

NORTEK - 2019 **Product catalogue**



nortekgroup.com



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About Nortek

Nortek designs, develops and produces scientific instruments that are used to measure the movement of water in its different forms.

These instruments are utilized by scientists, researchers and engineers at renowned institutions and government agencies worldwide. They are employed in demanding environments that require state-of-the-art instrumentation that is reliable and easy to use.

Knowledge about the world's oceans is lacking – in fact the oceans are called "the great unknown". We know more about the surface of the Moon than we know about the bottom of the oceans. Yet, the oceans control the world's climate, are responsible for producing most of the oxygen we breathe and are home to an unsurpassed number of species (many with commercial value). Furthermore, a major part of the world's population lives within a one-hour drive of one of the world's oceans. Nortek makes exploratory devices – technology that enables people to understand what happens in these vast areas of the Earth's surface.

Most of Nortek's technology is based on a scientific physical principle called the Doppler effect. This principle is related to the change in frequency (or pitch) when a sound source moves with respect to an observer.

Nortek's product portfolio spans from wave measurement systems to single-point turbulence sensors and oceanic current profilers. Our product range relates to four themes: ocean waves, ocean currents, turbulent flow and subsea navigation.





Index

Contents

About Nortek	. 02
Index	. 04
Explore water in motion	05-06
An overview of Nortek's instruments	07-08
- Aquadopp, 300 m	09-10
- Aquadopp, 3000 m	11-12
- Aquadopp, 6000 m	
- Aquadopp Profiler, 2 MHz	15-16
- Aquadopp Profiler, 1 MHz	17-18
- Aquadopp Profiler, 600 kHz	19-20
- Aquadopp Profiler, 400 kHz	21-22
- Aquadopp Profiler Z-Cell, 1 MHz	23-24
- Aquadopp Profiler Z-Cell, 600 kHz	25-26
- 2D Horizontal Profiler, 400 kHz	27-28
- AWAC, 1 MHz	29-30
- AWAC, 600 kHz	
- AWAC, 400 kHz	
- DVL1000, 300 m	
- DVL1000, 4000 m	37-38
- DVL500, 300 m	39-40
- DVL500, 6000m	
- Signature1000	
- Signature500	
- Signature250	
- Signature100	49-50
- Signature55	
- Vector, 300 m	
- Vector, 4000 m	55-56
- Vectrino	57-58
- Vectrino Profiler	59-60
- SignatureVM	61-62
Selection guide	63-64

Find products by category

→ Ocean waves

Aquadopp, 300 m	09-10
Aquadopp Profiler, 2 MHz	15-16
Aquadopp Profiler, 1 MHz	17-18
Aquadopp Profiler, 600 kHz	19-20
Aquadopp Profiler, 400 kHz	21-22
Aquadopp Profiler Z-Cell, 1 MHz	23-24
Aquadopp Profiler Z-Cell, 600 kHz	25-26
AWAC, 1MHz	29-30
AWAC, 600 kHz	
AWAC, 400 kHz	33-34
Signature1000	43-44
Signature500	45-46
Signature250	47-48
Vector, 300 m	53-54

\rightarrow Subsea navigation

DVL1000, 300 m	35-36
DVL1000, 4000 m	37-38
DVL500, 300 m	39-40
DVL500, 6000 m	41-42

→ Ocean currents

Aquadopp, 300 m Aquadopp, 3000 m Aquadopp, 6000 m Aquadopp Profiler, 2 MHz Aquadopp Profiler, 1 MHz Aquadopp Profiler, 600 kHz Aquadopp Profiler Z-Cell, 1 MHz Aquadopp Profiler Z-Cell, 600 kHz 2D Horizontal Profiler, 400 kHz AWAC, 1 MHz AWAC, 600 kHz AWAC, 400 kHz Signature1000 Signature500 Signature500	11-12 13-14 15-16 17-18 19-20 21-22 23-24 25-26 27-28 29-30 31-32 33-34 43-44 45-46
AWAC, 400 kHz	
8	
Signature250	
Signature100	
Signature55	
Vector, 300 m	
Vector, 4000 m	55-56
SignatureVM	61-62

→ Turbulent flow

Signature1000	43-44
Signature500	45-46
Vector, 300 m	53-54
Vector, 4000 m	55-56
Vectrino	57-58
Vectrino Profiler	59-60

Explore water in motion

\rightarrow Ocean waves

Whether you are measuring large open-ocean waves or local wind-generated ones, our acoustic wave sensors will help you record wave height, period and direction with great accuracy and precision – in addition to also measuring currents.

