



AWAC 400 kHz

300 m, Generation 2

Real-time current profiles and directional waves with up to 100 m range



The AWAC 400 kHz 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 100 m maximum range for wave measurements, 1.5 Hz sampling of the surface elevation and onboard wave processing for real-time applications, the AWAC 400 kHz is the optimal tool for deeper-water current and wave measurements.

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

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

Highlights

- ✓ Real-time current profiles and waves to 100 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 measurements of currents and waves at long ranges
- ✓ Site studies for offshore wind platforms
- ✓ Measurement campaigns where the full wave spectrum is needed
- ✓ Monitoring of transient waves for channel wall protection

Technical specifications

| Water velocity measurements | |
|-----------------------------|---------------------------------|
| Maximum profiling range* | 100 m |
| Cell size | 1.0-8.0 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 | 4 Hz |

*Dependent on measurement conditions

Echo intensity (along slanted beams)

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|-------------------------------|--|
| Sampling | Same as velocity |
| Resolution | 0.5 dB |
| Dynamic range | 90 dB |
| Transducer acoustic frequency | 400 kHz, 600 kHz for vertical beam |
| Number of beams | 3 beams 120° apart, one vertical beam, (90° apart, one at 5° for platform mount) |
| Beam width | 1.18 (2,36° total) |
| Beam width vertical beam | 1.93° total |

Wave measurement option (AST)

| | |
|-----------------------------|---|
| Maximum depth | 100 m |
| Data types | Pressure, one velocity along each beam, AST |
| Max. Sampling Rate (output) | 2Hz |
| No. of samples per burst | 512, 1024 or 2048 (Contact Nortek for other burst configurations) |

Wave estimates

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|---------------------------|--|
| Range | -15 to 15 m |
| Accuracy/resolution (Hs) | < 1% of measured value / 1 cm |
| Accuracy/resolution (Dir) | 2° / 0.2° |
| Period range | TBC |
| Cut-off period (Hs) | 20 m depth: 0.9 sec, 60 m depth: 1.5 sec, 100 m depth: 2 sec |
| Cut-off period (dir) | 20 m depth: 3.1 sec, 60 m depth: 5.5 sec, 100 m depth: 7.1 sec |

Sensors

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|---------------------------|--|
| 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 1 Hz sample rate) |
| Accuracy/resolution | 2° for tilt < 30°/0.01° |
| Tilt: | Solid State accelerometer (max 1 Hz 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

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

Real-time clock

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

Data communications

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| 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

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

Software

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|-----------|---|
| Functions | Deployment planning, instrument configuration, data retrieval and conversion (for Windows®) |
|-----------|---|

Power

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|----------------------------------|---|
| DC input | 12-48 V DC |
| Maximum peak current | 1.5 A |
| Max. average consumption at 1 Hz | 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 | 300 m |

Materials

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|----------------|-----------------------------|
| Standard model | POM with titanium fasteners |
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Dimensions

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| Maximum diameter | 306 mm |
| Maximum length | 203 mm |

Weight

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|-----------------|--------|
| Weight in air | 6.9 kg |
| Weight in water | 1.6 kg |

Online cable

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| 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)