

Acoustic Doppler Current Profilers

An Acoustic Doppler Current Profiler is referred to by the acronym ADCP, however, the name ADCP is a trademark of RD Instruments. Other manufacturers, therefore, use different trademark names. Acoustic Doppler Current Profiler instruments are used to measure the speed of water across an entire water column and also at equal intervals over the water column.

Generally the instrument is mounted vertically - facing upwards or downwards. However, the technology makes it possible for manufacturers to cater to different applications. For instance, the instrument can also be mounted horizontally, to measure the current profile from one side to the other side of a waterway. A number of instruments are particularly suitable for vessel (hull) mount. When interfaced to surface positioning systems you can take constant current profiles from the water column when sailing.

The various applications require the manufacturer to develop techniques to adhere to specific circumstances which the instrument has to measure. For instance, for vessel mount systems, the instrument should be capable of tracking the bottom profile (bottom track). Instruments equipped with surface tracking devices are able to accurately measure the currents in surface layers even when the water level changes due for example, to tide. The technology also has resulted in further development of algorithms which allow computing wave spectrum data from Current Profiler data.

Due to the typical applications and hence their specifications, a direct comparison is difficult to make between the available current profilers. In general, all instruments are able to measure small scale current at various distances up to 800m from the instrument. Obviously the systems which operate at low frequencies provide the biggest range while high frequency systems yield more precise data.

Incorporating additional sensors such as Turbidity, Oxygen, etc. makes the instrument very valuable for applications where environmental data at the instrument location is to be collected as well.

It is up to you to find out which system suits your application requirements best .

Hydro INTERNATIONAL is much indebted to all the manufacturers who contributed to our Product Survey and answered the many questions about their systems. ■

Manufacturer	Anderaa
Name of Product	RDGP 600
Year of initial development	2003
General specifications	
L/W/H (cm)	16.0X58.0
Housing material	Titan/POM/Osnisil
Weight in air (kg)	19.0
Weight in water (kg)	12.0
Operating temperature (°C)	-5...40
Operating power voltage (V)	7...14
Max operating depth (m)	300
Max battery lifetime (days)	10 year
Typical deployment period	60 days with internal battery, 2 year with external
Default Cell Size (m)	2
Max battery lifetime (days) with: 10 minute profile interval, 1 cm/sec standard deviation, default cell size	30 (use of 35 Ah internal battery)
True Bottom Tracking Capability (Speed of boat and Range to Bottom)	N
Doppler Current Profiler	
Center working frequency (kHz)	606,7
Typical Profiling range (m)	100
Number of beams	4
Transducer slant angle (deg)	25
Maximum Number of cells per beam	100
Minimum blanking distance (m)	1
Ping rate	100 (600)
Minimum vertical resolution (m)	0.1
Minimum/Maximum cell size (m)	1 (10)
Cell overlap (%)	0 (90)
Velocity range (cm/sec)	0 (500)
Horizontal velocity accuracy (cm/sec)	0.5
Vertical velocity accuracy (cm/sec)	1,0
Surface reference capability? (yes/no)	Y
Surface current measurement? (yes/no)	Y
Measurement and compensation for speed-of-sound? (yes/no)	Y
Processing model used e.g. ARMA parametric model	ARMA
Raw data in real dimensions? (yes/no)	N
Single ping rejection of outliers	N
Lost data at far boundary	N
Single Ping Horizontal velocity precision for default cell size (cm/sec)	4
Single Ping Vertical velocity precision for default cell size (cm/sec)	2
Standard Sensors	
Temperature yes/no	Y
Temp range (°C)	-3...37 (selectable)
Temp accuracy (°C)	±0.05
Tilt sensor yes/no	Y
Tilt range (deg)	±45
Tilt accuracy (deg)	±1,5
Compass type	Magnetic field
Heading accuracy (deg)	±4
Deployment method	
Moving vessel (yes/no)	N
Bottom mount (yes/no)	Y
In-line string mooring (yes/no)	Y
Data Buoy (yes/no)	Y
Marine structures (yes/no)	Y
Auxilliary Sensors	
Temperature sensor? (yes/no)	Y
Pressure sensor? (yes/no)	Y
Conductivity sensor? (yes/no)	Y
Oxygen sensor? (yes/no)	Y
Turbidity sensor? (yes/no)	Y
Tide measurement capability? (yes/no)	Y
Wave measurement capability? (yes/no)	Y
Other sensors	<input type="checkbox"/>
Other specifications	
Real-time interfacing (eg RS232, RS422, RS485)	RS485, RS 422, PDC4
External power range (V)	7...14
Max cable length and baudrate	1400, 38k
External battery container for extended deployment period	Y
Type and Number of memory slots	MMC,CF; 2 slots
Name of data acquisition software	Window CE touch screen
Name of data processing software	RDGP Studio
Application	
What is the typical application for your system (max 30 words)	Operational oceanography, harbours, water quality assessment, scientific long term observations, fish farming

