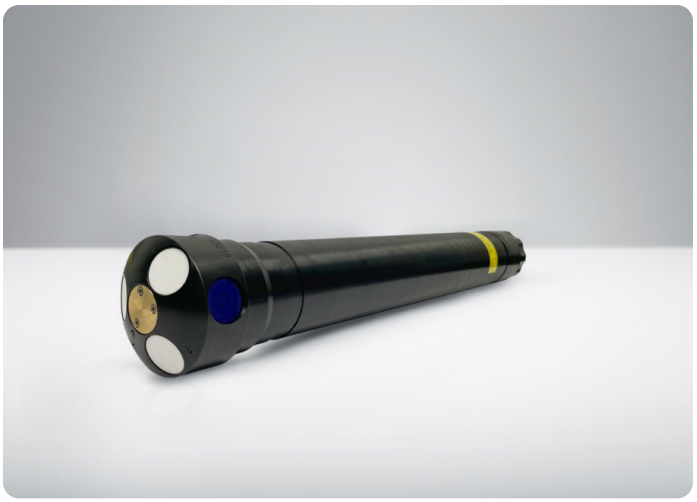
Aquadopp Profiler 1 MHz

500m, Z-Cell, Generation 2

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) 1 MHz 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. The 1 MHz Z-Cell profiler also offers all of the features and capabilities of the 1 MHz Aquadopp Profiler.

See the details of the Generation 2 Aquadopp updates in the release notes here.

Download our guide to Aquadopp ADCPs here.

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 also measure near-bed currents
- Mounted on surface buoys, with the ability to measure also surface currents
- Mean flow measurements with high focus on ease of use and simplicity
- Measurements of combinations of waves and currents

Technical specifications

Water velocity measurements	
Nominal profiling range*	25 m
Cell size	0.25-4 m
Maximum number of cells	200
Minimum blanking	0 m with Z-Cell enabled
Velocity range (along beam)	User-selectable 1.0 to 5.0 m/s
Accuracy	±1% of measured value ±0.5 cm/s

Water velocity measurements

Horizontal Velocity precision**	Typ. 1cm/s
Maximum sampling rate (output)	1 Hz
Wave measurements	PUV (optional)
* Depending on scattering conditions	
** Consult instrument SW	

Z-Cell Properties

Distance to measurement volume	0.05 - 2.5 m
Cell size	0.2 - 1.5 m
Velocity range (Horizontal)	±5 m/s
Transducer acoustic frequency	2 MHz
Number of beams	2

Echo Intensity

Sampling	Same as velocity
Resolution	0.5 dB
Dynamic range	90 dB
Transducer acoustic frequency	1 Mhz
Number of beams	3 (see GA drawing for angles)
Beam width	1.7° (3.4° total)

HR option

Maximum profiling range	8 m
Cell size	0.02-0.25 m
Minimum blanking	0.1 m
Maximum number of cells	256
Velocity range	3 cm/s - 1.3 m/s
Range velocity limitations	Product of profiling range and velocity should not exceed 0.25 m2/s
Accuracy	±1% of measured value ±0.5 cm/s
Max. Sampling rate	4 Hz

Sensors

Temperature:	
Temp. range	-4 to +40 °C
Temp. accuracy/resolution	0.1 °C/0.01 °C
Temp. time response	<1 min
Compass:	Solid State Magnetometer
Accuracy/resolution	<2° for tilt <30°/0.01°
Tilt:	Solid State Accelerometer
Accuracy/resolution	0.2° for tilt <30°/0.01°
Maximum tilt	Full 3D
Up or Down	Automatic detect
Pressure:	Piezoresistive
Range	30 m / 100 m / 500 m
Accuracy/precision	0.5% FS / 0.005% of full scale

Data recording	
Capacity	16 GB

Real-time clock	
Accuracy	±1 min/year
Backup in absence of power	4 weeks

Data communications	
I/O	RS-422 (Inquire for RS-232)
Communication Baud Rate	9600 Baud-1.2 Mbaud (default 115200 Baud)
User control	Nortek Deployment Software or direct ACSII commands, with binary or ASCII data output

Software	
Operating system	Cross platform
Functions	Deployment planning, instrument configuration, data retrieval and conversion. Online data display.

Power	
DC input	9-24 VDC
Absolute maximum DC input	26 VDC
Maximum peak current	4.5 A
Power consumption	Consult Nortek Deployment Software
Sleep current	< 40 uA
Transmit power	Adjustable

Batteries	
Internal Battery capacity	1-3x 50 Wh (Alkaline), 2-3x 165 Wh (Lithium), 1-3x 76Wh (Li-Ion)
Battery weight	430g per 50 Wh (Alkaline), 380g per 165 Wh (Lithium), 300g per 76Wh (Li-Ion)

Environmental	
Operating temperature	-5 to +40 °C
Storage temperature	-20 to +60 °C
Shock and vibration	Shock: IEC 60068-2-27, Vibration: IEC 60068-2-64
EMC	EN IEC 61000-6-2:2019, EN IEC 61000-6-4:2019
Depth rating	500 m

Connectors	
Bulkhead (Impulse)	MCBH-8-FS Brass
Cable	PMCIL-8-MP on 5m (default) polyurethane cable

Materials	
Standard model	POM, Naval Brass, Titanium Gr.5, Epoxy

Dimensions (see drawings for details)	
Maximum housing diameter	75 mm
Maximum length	602 mm

Weight

Weight in air (without batteries)	2280 g
Weight in water (without batteries)	-400 g (buoyant)
Weight in air, short housing (without batteries)	1680 g
Weight in water, short housing (without batteries)	50 g

Head configurations

S1VZ	Shallow water, 1 Mhz, Vertical orientation, Z-Cell Profiler

Online cable information

Cable length	A) 0-10m, B) 10-50m, C) 50-500m
Power wire gauge	A) 20AWG, B) 20AWG, C) 18AWG
Hardware	A) Standard, B) Standard, C) Long cable kit *
Input voltage	A) 9-24VDC, B) 24VDC +/-0.5, C) 48VDC +2/-5
Absolut maximum DC input	A) 26 VDC, B) 26 VDC, C) 51 VDC
Communication	A) RS232/RS422/115200, B) RS232/RS422/115200, C) RS422/115200

*Start-up voltage: greater than or equal to 26V. Recommended operating range: 43-50 V.