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.

The current profiler has effective range of 400 - 470 m, working alongside a scientific echosounder 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

- ✓ Up to 400 - 470 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*	400-470 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 and cell size.

AD2CP Measurement modes*	
Single	Average
Concurrent	Average and echosounder
Alternate	N/A

AD2CP Measurement modes*

* 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)
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)

Sensors

Accuracy/resolution	0.2° for tilt < 30°/0.01°
Maximum tilt	Full 3D orientation sensing. Recommended instrument orientation and allowable tilt depend on the measurement application.
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° (static, tilt < 20°)
Sampling rate	Same as measurement rate (up to 1 Hz)
Power	Using AHRS draws more power than the regular compass and tilt sensor. Please refer to the Signature Deployment software.

* 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

Power

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	455 mm
Maximum length with room for internal batteries	765 mm (2 batteries)

*See drawings for detailed dimensions

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*	456 mm
Maximum length (without room for internal batteries)	405 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
Weight in air, with echosounder	37.2 kg
Weight in water, with echosounder	21.8 kg

*See drawings for detailed dimensions