N/A Not Applicable
 No information received



Link Quest	Link Quest	Link Quest	Link Quest	Link Quest
FlowQuest 75 Acoustic Current Profiler	FlowQuest 150 Acoustic Current Profiler	FlowQuest 300 Acoustic Current Profiler	FlowQuest 600 Acoustic Current Profiler	FlowQuest 1000 Acoustic Current Profiler
2006	2006	2005	2006	2006
43/58/58	24/40/40	37/20/20	37/20/20	37/20/20
Anodized Aluminium	Anodized Aluminium	Plastics and Anodized Aluminium	Plastics and Anodized Aluminium	Plastics and Anodized Aluminium
40	23	16	16	16
26	14	7	7	7
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12...26	12...26	12...26	12...26	12...26
6000	6000	6000	6000	6000
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2 to 24 months	2 to 24 months	2 to 24 months	2 to 24 months	2 to 24 months
8m	4m	2m	1m	0.5m
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	Y	Y	Y	Y
75	150	300	600	1000
900	500	230	100	40
4	4	4	4	4
22	22	22	22	22
170	170	170	170	170
3.8m	2.8m	1.4m	0.7m	0.4m
1Hz	2Hz	2Hz	2Hz	5Hz
4m	2m	1m	0.5m	0.25m
4m / 32m	2m / 16m	1m / 8m	0.5m / 4m	0.25m / 2m
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
+/- 1000 cm/second	+/- 1000cm/second	+/- 1000cm/second	+/- 1000cm/second	+/- 1000cm/second
1% +/- 5mm/s	1% +/- 5mm/s	0.5% +/- 5mm/s	0.25% +/- 2.5mm/s	0.25% +/- 2.5mm/s
1% +/- 5mm/s	1% +/- 5mm/s	0.5% +/- 5mm/s	0.25% +/- 2.5mm/s	0.25% +/- 2.5mm/s
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Y	Y	Y	Y	Y
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Y	Y	Y	Y	Y
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Y	Y	Y	Y	Y
-5...45	-5...45	-5...45	-5...45	-5...45
0,4	0,4	0,4	0,4	0,4
Y	Y	Y	Y	Y
+/- 15	+/- 15	+/- 15	+/- 15	+/- 15
0,5	0,5	0,5	0,5	0,5
Fluxgate	Fluxgate	Fluxgate	Fluxgate	Fluxgate
2	2	2	2	2
Y	Y	Y	Y	Y
Y	Y	Y	Y	Y
Y	Y	Y	Y	Y
Y	Y	Y	Y	Y
Y	Y	Y	Y	Y
Y	Y	Y	Y	Y
Y	Y	Y	Y	Y
Y	Y	Y	Y	Y
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Y	Y	Y	Y	Y
22...26 V	22...26 V	22...26 V	22...26 V	22...26 V
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Y	Y	Y	Y	Y
Compact flash card	Compact flash card	Compact flash card	Compact flash card	Compact flash card
FlowQuest Studio	FlowQuest Studio	FlowQuest Studio	FlowQuest Studio	FlowQuest Studio
FlowQuest Studio	FlowQuest Studio	FlowQuest Studio	FlowQuest Studio	FlowQuest Studio
Current measurement in ultra deep ocean	Current measurement in deep ocean	Measure currents and flows in oceans, harbors, lakes and rivers	Measure currents and flows in oceans, harbors, lakes and rivers. Directional wave and discharge measurement	Measure currents and flows in oceans, harbors, lakes and rivers. Directional wave and discharge measurement



