# Signature 100

1500 m | 6000 m

**Long-range current profiler designed for combined current profile and biomass measurements**

The Signature 100 combines a four-beam current profiler operating at 100 kHz with an optional scientific echosounder.

Both the current profiler and the biomass measurements have an effective range of 300-400 m providing unprecedented insight into the dynamics of zooplankton, krill or even schools of fish. Likewise, acoustic tracer material can give new insight into small-scale physical processes.

Download our guide to Signature ADCPs here.

## Highlights

- ✓ 300–400 m current profiling range
- ✓ Optional center beam with 70–120 kHz echosounder

## Applications

- ✓ Detection of krill or plankton in the water column with scientific echosounder
- ✓ Upwelling and downwelling studies
- ✓ Suitable for buoy mounting with internal AHRS

## Technical specifications

| Water velocity measurements | |
|---|---|
| Maximum profiling range* | 300-400 m |
| Cell size | 3–15 m |
| Minimum blanking | 2 m |
| Maximum number of cells | 200 |
| Velocity range (along beam) | User-selectable 1.0 to 5.0 m/s |
| Minimum accuracy | 1% of measured value ± 0.5 cm/s |
| Velocity precision | Broadband processing, consult instrument software |
| Velocity resolution | 0.1 cm/s |
| Max sampling rate | 1 Hz (1/2 Hz at max output power) |

*Maximum range depends on acoustic scattering conditions.

| HR option (on 5th beam only) | |
|---|---|
| Velocity range | N/A |
| Cell size | N/A |
| Profiling range | N/A |

## HR option (on 5th beam only)

| | |
|---|---|
| Range velocity limitations | N/A |

## AD2CP Measurement modes*

| | |
|---|---|
| Single | Average |
| Concurrent | Average and echosounder |
| Alternate | N/A |

* US Patent 8223588

## Echo Intensity (along slanted beams)

| | |
|---|---|
| Sampling | Same as velocity |
| Resolution/dynamic range | 0.5 dB/70 dB |
| Transducer acoustic frequency | 100 kHz |
| Number of beams | 4 slanted at 20°, optional vertical beam for echosounder |
| Beam width | 6.1° (slanted) |

## Echosounder option

| | |
|---|---|
| Transducer acoustic frequency | 70–120 kHz |
| Transducer beam width | 15° @ 70 kHz, 8.7° @ 120 kHz |
| Resolution | 0.375–4 m |
| Number of bins | 1800 |
| Transmit pulse length | 0.5–6 ms |
| Transmit pulse | Monochromatic 70 kHz, 90 kHz and 120 kHz or frequency chirp (90 kHz, 50% BW) |
| Transmit power | 1.2–120 W, adjustable |
| Chirp signal processing | Pulse compression or binned frequency response |
| Raw complex data storage | Configurable rate |
| Resolution/dynamic range | 0.01 dB / 130 dB |
| Linearity | TBA |

## Wave measurement option

| | |
|---|---|
| AST frequency | N/A |
| AST max distance | N/A |
| Maximum wave measurement depth | N/A |
| Height range | N/A |
| Accuracy/resolution (Hs) | N/A |
| Accuracy/resolution (Dir) | N/A |
| Period range | N/A |
| Cut-off period (Hs) | N/A |
| Cut-off period (dir) | N/A |
| Sampling rate (velocity and AST) | N/A |

## Ice measurement option

| | |
|---|---|
| Parameters | N/A |

## Sensors

| | |
|---|---|
| Temperature | Thermistor in head (sampled at meas. rate) |

## Sensors

| | |
|---|---|
| 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) |
| Standard range | 0–1500 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)*, ± 0.5° (static, ±30°) |
| Heading range/resolution | 360°, all axis / 0.01° |
| Heading accuracy | ± 3° (dynamic)2), ± 2° (static, tilt < 20°) |
| Sampling rate | Same as measurement rate (up to 1 Hz) |

* Dynamic specifications depends on the type of motion

## 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-XTCP/IP, UDP, HTTP protocolsFixed IP/DHCP client/AutoIP, UPnP |
| 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 (14M) |

## Software

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

## Power

| | |
|---|---|
| DC input | 15–48 V DC |
| Maximum peak current | 1.5 A |
| Max. average consumption at 1 Hz | 15 W |
| Typical average consumption* | 2 W |
| Sleep consumption | 100 µA, power depending on supply voltage |
| Transmit power per beam | 4–200 W, adjustable levels |
| Ping sequence | Multiplexing or parallel |

* 10 min. avg. profile,1 cm/sec hor. prec., max cell size, max power, long range mode. Consult SW for other configurations

## Batteries

| | |
|---|---|
| Internal | One or two 540 Wh alkaline or 1800 Wh lithium |
| 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 | 1500 m (for 6000 m version, contact Nortek for specifications) |

## Materials

| | |
|---|---|
| Standard model | POM with titanium fasteners. Titanium/POM transducer cups |

## Dimensions

| | |
|---|---|
| Maximum diameter | 460 mm |
| Maximum length with room for internal batteries | 765 mm (2 batteries) |
| Maximum length without room for internal batteries | N/A |

## Weight

| | |
|---|---|
| In air, no battery | 37.5 kg |
| In water, no battery | 13 kg |
| Battery | 10.2 kg (2x540 Wh), 7.6 kg (2x1800 Wh) |

## Deep water version specifications

| | |
|---|---|
| Depth rating | 6000 m |
| Maximum diameter | 460 mm |
| Maximum length (without room for internal batteries) | 410 mm |
| Standard model | Titanium/POM housing with titanium fasteners. Titanium/POM endbell. Titanium/POM transducer cups. |
| Weight in air, without echosounder | 35.9 kg |
| Weight in water, without echosounder | 20.8 kg |

## Deep water version specifications

| | |
|---|---|
| Weight in air, with echosounder | 37.2 kg |
| Weight in water, with echosounder | 21.8 kg |