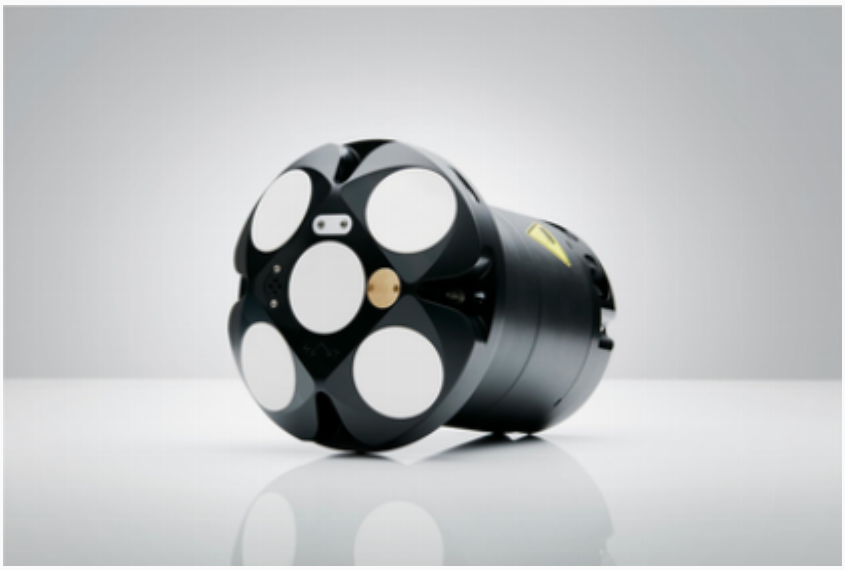
CURRENT PROFILER

# Signature500



## Mean currents and turbulence, plus wave height, direction and ice tracking

The Signature500 ADCP is designed for flexibility. It measures current profiles at up to 8 Hz sampling frequency. It can also measure direct vertical velocity profiles, wave height and direction, and acoustic ranging to ice. The center beam also functions as a biological echosounder, enabling high-resolution measurements of biomass in the water column. All these features can be combined using Nortek’s patented concurrent mode technology.

CURRENT PROFILER

# Signature500

## Highlights

- Five beams for mean currents and turbulence
- Wave height and direction
- Acoustic ranging to ice

## Applications

- Turbulence studies
- Tidal turbine operations
- Studies of tidal currents
- Sediment transport studies
- Ice drift and draft studies
- Vessel-mounted coastal surveying
- Plankton migration studies
- Biomass measurements
- Directional wave measurements
- Suitable for wave buoys

CURRENT PROFILER

# Signature500

## Technical specifications

| | |
|---|---|
| ⟶ Water velocity measurements | |
| Maximum profiling range1) | 60 m (burst mode), 70 m (average mode) |
| Cell size | 0.5-4 m |
| Minimum blanking | 0.5 m |
| Maximum number of cells | 256 (burst)/200 (average) |
| Velocity range (along beam) | User-selectable 2.5 or 5.0 m/s |
| Minimum accuracy | 0.3% of measured value ± 0.3 cm/s |
| Velocity precision | Broadband processing, consult instrument software |
| Velocity resolution | 0.1 cm/s |
| Max sampling rate | 8 Hz (4 Hz using 5 beams) |
| ⟶ HR option (on 5th beam only) | |
| Velocity range | N/A |
| Cell size | N/A |
| Profiling range | N/A |
| Range velocity limitations | N/A |
| ⟶ AD2CP measurement modes | |
| Single | Burst or average |
| Concurrent | Burst and average |
| Alternate | Single and/or concurrent |
| ⟶ Echo intensity (along slanted beams) | |
| Sampling | Same as velocity |
| Resolution/ dynamic range | 0.5 dB / 70 dB |
| Transducer acoustic frequency | 500 kHz |
| Number of beams | 5; 4 slanted at 25°, 1 vertical |
| Beam width | 2.9° |
| ⟶ Echo sounder option | |
| Resolution | 6 mm - 0.5 m |
| Number of bins | 11,000 |

CURRENT PROFILER

# Signature500

| | |
|---|---|
| ⟶ Echo sounder option | |
| Transmit pulse length | 32 µs - 1 ms |
| Transmit pulse | Monochromatic or pulse compressed (25% BW) |
| Resolution / dynamic range | 0.01 dB / 70 dB |
| ⟶ Wave measurement option | |
| AST frequency | 500 kHz |
| AST max distance | 75 m |
| Maximum wave measurement depth | 60 m |
| Height range | -15 to +15 m |
| Accuracy/resolution (Hs) | < 1% of measured value / 2 cm |
| Accuracy/resolution (Dir) | 2° / 0.1° |
| Period range | 1-50 s |
| Cut-off period (Hs) | 5 m depth; 0.6 sec, 20 m depth; 1.1 sec, 60 m depth; 1.9 sec |
| Cut-off period (dir) | 5 m depth; 1.5 sec, 20 m depth; 3.1 sec, 60 m depth; 5.5 sec |
| Sampling rate (velocity and AST) | 4 Hz |
| ⟶ Ice measurement option | |
| Parameters | Acoustic ranging to ice, speed and direction, echo sounder data |
| ⟶ 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 1 Hz samplerate) |
| 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) |

CURRENT PROFILER

# Signature500

| | |
|---|---|
| ⟶ Sensors | |
| Standard range | 0-100 m (inquire for options) |
| Accuracy/precision | 0.1% FS / Better than 0.002% of full scale |
| ⟶ AHRS option | |
| Accelerometer dynamic range | ± 2 g |
| Gyro dynamic range | ± 250°/sec |
| Magnetometer dynamic range | ± 1.3 Gauss |
| Pitch and roll range /resolution | ± 90° (pitch) ± 180° (roll) /0.01° |
| Pitch and roll accuracy | ± 2° (dynamic)4), ± 0.5° (static, ±30°) |
| Heading range / resolution | 360°, all axis /0.01° |
| Heading accuracy | ± 3° (dynamic)4), ± 2° (static, tilt < 20°) |
| Sampling rate | Same as measurement rate (up to 8 Hz) |
| ⟶ 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 | |
| Depending on configuration | MCBH6F (Ethernet), MCBH8F (serial), MCBH2F-G2 (pwr), optional Souriau M-series metal connector for online use (10M) |
| ⟶ Software | |

CURRENT PROFILER

# Signature500

| | |
|---|---|
| Functions | Deployment planning, instrument configuration, data retrieval and conversion (for Windows®) |
| ⟶ Power | |
| 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 | 25 mW |
| Sleep consumption | 100 µA, power depending on supply voltage |
| Transmit power per beam | 0.3-30 W, adjustable levels |
| Ping sequence | Parallel |
| ⟶ Batteries | |
| Internal | 180 Wh alkaline, 540 or 1800 Wh with long canister |
| Duration | Depending on configuration, consult software |
| ⟶ 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 (for 6000 m version, contact Nortek for specifications) |
| ⟶ Materials | |
| Standard model | POM with titanium fasteners |
| ⟶ Dimensions | |
| Maximum diameter | 228 mm |
| Maximum length with room for internal batteries | 274 mm (180 Wh), 464 mm (540 Wh or 1800 Wh Li) |
| Maximum length without room for internal batteries | 184 mm |
| ⟶ Weight | |
| In air, no battery | 6.4 kg (5.2 kg short) |
| In water, no battery | -0.35 kg (0.6 kg short) |
| Battery | 1.8 kg |