Our instruments can be installed in shallow or deep areas and help you to fully characterize all sea state conditions. All wave systems are also capable of current measurements.



Ocean currents

Explore the capabilities of our innovative current meters and acoustic Doppler current profilers (ADCPs). These diverse instruments are appropriate for a multitude of applications, ranging from very shallow estuaries to long-range current profiling in the open ocean.

Turbulent flow

Velocimeters are used to study rapid velocity fluctuations in a small sampling volume, both in the laboratory and in the ocean. These accurate high-resolution 3D instruments measure velocity at very high sampling rates and are ideal for detection of rapid fluctuations in turbulent flows.

Subsea navigation

The quality and accuracy of a navigation system depends largely on the quality and reliability of the Doppler Velocity Log (DVL). Professional users therefore choose the Nortek DVL to meet their strict demands. They depend on our DVL to secure precision navigation and positioning for their advanced vehicles.



An overview of Nortek's instruments

Aquadopp, 300 m



Current meter



The Aquadopp 300 m is a compact, accurate and affordable single-point current meter for applications where a current profile is not needed. Designed for use in a number of deployment scenarios from mooring lines to bottom-mounted structures, it comes with PUV-based directional wave measurement capability as standard, making it the best value in the industry.

Raw magnetometer data can be stored for post calibration of compass when used without the inductive modem option.



Highlights

- → Single-point current meter
- → Perfect for mooring lines
- → PUV-based directional wave measurements



- → Attached to mooring lines
- → In conjunction with riser monitoring systems
- → Measurements of unaffected currents from physical structures
- → Shallow-water wave and current measurements
- → Alternative to mechanical current meters with errors due to fouling
- → Near-surface current measurements from surface buoys
- → Studies of tidal currents
- \rightarrow Suitable for wave buoys





