

Signature55



> 1000 m current profiling range for stand-alone and online applications

The Signature55 ADCP is a current profiler that combines an ultralong range with a compact layout. Novel ADCP transducer design allows 1000 m profiles concurrent with slightly shorter-range, finer resolution measurements using two different frequencies in the same instrument. The more than 90% lower power consumption (compared to similar ADCPs) also permits long-duration deployments operating on internal batteries only.

Highlights

- ✓ > 1000 m current profiling range
- ✓ Stand-alone and online applications
- ✓ Concurrent high-resolution and long-range measurements

Applications

- ✓ Observing deep-ocean current profiles
- ✓ Current measurements for deep-water meteorological buoys
- ✓ Fine and coarse deep-water current profiles

Technical specifications

→ Water velocity measurements

Maximum profiling range*	1000 m (55 kHz), 600+ (75 kHz)
Cell size	5-20 m
Minimum blanking	2 m
Maximum number of cells	200
Velocity range (along beam)	User-selectable 1 or 5.0 m/s
Minimum accuracy	1% of measured value \pm 0.5 cm/s
Velocity precision	Broadband processing, consult instrument software
Velocity resolution	0.1 cm/s
Max sampling rate	1 Hz (1/3 Hz at max power)

- Maximum range depends on transmit power and acoustic scattering conditions

→ 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	N/A
Alternate	Single (coarse/fine)

- US Patent 8223588

→ Echo intensity (along slanted beams)

Sampling	Same as velocity
Resolution/ dynamic range	0.5 dB / 70 dB
Transducer acoustic frequency	55 and 75 kHz
Number of beams	3, slanted at 20°
Beam width	4.5°-5.5°

→ Echo sounder option

Resolution	N/A
Number of bins	N/A
Transmit pulse length	N/A
Transmit pulse	N/A
Resolution / dynamic range	N/A

→ Wave measurement option

AST frequency	N/A
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→ Wave measurement option

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
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→ 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° (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)
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→ Data recording

Data record	Consult instrument software
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Mode	Stop when full
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→ Real-time clock

Accuracy	± 1 min/year
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Clock retention in absence of external power	1 year. Rechargeable backup battery.
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→ 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
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Serial	Configurable RS-232/RS-422 300-1250000 bps
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Recorder download baud rate	20 Mbit/s (Ethernet only) - 1 GB in 6 minutes
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Controller interface	ASCII command interface over Telnet and serial
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→ Connectors

Depending on configuration	MCBH6F (Ethernet), MCBH8F (serial), MCBH2F-G2 (pwr), optional Souriau M-series metal connector for online use (14M)
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→ Software

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

DC input	15-48 V DC
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Maximum peak current	1.5 A
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Max. average consumption at 1 Hz	15 W
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Typical average consumption*	2 W
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Sleep consumption	100 µA, power depending on supply voltage
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Transmit power per beam	4-250 W, adjustable levels
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Ping sequence	Multiplexing or parallel
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- 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
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Duration	Depending on configuration, consult software
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→ Environmental

Operating temperature	-4 to +40 °C
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Storage temperature	-20 to +60 °C
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Vibration	IEC60068-2-64
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EMC approval	IEC/EN 61000-6-2, 61000-6-3
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→ Environmental

Depth rating	1500 m
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→ Materials

Standard model	POM with titanium fasteners. Reinforced polyurethane transducer cups
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→ Dimensions

Maximum diameter	648 mm
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Maximum length with room for internal batteries	547 mm (1 battery), 747 mm (2 batteries)
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Maximum length without room for internal batteries	314 mm
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→ Weight

In air, no battery	65.5 kg
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In water, no battery	25.1 kg
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Battery	10.2 kg (2 x 540 Wh), 7.6 kg (2 x 1800 Wh)
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