CURRENT PROFILER

Aquadopp Z-Cell 1 MHz

Up to 25 m current profiling range and no blanking; can measure near-surface or near-bottom currents

Need to collect accurate 3D currents very near the seabed or sea surface, in addition to a full water-column profile?

The Z-Cell (Zero Cell) Aquadopp allows current measurement to start right at the instrument's level through an innovative approach: it has side-looking beams fully integrated into the instrument's head, effectively removing the blanking distance normally applicable to ADCPs.

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Highlights

- Up to 25 m current profiling range
- Capable of measuring surface or bottom currents
- PUV-based directional wave measurements

Applications

- Mounted on bottom frames, with ability to measure also near-bed currents
- Mean flow measurements with high focus on ease of use and simplicity
- Measurements in flow regimes with strong variations in flow speeds
- Projects with needs for both high-resolution and normal-range current measurements
- Studies of tidal currents
- Measurements of combinations of waves and currents
- Mounted on surface buoys, with the ability to measure also surface currents

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Technical specifications

Water velocity measurements	
Maximum profiling range	12-25 m
Cell size	0.3-4 m
Minimum blanking	0.20 m when profiling; 0 m when Z-Cell enabled
Maximum number of cells	128
Measurement cell position	N/A
Default position (along beam)	N/A
Velocity range	±10 m/s
Accuracy	±1% of measured value ±0.5 cm/s
Velocity precision	Consult instrument software
Maximum sampling rate (output)	1 Hz
Internal sampling rate	6 Hz
Echo intensity (along slanted beams)	
Sampling	Same as velocity
Resolution	0.45 dB
Dynamic range	90 dB
Transducer acoustic frequency	1 MHz
Number of beams	3
Beam width	3.4°
HR option (Z-Cell will be disabled)	
Maximum profiling range	6 m
Cell size	20-300 mm
Minimum blanking	0.2 m
Maximum number of cells	128
Range/Velocity limitations	Product of profiling range and velocity should not exceed 1.0 m2/s
Accuracy	±1% of measured value ±0.5 cm/s
Max. sampling rate	1 Hz (continuous mode), 8 Hz (burst mode)”
Z-Cell option	
Cell zero acoustic frequency	2 MHz
Maximum profiling range	0.4-0.9 m
Number of beams	3
Sensors	
Temperature:	Thermistor embedded in head
Temp. range	-4 to +40 °C

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Sensors	
Temp. accuracy/resolution	0.1 °C/0.01 °C
Temp. time response	10 min
Compass:	Magnetometer
Accuracy/resolution	2°/0.1° for tilt < 20°
Tilt:	Liquid level
Accuracy/resolution	0.2°/0.1°
Maximum tilt	30°
Up or Down	Automatic detect
Pressure:	Piezoresistive
Range	0-100 m (inquire for options)
Accuracy/precision	0.5% FS / 0.005% of full scale
Analog inputs	
No. of channels	2
Supply voltage to analog output devices	Three options selectable through firmware commands: 1) Battery voltage/500 mA, 2) +5 V/250 mA, 3) +12 V/100 mA
Voltage input	0-5 V
Resolution	16-bit A/D
Data recording	
Capacity	9 MB, can add 4/16 GB
Data record	9*Ncells + 32 bytes
Diagnostics record	N/A
Wave record	Nsamples * 24 + 60 bytes
Mode	Stop when full (default) or wrap mode
Real-time clock	
Accuracy	±1 min/year
Backup in absence of power	4 weeks
Data communications	
I/O	RS-232 or RS-422
Communication baud rate	300-115200 Bd
Recorder download baud rate	600/1200 kBd for both RS-232 and RS-422
User control	Handled via "Aquadopp" software, ActiveX®function calls, or direct commands with binary or ASCII data output
Connectors	
Bulkhead	MCBH-8-FS
Cable	PMCIL-8-MP on 10 m polyurethane cable
Software	

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Functions	Deployment planning, instrument configuration, data retrieval and conversion (for Windows®).
Power	
DC input	9-15 V DC
Maximum peak current	3 A
Avg. power consumption	0.05 W
Sleep current	< 100 ?A
Transmit power	0.3-20 W, 3 adjustable levels
Batteries	
Battery capacity	50 Wh (alkaline or Li-ion), 165 Wh (lithium), Single or dual
New battery voltage	13.5 V DC (alkaline)
Environmental	
Operating temperature	-5 to +40 °C
Storage temperature	-20 to +60 °C
Shock and vibration	IEC 721-3-7
EMC approval	IEC 61000
Depth rating	300 m
Materials	
Standard model	POM and polyurethane plastics with titanium fasteners
Dimensions	
Maximum diameter	75 mm
Maximum length	~550 mm (single battery), +110 mm (double battery) depending on head configuration
Weight	
Weight in air	2.2 kg
Weight in water	0.2 kg
Options	

1) Alkaline, lithium or Li-ion external batteries, 2) Inquire for different head configurations