Product Survey

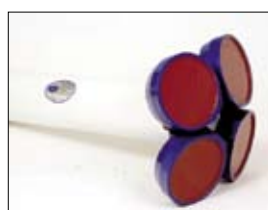
Manufacturer	Nortek	Nortek	Nortek
Name of Product	Aquadopp Profiler	AWAC	Continental
Year of initial development	2001	2003	2003
General specifications			
L/W/H (cm)	L=55cm, D=7.5cm	H=19cm, D=19 cm	22cm, D=19cm
Housing material	POM and epoxy	POM	POM
Weight in air (kg)	2.4 - 3.7kg	<input type="checkbox"/>	18.4kg
Weight in water (kg)	Neutrally buoyant	<input type="checkbox"/>	13 kg
Operating temperature (°C)	-5...+35	-4...+ 40	-5...35
Operating power voltage (V)	9...16 VDC	9...16 VDC	12...18 VDC
Max operating depth (m)	300m*	500 m*	500m
Max battery lifetime (days)	300 days**	<input type="checkbox"/>	150 days*
Typical deployment period	Three months	Three months	Three months
Default Cell Size (m)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Max battery lifetime (days) with: 10 minute profile interval, 1 cm/sec standard deviation, default cell size	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
True Bottom Tracking Capability (Speed of boat and Range to Bottom)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Doppler Current Profiler			
Center working frequency (kHz)	2, 1, 0.6, and 0.4 MHz	1 MHz or 600 kHz	190 and 470 kHz
Typical Profiling range (m)	5, 25, 40, and 80 m	25 or 50 meters	250 and 100 m
Number of beams	3	4	3
Transducer slant angle (deg)	25	25	25
Maximum Number of cells per beam	128	128	128
Minimum blanking distance (m)	5, 20, 30, 100cm	<input type="checkbox"/>	2m and 1m
Ping rate	27 Hz max.	<input type="checkbox"/>	2 Hz
Minimum vertical resolution (m)	10, 30, 50, 100cm	<input type="checkbox"/>	2m and 1m
Minimum/Maximum cell size (m)	0.1/2m, 0.3/4m, 0.5/8m, 1/8m	<input type="checkbox"/>	2/20m and 1/10m
Cell overlap (%)	Varies	Varies	Varies
Velocity range (cm/sec)	0 - 10 m/s	0 - 10 m/s	0 - 10 m/s
Horizontal velocity accuracy (cm/sec)	Better than 1 cm/s	Better than 1 cm/s	Better than 1 cm/s
Vertical velocity accuracy (cm/sec)	Better than 1 cm/s	Better than 1 cm/s	Better than 1 cm/s
Surface reference capability? (yes/no)	N	N	N
Surface current measurement? (yes/no)	N	N	N
Measurement and compensation for speed-of-sound? (yes/no)	Y	Y	Y
Processing model used e.g. ARMA parametric model	N/A	N/A	N/A
Raw data in real dimensions? (yes/no)	Y	Y	Y
Single ping rejection of outliers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Lost data at far boundary	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Single Ping Horizontal velocity precision for default cell size (cm/sec)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Single Ping Vertical velocity precision for default cell size (cm/sec)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Standard Sensors			
Temperature yes/no	Y	Y	Y
Temp range (°C)	-4...+30	-4...+40	-4...+30
Temp accuracy (°C)	0.1	0.1	0.1
Tilt sensor yes/no	Yes	Yes	Yes
Tilt range (deg)	0 - 40	0 - 40	0 - 40
Tilt accuracy (deg)	0.2	0.2	0.2
Compass type	Fluxgate	Fluxgate	Fluxgate
Heading accuracy (deg)	2	2	2
Deployment method			
Moving vessel (yes/no)	N	Y	N
Bottom mount (yes/no)	Y	Y	Y
In-line string mooring (yes/no)	Y	Y	Y
Data Buoy (yes/no)	Y	Y	Y
Marine structures (yes/no)	Y	Y	Y
Auxiliary Sensors			
Temperature sensor? (yes/no)	Y	Y	Y
Pressure sensor? (yes/no)	Y	Y	Y
Conductivity sensor? (yes/no)	Y	Y	Y
Oxygen sensor? (yes/no)	Y	Y	Y
Turbidity sensor? (yes/no)	Y	Y	Y
Tide measurement capability? (yes/no)	Y	Y	Y
Wave measurement capability? (yes/no)	Y	Y	Y
Other sensors	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other specifications			
Real-time interfacing (eg RS232, RS422, RS485)	Y	Y	Y
External power range (V)	9 - 48 VDC, 220/110 VAC	9 - 48 VDC, 220/110 VAC	9 - 48 VDC, 220/110 VAC
Max cable length and baudrate	4km at 9,600 baud	4km at 9,600 baud	4km at 9,600 baud
External battery container for extended deployment period	Y	Y	Y
Type and Number of memory slots	Proprietary memory	Proprietary memory	Proprietary memory
Name of data acquisition software	AquaPro	AWAC	Continental
Name of data processing software	Surge	Storm	Surge
Application			
What is the typical application for your system (max 30 words)	Coastal and near-shore current profile measurements, often in combination with wave measurements (PUV). Physical dimensions and weight make it an ideal tool for such applications.	Scientific studies of highly accurate wave and current profiles combined, transient wave measurements, online monitoring of waves and currents in harbours, vessel-mounted applications.	Continental shelf current profile measurements. The Continental bridges the gap between near-shore and long range profilers.
	* The 2 MHz sensor also comes in a 6,000m version ** Assuming 10 minutes between measurements	* For wave measurements the maximum operating depth is 60 meters	

