Hz input) provides power to all system components.

REWINDER (FOR DEEP WATER PROFILING)



The microprocessor controlled UnderwaySV tail spool rewinder precisely loads the profiler tail spool with high strength line, typically 350 to 550m of line is added from the main winch for each deployment. The unit may be programmed for different profile depths and is automated for quick turnaround.

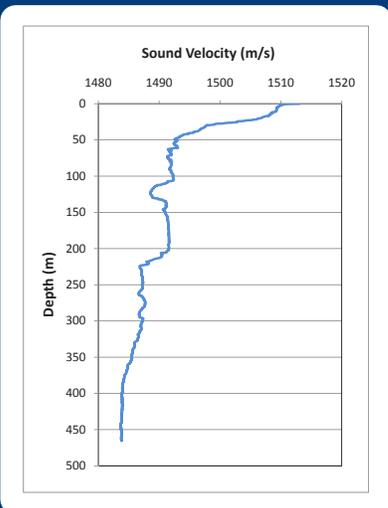
VALEPORT “RAPIDSV” PROBE SYSTEM



The Valeport RapidSV free fall sound velocity profiler is robust enough to handle underway deployment and highly accurate, to offer the best possible SV data for sound speed corrections. The profiler falls at up to 5m/s, but a sampling rate of 32Hz assures a fine vertical resolution in sound speed data. The transducer is mounted in a hydrodynamic nose section to ensure excellent water flow, and electronics are housed in a 2000m rated titanium casing. A Bluetooth module allows fast and easy data recovery as soon as the probe is out of the water.

CONFIGURATION OPTIONS

For shallow water profiling, the UnderwaySV main winch and RapidSV probe system (A) will be a cost-effective solution for underway deployments. For deep water surveys, with profiling depths of over 1000m while underway, opt for the full specification UnderwaySV including the main winch, tail spool rewinder and RapidSV profiler (B).



EXAMPLE PROFILE:
470M CAST CONDUCTED AT 10KTS

	Vessel Speed			
	0kts	4kts	8kts	10kts
A. Shallow Survey	650m	350m	250m	200m
B. Deep Survey	1100m	700m	600m	550m

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OCEANSCIENCE

The Oceanscience UnderwaySV offers high quality sound velocity profiles from moving vessels.

The compact design offers fast and deep profiling from a system that can be installed on practically any vessel.

The benefits of the UnderwaySV system are considerable. Avoid stopping the ship and suspending survey operations to collect sound speed profiles. Avoid using expendable profilers that provide poor data quality. Improve survey results with a better overall understanding of the sound velocity structure within the survey area.

Obtain data quality as good as a stationary cast with the convenience of an underway deployment.

The Series II UnderwaySV is available in several standard configurations to suit the survey environment.

**SHALLOW USV SYSTEM (800LB LINE)
FREE-FALL PROFILER - NO TAIL REWINDER**

		Depth (m)												
		150	200	250	300	350	400	450	500	550	600	650	700	
Speed (kts)	0	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green
	2	Green	Green	Green	Green	Green	Green	Green	Red	Red	Red	Red	Red	Red
	4	Green	Green	Green	Green	Green	Red							
	6	Green	Green	Green	Green	Red								
	8	Green	Green	Green	Red									
	10	Green	Green	Red										
	12	Green	Red											

**SHALLOW USV SYSTEM (500LB LINE)
FREE-FALL PROFILER - NO TAIL REWINDER**

		Depth (m)												
		300	350	400	450	500	550	600	650	700	800	900	1000	
Speed (kts)	0	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green
	2	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green
	4	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green
	6	Green	Green	Green	Green	Green	Red							
	8	Green	Green	Green	Green	Red								
	10	Green	Green	Red										
	12	Green	Red											

**DEEP USV SYSTEM (500LB LINE)
FREE-FALL PROFILER - WITH TAIL REWINDER**

		Depth (m)												
		400	450	500	550	600	650	700	800	900	1000	1100	1200	
Speed (kts)	0	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green
	2	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green
	4	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green
	6	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green
	8	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green
	10	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green
	12	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green

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rapidSV Profiler



The Valeport rapidSV profiler has been developed for the fast collection of Sound Velocity Profiles, without compromising the quality of the data.

