



# 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)	$\pm 5$ 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 m <sup>2</sup> /s
Accuracy	$\pm 1\%$ of measured value $\pm 0.5$ 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
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## Real-time clock

Accuracy	±1 min/year
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Backup in absence of power	4 weeks
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## Data communications

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

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

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

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

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

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

Standard model	POM, Naval Brass, Titanium Gr.5, Epoxy
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## Dimensions (see drawings for details)

Maximum housing diameter	75 mm
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Maximum length	602 mm
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## 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
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## 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.