Notes

- [1] WINSC,VMDAS
3rd Party:VISEA, NAVIPAC, UHDAS, HYPACK, QUINSY, SEDVIEW
- [2] WINADCR,VMDAS
3rd Party:VISEA, NAVIPAC, UHDAS, HYPACK, QUINSY, SEDVIEW
- [3] WINSC,VMDAS, WAVESMON, WINRIVERII
3rd Party:VISEA, NAVIPAC, UHDAS, HYPACK, QUINSY, SEDVIEW
- [4] WINADCR,VMDAS, WAVESMON, WINRIVERII
3rd Party:VISEA, NAVIPAC, CODAS, HYPACK, QUINSY, SEDVIEW

N/A Not Applicable
 No information received

Nortek	RDI Teledyne	RDI Teledyne	RDI Teledyne	RDI Teledyne
HR Profiler	WorkHorse Long Ranger 75kHz (WHS150)	WorkHorse Quarter Master 150kHz (WHS150)	WorkHorse Sentinel 300kHz (WHS300)	WorkHorse Sentinel 1200kHz (WHS1200)/600kHz (WHS600)
2007	1997	2000	1995	1995
L=55cm, D=7.5cm	102cm (L), 202cm P-Case(W), 550cm XDCCR(W)	102cm (L), 202cm P-Case(W), 550cm XDCCR(W)	41cm(L), 23cm(W)	41cm(L), 23cm(W)
POM and epoxy	Aluminum	Aluminum	200m Plastic, >500m Aluminum	200m Plastic, >500m Aluminum
2.4kg	86kg	85kg	13kg (Plastic), 27kg (aluminum)	13kg (Plastic), 27kg (aluminum)
Neutrally buoyant	55kg	48kg	4.5kg (Plastic), 9.5kg (aluminum)	4.5kg (Plastic), 9.5kg (aluminum)
-5...+35	-5...+45	-5...+45	-5...+45	-5...+45
9...16 VDC	20...50VDC	20...50VDC	20...50VDC	20...50VDC
300m	3000m	6000m	6000m	6000m
2 days 1)	365 days shelf + 730 days deployed	365 days shelf + 730 days deployed	365 days shelf + 730 days deployed	365 days shelf + 730 days deployed
1-2 days	30-400 days	30-400 days	30-400 days	30-400 days
0.05 2)	16m	8m	4m	1m/2m
500 3)	205 days	280 days	130 days	365/260 days
Cannot be used with BT	N	Y	Y	Y
2 MHz	76.8kHz	153.6kHz	307.2kHz	1,228.8kHz/614.4kHz
1 - 2m	500-800m	250-375m	100-160m	15-20m/50-70m
3	4	4	4	4
25	20	20	20	20
128	128	128	128	128
0.05m	7m	3.5m	0.8m	0.1m/0.5m
27Hz	0.5hz	1Hz	2Hz	10Hz/3Hz
0.01m	4m	2m	1m	0.1m/0.25m
0.01/0.15m	4-32m	2-16m	1-8m	0.1-2m/0.25-4m
Varies	<25%	<25%	<25%	<25%
0 - 100	+/-1000	+/-1000	+/-1000	+/-1000
Better than 1cm/s	+/-0.5cm/s	+/-0.5cm/s	+/-0.5cm/s	+/-0.25cm/s
Better than 1cm/s	+/-0.18cm/s	+/-0.18cm/s	+/-0.18cm/s	+/-0.09cm/s
N	Y	Y	Y	Y
N	Y	Y	Y	Y
Y	Y	Y	Y	Y
N/A	Broad Bandwidth Processing	Broad Bandwidth Processing	Broad Bandwidth Processing	Broad Bandwidth Processing
Y	Y	Y	Y	Y
N/A	Y (Error Vel, Fish Rejection, Correlation, Signal Level)	Y (Error Vel, Fish Rejection, Correlation, Signal Level)	Y (Error Vel, Fish Rejection, Correlation, Signal Level)	Y (Error Vel, Fish Rejection, Correlation, Signal Level)
