Signature100

Long-range current profiler designed for combined current profile and biomass measurements
The Signature100 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.

Specifications

Product	Signature 100
Country of origin	Norway
Manufacturer	Nortek
Material	POM with titanium fasteners. Titanium/POM transducer cups
Weight in air no battery	37.5 kg

RTS – Rental Technology & Services **rts.as**

Åkrehamn, Norway tel: +47 52 81 47 60 sales@rts.as **Bridge of Don, Aberdeen, UK** tel: +44 (0) 1224 907530 sales.uk@rts.as

Highlights and applications

- 300–400 m current profiling range
- Internal waves
- Detection of krill in the water column
- Optional center beam with 70–120 kHz echosounder
- Plankton migration studies
- Upwelling and downwelling studies
- Suitable for buoy mounting with internal AHRS
- Cost-effective current profile measurements at mid-range

Water velocity measurements

Max profiling range	300-400 m*
Cell size	3–15 m
Max no. cells	200
Min. blanking	2 m
Velocity range (along beam)	User-selectable 2.5 or 5.0 m/s
Velocity precision	Broadband processing, consult instrument software
Minimum accuracy	1% of measured value ± 0.5 cm/s
Velocity resolution	0.1 cm/s
Max sampling rate	1 Hz (1/2 Hz at max output power)

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	Average
Concurrent	Average and echosounder
Alternate	N/A

Real-time clock

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

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

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)
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)

Data recording

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

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

Power

DC input	15–48 V DC
Max. 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

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

Materials

Standard mode	POM with titanium fasteners. Titanium/POM transducer cups

Software

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

Weight

In air, no battery	37.5 kg
In water, no battery	13 kg
Battery	10.0 kg (2x540 Wh), 5.8 kg (2x1800 Wh)

Dimensions

Maximum diameter	460 mm
Maximum length without room for internal batteries	Depending on configuration, consult software
Maximum length with room for internal batteries	765 mm (2 batteries)

Ice measurement option

Parameters	N/A