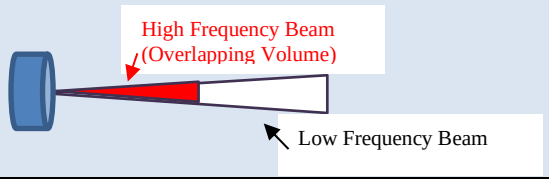
Sea PROFILER

Single and Dual Frequency ADCPs for Ocean Surveys

RTI's The Sea **PROFILER-ADCPs** employ advanced 3rd generation **ROWE ADCP** Technologies (**ADCP-3**), to simultaneously measure precision and short Range and Long Range vertical profiles of 3-Axis Currents, Echo Intensity, Plankton Size and also providing:

- Dual-Frequency Bottom Track, Current Profile, and Altitude measurements
- Multiple Frequency Piston and/or Planar Array Transducers.
- Multiple bandwidths for range/resolution tradeoffs
- 3 selectable Transmit Power levels for profiling range/ battery life tradeoffs.
- User adaptable or in-situ Multi-Mode optimization of 2 frequencies, modes, bandwidths, etc.
- Single ping data recording for flexible post deployment processing.
- Low power consumption

FEATURES	APPLICATION BENEFITS
MULTI-FREQUENCY OVERLAPPING BEAM ADCP Sequential ADCP operation at multiple acoustic frequencies	1) Synchronized sequential long profiling range at lower frequencies, plus high spatial, velocity and temporal resolution measurements over short ranges at higher frequencies in a single ADCP. 2) Dual ADCP use in short and/or long-range applications. 3) Overlapping Dual-Frequency beams for improved plankton, velocity measurement and Quality Control.
DUAL-FREQUENCY PHASED ARRAY TRANSDUCERS 2 sets of 4 inclined, overlapping dual frequency beams formed in a single flat transducer aperture	1) Smaller transducer size and flat aperture re multiple piston arrays. 2) Transverse velocity accuracy independent of VOS.
DUAL-FREQUENCY PISTON TRANSDUCERS 	1) Reduced Dual-Frequency transducer array size re multi single frequency piston transducer arrays. 2) Dual frequency vertical beam enables triple and quad frequency beams for plankton characterization.
Upward and downward looking Multi-Frequency ADCPs physically and functionally integrated in a single unit	1) High resolution near-surface/bottom boundary layer measurements in near boundary moorings
Precision inter-frequency calibrated acoustic transmit and echo reception of dual, triple or quad Frequency beams	Precise Multi-Frequency Target Strength measurement for characterization of plankton concentration and particle size.
Real-Time adaptable multi-mode optimization of multiple frequency, bin sizes, pings, transmit levels, Broadband, Narrowband and pulse-to-pulse coherent modes.	Optimized situation dependent velocity and plankton profile measurements. Optimized performance/battery life
PC Software deployment setup and data retrieval, data processing and display	1) Easy setup of synchronized multi-frequency operation 2) Performance and battery consumption predictions 3) Post deployment data processing and display
Optional high capacity data recorder	Recording of all single-ping data for post processing
Modular Plug-In Battery Packs 	Easy field conversion from DR to SC and SC battery sizes

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TECHNICAL SPECIFICATION										
Acoustic										
Frequency (kHz)	38	75	150	300	600	75	150	300	600	1200
Transducer Type	Phased Array					Piston Array				
Cup Size (in)	36	18.9	7.5	5	4.2	9	7.5	3.5	2.5	2.5
Dual Frequencies (kHz)	38/150, 75/300, 150/600					75/300, 150/600, 300/1200				
Beams	4 inclined @ 30˚, 1 @ 0˚					4 inclined @ 20˚, Optional 1 @ 0˚				
2-Way Beam Width	2.7					4.3˚	2.7˚	2.9˚	2.2˚	1.1˚
Current Profile										
Velocity range	± 20 m/s Max; ± 5 m/s Typical									
Long-term Accuracy	±0.2 % ± 0.2 mm/s									
Broad Band Precision	4 cm/s @ Standard Depth Cell									
Narrow Band Precision	20 cm/s @ Standard Depth Cell									
Broad Band Range (m)	1100	700	350	180	100	490	375	100	40	20
Narrow Band Range (m)	1400	1000	450	250	120	735	470	150	70	30
# Cells	Up to 200									
Cell Size (m)	8-64	4-32	2-16	1-8	0.5-4	4-32	2-16	1-8	0.5-4	0.1-2
Max Sampling Rate (Hz)	0.5	1.0	2.0	4.0	6.0	1.0	3.0	5.0	10	20
Echo Intensity Profile										
Amplitude Resolution	0.1 dB									
Amplitude Accuracy	± 0.5 dB									
Dynamic range	80 dB									
Altitude Accuracy	± 1 %									
Data Communications										
Serial	RS-232, RS42 or RS-485 serial @ 1200 - 921600 baud									
Ethernet	100 Base-T									
Sensors										
Water Temperature	-5 to 40°C, ± 0.2°									
Pressure Range/Accuracy	Optional 100, 200, 500, 1000, 2000, 5000, 10000m/0.1% FS									
Compass: Accuracy/Resolution	±2˚/.01˚									
Tilt: Accuracy/Range/Resolution	±0.2˚/30˚//0.05									
Power										
Voltage Form	12 – 48 VDC									
Average Power (5 % duty cycle)/ Peak Current	70 W / 16 A	50 W / 16 A	40 W / 16 A	20 W / 5 A	15 W / 3 A	50 W / 5A	40 W / 5 A	20 W / 5 A	15 W / 3 A	10 W / 3A
Batteries										
Internal	1 – 4 Packs Alkaline @ 440 WHr/pack									
External Canister	2 – 8 Packs Alkaline @ 440 WHr/pack									
Deployment Duration	See Deployment Software									
Data Recording Capacity	64 GB									
Physical										
Materials	Delrin, Aluminum, or Titanium									
Dimensions	See Tables below and Drawings									
Environmental:										
Operating Temperature	-5 to 50° C									
Storage Temperature	-30 to 70° C									
Depth Rating	200, 1000, 3000, or 6000 m									
Built-In-Test										
End-to End Continuous Monitor	Transmit Power, Transducer Impedance, Operating Voltages, Receiver and Processor Operation,									
Fault Diagnostics	Fault Localization to Plug-in Replaceable Module									

MECHANICAL INFORMATION

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