□	6% of range	6% of range	6% of range	6% of range
4)	3,6cm/s	3,6cm/s	3,6cm/s	3,6cm/s
4)	1,31cm/s	1,31cm/s	1,31cm/s	1,31cm/s
Yes	Y	Y	Y	Y
-4...+30	-5...+45	-5...+45	-5...+45	-5...+45
0.1	+/-0.4	+/-0.4	+/-0.4	+/-0.4
Y	Y	Y	Y	Y
0 - 40	+/-20, +/-45 optional	+/-20, +/-45 optional	+/-20, +/-45 optional	+/-20, +/-45 optional
0.2	+/-0.5	+/-0.5	+/-0.5	+/-0.5
Fluxgate	Fluxgate	Fluxgate	Fluxgate	Fluxgate
2	<+/-1.0 with field calibration	<+/-1.0 with field calibration	<+/-1.0 with field calibration	<+/-1.0 with field calibration
N	Y	Y	Yes	Y
Y	Y	Y	Y	Y
N	Y	Y	Y	Y
N	Y	Y	Y	Y
Y	Y	Y	Y	Y
Y	Y	Y	Y	Y
Y	N	N	N	N
Y	N	N	N	N
Y	Y	Y	Y	Y
N	N	N	Y	Y
□	Speed of Sound	Speed of Sound	Speed of Sound	Speed of Sound
Y	RS232/RS422/Inductive Modem/ Acoustic Modem	RS232/RS422/Inductive Modem/ Acoustic Modem	RS232/RS422/Inductive Modem/ Acoustic Modem	RS232/RS422/Inductive Modem/ Acoustic Modem
9 - 48 VDC, 220/110 VAC	20 to 50	20 to 50	20 to 50	20 to 50
4km at 9,600 baud	6km, 1200 baud	6km, 1200 baud	6km, 1200 baud	6km, 1200 baud
Y	Y	Y	Y	Y
Proprietary memory	2 PCMCIA Slots, 4GBytes Total	2 PCMCIA Slots, 4GBytes Total	2 PCMCIA Slots, 4GBytes Total	2 PCMCIA Slots, 4GBytes Total
AquaPro HR	[1]	[1]	[3]	[3]
Surge	[2]	[2]	[4]	[4]
Studies of detailed boundary layer velocity profiles and measurements of very low flow velocities	Physical & Biological Oceanography, Coastal Engineering, Hydrology, Fisheries, Pipe & Cable Laying, Offshore Oil, Marine Renewables, Observatories, Plume Tracking, Transport & Discharge, Model Calibration	Physical & Biological Oceanography, Coastal Engineering, Hydrology, Fisheries, Ports, Pipe & Cable Laying, Offshore Oil, Marine Renewables, Observatories, Seismic Operations, Plume Tracking, Transport & Discharge, Model Calibration	Physical & Biological Oceanography, Coastal Engineering, Hydrology, Fisheries, Ports, Pipe & Cable Laying, Offshore Oil, Marine Renewables, Observatories, Seismic Operations, Plume Tracking, Transport & Discharge, Model Calibration	Physical & Biological Oceanography, Coastal Engineering, Hydrology, Fisheries, Ports, Pipe & Cable Laying, Offshore Oil, Marine Renewables, Observatories, Seismic Operations, Plume Tracking, Transport & Discharge, Model Calibration



