Multiple-Frequency River Q4 ADCPs

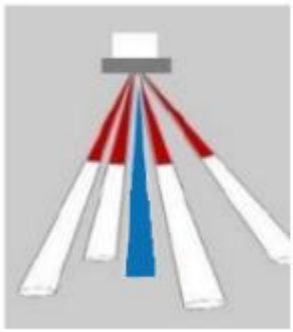
NEW

for
River/Channel Flow and Sediment Discharge

RTI's Multi-Frequency **River Q4** ADCPs employ advanced the new 4rd generation RTI ADCP Technologies providing:

- SINGLE PING Dual-Frequency Bottom Track, Current Profile, and Altitude measurements
- Quad or Triple Target Strength measurements for Sediment Concentration and Grain Size estimation

together providing measurement of calculation of both River Flow and Sediment Discharge with ease of use with a trimaran boat, ease of use software, wireless and GPS/GNSS integrated system. Four system configurations are available.



MULTI-FREQUENCY RIVER SURVEYOR SYSTEMS			
	RQ4-S1	RQ4-S2	RQ4-S3/S4
	600 kHz	600 kHz	300 kHz
	2000 kHz	2000 kHz	1000 kHz
	300 kHz	300 kHz	150 kHz

1. Housing and Head is white in color. Transducer beam is red in color.
2. RQ4-S3 and RQ4-S4 have same acoustic configurations but different mechanical head and housings respectively.

FEATURES

RTI`s Patented Multi-Frequency ADCP with overlapping inclined Dual-Frequency 4-beam sets.

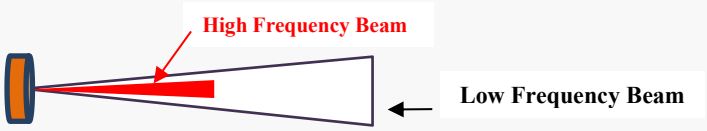


Illustration of dual beamwidths from single piston transducer. All 4 slant beams can be operated at 2 independent frequencies resulting in two independent measurements over the same ensonified volume.

APPLICATION BENEFITS

- 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.
- Accurate low frequency Bottom Track in high sediment "moving bottoms" conditions.
- Dual frequency ADCP beams use in shallow and deep rivers
- Overlapping beams improved sediment and velocity measurement and data Quality Control
- Small Size, High performance with state of the art electronics.

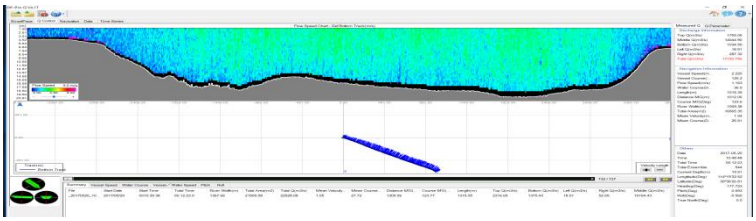
Precision inter-frequency calibrated acoustic transmit and echo reception of Triple or Quad-Frequency beams.

- Precise Multi-Frequency Target Strength measurement for characterization of sediment concentration and grain size.

Real-Time automatic multi-mode optimization of multiple frequency, bin sizes, transmit levels, Broadband, Narrowband and pulse-to-pulse coherent modes.

- Automatic mode adaption to River and Channel depth, velocity and sediment conditions.

DP-Pro Q software



- Real time GPS integration, processing and display of velocity profiles, Discharge, navigation and data quality.
- Real time flow discharge calculation.
- Internal ADCP recording of all raw and processed echo data for post deployment review.

Optional trimaran with integrated radios and DGPS or RTK

Dimensions:

Length : 120 cm
Width : 85 cm
Height : 39 cm

- Complete river discharge measurement system with options
- Blue tooth radio - range 200 m
- Spread Spectrum radio - range > 800 m
- Integration with differential Multi band GNSS or RTK
- Differential GNSS receiver supports GPS, Galileo GLONASS and BeiDOu satellite systems.
- 3 Plastic Hulls and mounting hardware

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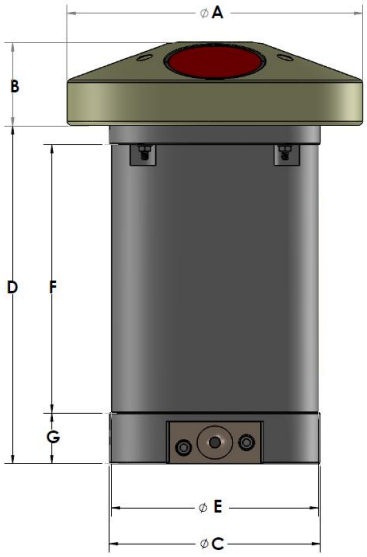
SPECIFICATIONS