The world's most accurate Sound Velocity sensor with virtually instantaneous response time, data acquisition rates of up to 32Hz housed in a low drag housing result in the highest quality profiles at drop rates over 5 m/s

Specifications

The rapidSV Profiler is fitted with Valeport's digital time of flight sound velocity sensor, strain gauge pressure transducer and optional PRT temperature sensor.

Sound Velocity

Range: 1375 - 1900m/s
Resolution: 0.001m/s
Accuracy: ± 0.02 m/s

Pressure

Range: 200 Bar
Resolution: 0.001% range
Accuracy: ± 0.05 % range

Temperature (Optional)

Range: -5°C to +35°C
Resolution: 0.001°C
Accuracy: ± 0.01 °C



Data Acquisition

Sample Rate	dependent on configuration		
Rate	SV+P	SVP+T	Depth Resolution
16Hz	●	●	~40cm
32Hz	●		~20cm

The optional temperature sensor gives valuable information about the physical structure of the ocean with the trade off of reducing the maximum data acquisition rate to 16 Hz.

Communications

Integral Bluetooth for configuration & data recovery

Memory

The rapidSV Profiler is fitted with a solid state non-volatile Flash memory, capable of storing over 10 million lines of data.

Electrical

Battery 1 x C cell, 1.5v alkaline or 3.6v lithium

Battery Life approx 25 hours operation (alkaline)
approx 80 hours operation (lithium)

Physical

Materials Titanium housing, Aluminium-Bronze nosepiece, polycarbonate & composite sensor components

Depth Rating 2000m

Instrument Size Sensor Body $\varnothing 50$ mm x Length 515mm

Weight ~3kg (in air)

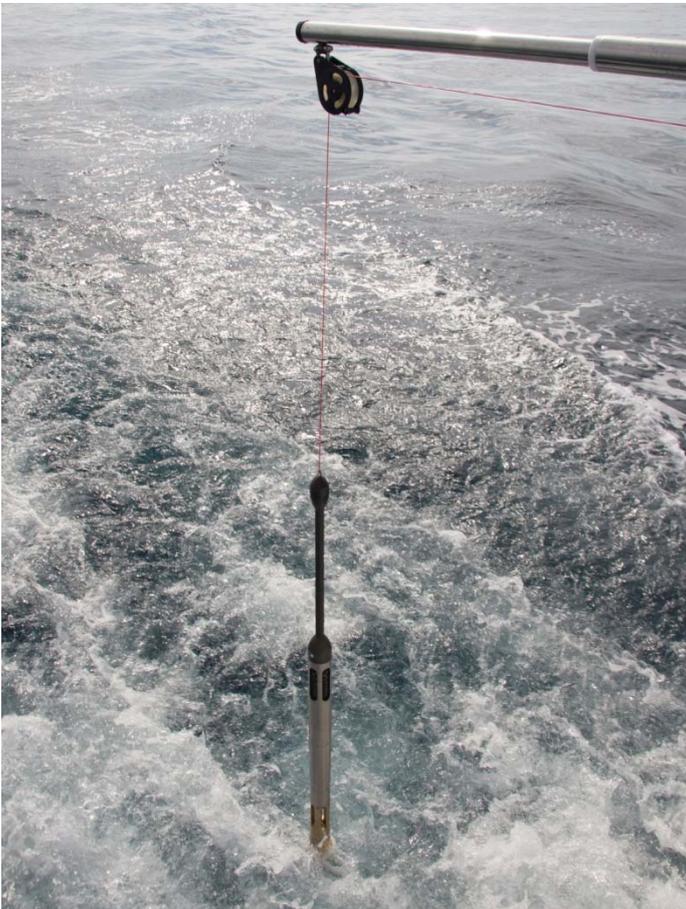
Software

System is supplied with DataLog Express Windows based PC software, for instrument setup, data extraction and display. DataLog Express is licence free

Ordering

0660021 rapidSV Profiler in titanium housing, DataLog Express software, manual and transit case.

0660022 rapidSV Profiler with Temperature in titanium housing, DataLog Express software, manual and transit case.



Datasheet Reference: rapidSV version 2A, Feb 2011