Manufacturer	RDI Teledyne	SonTek	SonTek
Name of Product	Doppler Volume Sampler (DVS)	ADP	XR
Year of initial development	2006	1994	1998
General specifications			
L/W/H (cm)	70cm(L), 10cm(W)	Frequency-dependant	15/15/18
Housing material	Fiber Wound/Plastic	Delrin, Aluminum	Delrin
Weight in air (kg)	8kg	Frequency-dependant	2,5
Weight in water (kg)	3.5kg	Frequency-dependant	-0,3
Operating temperature (°C)	-5...+40	-5...45	-5...45
Operating power voltage (V)	10.6...28VDC	12-24	12-24
Max operating depth (m)	6000m	6000	200
Max battery lifetime (days)	365 days shelf + 730 days deployed	700+	400+
Typical deployment period	30-400 days	1-24 months	1-12 months
Default Cell Size (m)	0.5m	0.25 - 2	Frequency dependant
Max battery lifetime (days) with: 10 minute profile interval, 1 cm/sec standard deviation, default cell size	365 days	200	220
True Bottom Tracking Capability (Speed of boat and Range to Bottom)	N	10m/s; up to 200 m	<input type="checkbox"/>
Doppler Current Profiler			
Center working frequency (kHz)	2.457.6kHz	250-3000	750-3000
Typical Profiling range (m)	3-5m	5-180	5-40
Number of beams	4	3 or 4	3
Transducer slant angle (deg)	45	25-30	25
Maximum Number of cells per beam	5	128	10
Minimum blanking distance (m)	0.02m	0,25	0,25
Ping rate	50Hz	Variable	1Hz
Minimum vertical resolution (m)	0.03m	0,15	0,2
Minimum/Maximum cell size (m)	0.03-5m	0.15-2	0,2
Cell overlap (%)	<25%	50	50
Velocity range (cm/sec)	+/-600	1000	600
Horizontal velocity accuracy (cm/sec)	+/-0.5cm/s	0,5	0,5
Vertical velocity accuracy (cm/sec)	+/-0.5cm/s	0,5	0,5
Surface reference capability? (yes/no)	N	N	Y
Surface current measurement? (yes/no)	N	Y	Y
Measurement and compensation for speed-of-sound? (yes/no)	Y	Y	Y
Processing model used e.g.ARMA parametric model	Broad Bandwidth Processing	<input type="checkbox"/>	<input type="checkbox"/>
Raw data in real dimensions? (yes/no)	Y	Y	Y
Single ping rejection of outliers	Y (Error Vel, Fish Rejection, Correlation, Signal Level)	N	N
Lost data at far boundary	30% of range	<5%	<5%
Single Ping Horizontal velocity precision for default cell size (cm/sec)	3,5cm/s	<input type="checkbox"/>	<input type="checkbox"/>
Single Ping Vertical velocity precision for default cell size (cm/sec)	3,5cm/s	<input type="checkbox"/>	<input type="checkbox"/>
Standard Sensors			
Temperature yes/no	Y	Y	Y
Temp range (°C)	-5...+35	-5...45	-5...45
Temp accuracy (°C)	+/-0.005	0,1	0,1
Tilt sensor yes/no	Y	Y	Y
Tilt range (deg)	-70...+70	60	60
Tilt accuracy (deg)	+/-1.0	1	1
Compass type	Fluxgate	Proprietary fluxgate	Proprietary fluxgate
Heading accuracy (deg)	<+/-1.0 with field calibration	2	2
Deployment method			
Moving vessel (yes/no)	N	Y	N
Bottom mount (yes/no)	Y	Y	Y
In-line string mooring (yes/no)	Y	Y	N
Data Buoy (yes/no)	Y	Y	Y
Marine structures (yes/no)	Y	Y	Y
Auxilliary Sensors			
Temperature sensor? (yes/no)	Y	Y	Y
Pressure sensor? (yes/no)	Y	Y	Y
Conductivity sensor? (yes/no)	Y	Y	Y
Oxygen sensor? (yes/no)	N	N	N
Turbidity sensor? (yes/no)	N	Y	N
Tide measurement capability? (yes/no)	N	Y	Y
Wave measurement capability? (yes/no)	N	Y	Y
Other sensors	None	Frequency-based Pressure	<input type="checkbox"/>
Other specifications			
Real-time interfacing (eg RS232, RS422, RS485)	RS232/Inductive Modem	RS-232/422	RS-232/422, SDI-12, ModBus, Analog (current or voltage)
External power range (V)	10.6 to 28VDC	110-240 AC	110-240 AC
Max cable length and baudrate	6km, 1200 baud	>1000m; 115200	>1000m; 115200
External battery container for extended deployment period	Y	Y	Y
Type and Number of memory slots	16Mbytes Flash	CF; 1	On-board 4MB
Name of data acquisition software	DVS (PLAN)	Variable, dependant on application	Variable, dependant on application
Name of data processing software	WINADCP	ViewADP	ViewArgonaut
Application			
What is the typical application for your system (max 30 words)	Physical & Biological Oceanography, Coastal Engineering, Hydrology, Fisheries, Ports, Offshore Oil, Marine Renewables, Observatories, Plume Tracking, Transport, Model Calibration	Coastal and deep water oceanography, directional waves, port and harbors, underway coastal surveying, river discharge, sediment transport	Coastal water oceanography, waves, port and harbors, fisheries monitoring and assesment, Low-cost applications