ACOUSTIC CONFIGURATIONS	RS1			RS2			RS3/ RS4[1]		
Frequency (kHz)	600	2000	300	600	2000	300	300	1000	150
# Beams	4	4	1	4	4	1	4	4	1
Beam Angles	± 20˚	± 20˚	0˚	± 20˚	± 20˚	0˚	± 20˚	± 20˚	0˚
2-Way Beamwidth	3.2˚	1˚	12.3˚	2.1˚	0.6 ˚	6.3˚	2.9˚	0.82˚	8.5˚
CURRENT PROFILE									
Operation Mode	Narrow Band, Broadband , Pulse-Pulse Coherent, Auto mode, Manual mode								
Velocity Range	±20 m/s Max; ±5 m/s Typical								
Accuracy	3.5 cm/s @ standard depth cell size								
Resolution	0.1 mm/s								
Number of cells	Up to 300 (10 cm minimum to 16m maximum)								
Data output rate	5 to 10 Hz for 300 Hz, 600 kHz, 1000 kHz, 2000 kHz (will be 30 Hz for shallow depth)								
MAXIMUM RANGE									
Broad Band Profiling Range (m)	40	7	[2]N/A	45	9.5	[2]N/A	120	22	[2]N/A
Standard depth cell size (m)	2	0.5		2	0.5		4	1	
Narrowband Single Ping Precision	20 cm/s @ standard depth cell size								
Broadband Single Ping Precision	3.5 cm/s @ standard depth cell size								
Long Term Accuracy	Up to ± 0.25 % of velocity measured relative to ADCP								
ECHO INTENSITY PROFILE									
Amplitude Dynamic Range	80 dB								
Amplitude Accuracy	± 2 dB								
Altitude Accuracy	± 1 % (with uniform temperature and salinity)								
BOTTOM TRACKING									
Maximum Range (m)	100	10	180	120	13	210	300	50	400
Long Term Accuracy (standard)	[3] ± 1.0 %, ± 0.1 mm/s								
Single-Ping Precision	± 0.4 cm/s @ 3 m/s								
Maximum Bottom Track Speed	15 m/s								
Depth Measurement Accuracy	± 1.0 %								
Depth Measurement Resolution	0.1 mm for single ping								
SENSORS									
Compass (6 axis IMU)	O – 360 ˚; Heading Accuracy - ± 1˚/±0.01˚								
Tilt(Accuracy/Resolution)	Roll ± 180˚ and Pitch ± 90˚ ± 0.2˚ ± 0.01								
Water Temperature	-5 to 50˚C ± 0.2˚C; Accuracy ± 0.2˚ C, Resolution ± 0.01˚C								
Pressure	± 0.1% Full Scale (*only for RS4 configuration)								
INPUT POWER	10 - 18 VDC @ 3 amps max., Can also operate with Rechargeable battery - 12 VDC/8AH with Charger; > 40 hour continuous operation								
Data Communications	RS-232 (1200 -115200 baud), RS485(1200 -921600 baud) **OR** RS-422 serial (1200 -115200 baud)								
Optional Data Storage	Up to 512 GB								
I/O Cable Length	5 m and 25 m								
Operating/Storage Temp	-5 to 50˚C/ -30 to 70˚C								
FLOATS	Three hulls (trimaran) made of Polyethylene Dimensions: Length 120 cm, Width 85 cm and Height 39 cm								

1 RS3 and RS4 have same acoustic configurations but different mechanical head and housings
2 Not applicable
3 For non-export control applications
** Tested at conditions - Speed of sound - 1494 m/s, Water temp - 24 °C and Salinity - 0 ppt;*



MECHANICAL DETAILS

MODEL NUMBER	A DIAMETER	B THICKNESS	C DIAMETER	D HEIGHT	E DIAMETER	F HEIGHT	G HEIGHT
RS-1	5.0”/127	1.7”/43	5.0”/127	8.0”/203	4.9”/124	6.35”/161	1.2”/30
RS-2	7.0”/178	2.0”/51	5.0”/127	8.0”/203	4.9”/124	6.35”/161	1.2”/30
RS-3	9.7”/246	3.23”/82	5.0”/127	8.0”/203	4.9”/124	6.35”/161	1.2”/30
RS-4	9.7”/246	2.80”/71	7.95”/202	5.5”/138	7.1”/180	4.55”/116	0.5”/13

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