

# AWAC 1 MHz

300 m, Generation 2

**Real-time current profiles and directional waves for shallow water**



The AWAC 1 MHz ADCP has become the standard reference technology in submerged wave-measurement applications. Thousands of these ADCPs have been deployed to capture the full wave spectrum in combination with current profiles. With a 35 m maximum range for wave measurements, 4 Hz sampling of the surface elevation and onboard wave processing for real-time applications, the AWAC 1 MHz is the optimal tool for shallow current and wave measurements.

The AWAC Generation 2 design offers future-proof electronics, improved performance and easier instrument maintenance.

See the details of the Generation 2 AWAC updates in the release notes [here](#).

## Highlights

- ✓ Real-time current profiles to 30 m range; real-time directional waves to 35 m range
- ✓ Acoustic surface tracking (AST) with vertical beam
- ✓ Can be used both with fixed frames and subsurface buoys
- ✓ Onboard wave processing for real-time applications

## Applications

- ✓ Online, real-time measurements of currents and waves
- ✓ Design data for planning of new coastal structures
- ✓ Site studies for offshore wind platforms
- ✓ Coastal erosion studies
- ✓ Monitoring of transient waves for channel wall protection

## Technical specifications

Water velocity measurements	
Maximum profiling range*	30 m
Cell size	0.25-4.0 m
Number of cells	200
Velocity range (along beam)	User-selectable 1.0 to 5.0 m/s
Accuracy	±1% of measured value ±0.5 cm/s
Velocity precision	Consult instrument software
Maximum output rate	1 Hz or 2 Hz
Internal sampling rate	16 Hz

\*Dependent on measurement conditions

## Echo intensity (along slanted beams)

Sampling	Same as velocity
Resolution	0.5 dB
Dynamic range	90 dB
Transducer acoustic frequency	1 MHz
Number of beams	3 beams 120° apart, one vertical beam (90° apart, one at 5° for platform mount)
Beam width	0.725° (1.45° total)
Beam width vertical beam	1.45° total

## Wave measurement option (AST)

Maximum depth	35 m
Data types	Pressure, one velocity along each beam, AST
Max. Sampling Rate (output)	4Hz
No. of samples per burst	512, 1024 or 2048 (Contact Nortek for other burst configurations)

## Wave estimates

Range	-15 to 15 m
Accuracy/resolution (Hs)	< 1% of measured value / 1 cm
Accuracy/resolution (Dir)	2° / 0.2°
Period range	0.5-50 s
Cut-off period (Hs)	5 m depth: 0.5 sec, 20 m depth: 0.9 sec
Cut-off period (dir)	5 m depth: 1.5 sec, 20 m depth: 3.1 sec

## Sensors

Temperature:	Thermistor in head (sampled at meas. rate)
Temp. range	-4 to +40 °C
Temp. accuracy/resolution	0.1 °C/0.01°C
Temp. time response	2 min
Compass:	Solid state magnetometer (max 1Hz sample rate)
Accuracy/resolution	2° for tilt <30° / 0.01°
Tilt:	Solid state accelerometer (max 1Hz sample rate)
Accuracy/resolution	0.2° for tilt <30° / 0.01°
Maximum tilt	Full 3D
Up or Down	Automatic detect
Pressure:	Piezoresistive (sampled at meas. rate)
Range	0-100 m (inquire for options)
Accuracy / precision	0.1% FS / Better than 0.002% of full scale

## Data Recording

Capacity	16 GB, 64 GB or 128 GB (inquire for larger capacity)
Data record	Consult instrument software
Mode	Stop when full

## Real Time Clock

Accuracy	±1 min/year
Clock retention in absence of external power	1 year. Rechargeable backup battery

## Data Communications

Ethernet	10/100 Mbits Auto MDI-X, TCP/IP, UDP/IP, HTTP protocols, Fixed IP / DHCP client /Auto IP address assignment, UPnP and Nortek proprietary instrument, discovery over Ethernet
Serial	Configurable RS-232/RS-422 300-1250000 bps
Recorder download baud rate	20 Mbit/s (Ethernet only) - 1 GB in 6 minutes
Controller interface	ASCII command interface over Telnet and serial

## Connectors

Standard*	MCBH6F (Ethernet) + MCBH8F (serial and/or battery)
Optional*	MCBH6F (Ethernet) + Souriau M-series metal connector for online use (10M) + MCBH2F (battery)

\*Configuration dependent

## Software

Functions	Deployment planning, instrument configuration, data retrieval and conversion (for Windows®)
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## Power

DC input	12-48 V DC
Maximum peak current	1.5 A
Max. average consumption at 1Hz	8 W at 1 Hz, Ethernet adds 0.75 W
Typical average consumption	15 mW
Sleep consumption	100 µA, power depending on supply voltage
Transmit power per beam	0.3-30 W, adjustable levels
Ping sequence	Parallel

## Environmental

Operating temperature	-4 to +40 °C
Storage temperature	-20 to +60 °C
Vibration	IEC60068-2-64
EMC approval	IEC/EN 61000-6-2, 61000-6-3
Depth rating	300m

## Materials

Standard model	POM with titanium fasteners
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## Dimensions

Maximum diameter	215 mm
Maximum length	175 mm

## Weight

Weight in air	5.4 kg
Weight in water	1 kg

## Online cable

Online cable	Polyurethane jacket, Shore D hardness, 13mm in diameter, max 500m. Inquire for longer cables
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## Batteries

External

540Wh (alkaline) or 1800 W (lithium)