N/A Not Applicable
 No information received

SonTek	Son Tek	SonTek
ADV	PC-ADP	SL
1992	2001	1997
Frequency-dependant	10/10/9 (head)	Frequency-dependant
Delrin, 316 SS	Delrin	Plastic
Frequency-dependant	2.2 (head)	Frequency-dependant
Frequency-dependant	0.8 (head)	Frequency-dependant
-5...45	-5...45	-5...45
12-24	12-24	7-15
400	500	30
700+	200+	400+
1-24 months	1-6 months	Continuous
N/A	0,016	Frequency dependant
200	200	220
N/A	N/A	N/A
5000-16000	1500	500-3000
N/A	2-3	120
2 or 3	3	3 (one is vertical)
15	15	25
N/A	100	10
N/A	0,05	0,1
Variable	Variable	1Hz
N/A	0,016	N/A
N/A	0,016-1	0,2
N/A	50	50
500	Variable	600
0,1	0,1	0,5
0,1	0,1	0,5
N/A	N	N/A
Y	Y	Y
Y	Y	Y
Y	Y	Y
N/A	N	Y
N/A	<5%	N/A
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Y	Y	Y
-5...45	-5...45	-5...45
0,1	0,1	0,1
Y	Y	Y
60	60	60
1	1	1
Proprietary fluxgate	Proprietary fluxgate	Proprietary fluxgate
2	2	2
N	N	N
Y	Y	Y
N	N	N
N	N	N
Y	Y	Y
Y	Y	Y
Y	Y	Y
Y	Y	Y
Y	Y	Y
Y	Y	Y
Y	Y	Y
Frequency-based Pressure	Frequency-based Pressure	<input type="checkbox"/>
RS-232/422	RS-232/422	RS-232/422, SDI-12, ModBus, Analog (current or voltage)
110-240 AC	110-240 AC	110-240 AC
>1000m; 115200	>1000m; 115200	>1000m; 115200
Y	Y	Y
CF; 1	CF; 1	On-board 4MB
Variable, dependant on application	Variable, dependant on application	Variable, dependant on application
HorizonADV,ViewHydra	ViewADP	ViewArgonaut
Near shore oceanography, surf zone measurements, directional wave measurement, wave and tide studies, turbulence, Reynolds stress	High resolution current profiling, bottom boundary layer/benthic studies, sediment transport, near shore oceanography	Side-looking applications, horizontal applications, open channel flow, Ports & Harbors, discharge monitoring, vessel traffic systems, measurements from bridges or fixed structures



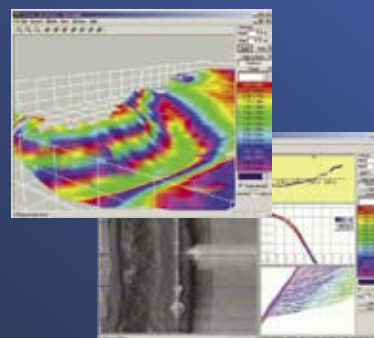
Versatile and Flexible Software for all Your Survey Needs

NaviPac Integrated Navigation



- :: System integration
- :: Comprehensive survey planning
- :: Extensive geodetic support
- :: Versatile device I/O driver support
- :: Data collection & output
- :: Unlimited Helmsman displays
- :: USBL/LBL/INS support
- :: AIS integration

NaviScan Multibeam and Sonar Data Acquisition



- :: Interactive patch test calibration
- :: Sensor data displays
- :: Real-time 2D/3D DTM
- :: Side scan sonar imagery
- :: 3D geo-referenced Snippets support
- :: ROV/AUV support
- :: Pipeline inspection & eventing

EIVA

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