

Aquadopp Profiler 2 - Z-Cell - 1 MHz



New image
coming soon!

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.

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) | ± 1 m/s, ± 2.5 m/s, ± 5 m/s |
| Velocity range (horizontal) | ± 2.3 m/s, ± 5.75 m/s, ± 11.5 m/s |
| Accuracy | $\pm 1\%$ of measured value ± 0.5 cm/s |
| 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 m ² /s |
| Accuracy | $\pm 1\%$ 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 ASCII commands, with binary or ASCII data output

→ Software

Operating system Agnostic

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 < 10 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

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|-----------------------|--|
| 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

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

→ Materials

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|----------------|--|
| Standard model | POM, Naval Brass, Titanium Gr.5, Epoxy |
|----------------|--|

→ Dimensions (see drawings for details)

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|--------------------------|--------|
| Maximum housing diameter | 75 mm |
| Maximum length | 602 mm |

→ Weight

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|-------------------------------------|------------------|
| Weight in air (without batteries) | 2280 g |
| Weight in water (without batteries) | -400 g (buoyant) |

→ Head configurations

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