Aquadopp, 300 m

→ Water velocity measureme	ents
Maximum profiling range	N/A
Cell size	0.75 m
Minimum blanking	0.35 m
Maximum number of cells	1
Measurement cell position	0.35-5.0 m (user-selectable)
Default position (along beam)	0.35-1.85 m
Velocity range	±5 m/s ¹⁾
Accuracy	±1% of measured value ±0.5 cm/s
Velocity precision	Consult instrument software
Maximum sampling rate (output)	1 Hz, 4 Hz on request
Internal sampling rate	23 Hz
→ Echo intensity	
Sampling	Same as velocity
Resolution	0.45 dB
Dynamic range	90 dB
Transducer acoustic frequency	2 MHz
Number of beams	3
Beam width	3 4°
→ HR option	J. 4
Maximum profiling range	N/A
Cell size	N/A
Minimum blanking	N/A
Maximum number of cells	N/A N/A
Range/velocity limitations	N/A
5,	N/A N/A
Accuracy	N/A
Max.samplingrate → Z-Cell option	N/A
Leu Zero acousuc trequency	N/A
Cell zero acoustic frequency	N/A
Maximum profiling range	N/A
Maximum profiling range Number of beams	
Maximum profiling range Number of beams → Sensors	N/A N/A
Maximum profiling range Number of beams → Sensors Temperature:	N/A N/A Thermistor embedded in head
Maximum profiling range Number of beams → Sensors Temperature: Temp. range	N/A N/A Thermistor embedded in head -4 to +40 °C
Maximum profiling range Number of beams → Sensors Temperature: Temp. range Temp. accuracy/resolution	N/A N/A Thermistor embedded in head -4 to +40 °C 0.1 °C/0.01 °C
Maximum profiling range Number of beams → Sensors Temperature: Temp. range Temp. accuracy/resolution Temp. time response	N/A N/A Thermistor embedded in head -4 to +40 °C 0.1 °C/0.01 °C 10 min
Maximum profiling range Number of beams → Sensors Temperature: Temp. range Temp. accuracy/resolution Temp. time response Compass:	N/A N/A Thermistor embedded in head -4 to +40 °C 0.1 °C/0.01 °C 10 min Magnetometer
Maximum profiling range Number of beams Sensors Temperature: Temp. range Temp. accuracy/resolution Temp. time response Compass: Accuracy/resolution	N/A N/A Thermistor embedded in head -4 to +40 °C 0.1 °C/0.01 °C 10 min Magnetometer 2°/0.1° for tilt < 20°
Maximum profiling range Number of beams → Sensors Temperature: Temp. range Temp. accuracy/resolution Temp. time response Compass: Accuracy/resolution Tilt:	N/A N/A Thermistor embedded in head -4 to +40 °C 0.1 °C/0.01 °C 10 min Magnetometer 2°/0.1° for tilt < 20° Liquid level
Maximum profiling range Number of beams → Sensors Temperature: Temp. range Temp. accuracy/resolution Temp. time response Compass: Accuracy/resolution Tilt: Accuracy/resolution	N/A N/A Thermistor embedded in head -4 to +40 °C 0.1 °C/0.01 °C 10 min Magnetometer 2°/0.1° for tilt < 20° Liquid level 0.2°/0.1°
Maximum profiling range Number of beams → Sensors Temperature: Temp. range Temp. accuracy/resolution Temp. time response Compass: Accuracy/resolution Tilt: Accuracy/resolution Maximum tilt	N/A N/A Thermistor embedded in head -4 to +40 °C 0.1 °C/0.01 °C 10 min Magnetometer 2°/0.1° for tilt < 20° Liquid level 0.2°/0.1° 30°
Maximum profiling range Number of beams > Sensors Temperature: Temp. range Temp. accuracy/resolution Temp. time response Compass: Accuracy/resolution Tilt: Accuracy/resolution Maximum tilt Up or Down	N/A N/A Thermistor embedded in head -4 to +40 °C 0.1 °C/0.01 °C 10 min Magnetometer 2°/0.1° for tilt < 20° Liquid level 0.2°/0.1° 30° Automatic detect
Maximum profiling range Number of beams → Sensors Temperature: Temp. range Temp. accuracy/resolution Temp. time response Compass: Accuracy/resolution Tilt: Accuracy/resolution Maximum tilt Up or Down Pressure:	N/A N/A Thermistor embedded in head -4 to +40 °C 0.1 °C/0.01 °C 10 min Magnetometer 2°/0.1° for tilt < 20° Liquid level 0.2°/0.1° 30° Automatic detect Piezoresistive
Maximum profiling range Number of beams → Sensors Temperature: Temp. range Temp. accuracy/resolution Temp. time response Compass: Accuracy/resolution Titt: Accuracy/resolution Maximum tilt Up or Down Pressure: Range	N/A N/A Thermistor embedded in head -4 to +40 °C 0.1 °C/0.01 °C 10 min Magnetometer 2°/0.1° for tilt < 20° Liquid level 0.2°/0.1° 30° Automatic detect Piezoresistive 300 m
Maximum profiling range Number of beams > Sensors Temperature: Temp. range Temp. accuracy/resolution Temp. time response Compass: Accuracy/resolution Tilt: Accuracy/resolution Maximum tilt Up or Down Pressure: Range Accuracy/precision	N/A N/A Thermistor embedded in head -4 to +40 °C 0.1 °C/0.01 °C 10 min Magnetometer 2°/0.1° for tilt < 20° Liquid level 0.2°/0.1° 30° Automatic detect Piezoresistive
Maximum profiling range Number of beams → Sensors Temperature: Temp. range Temp. accuracy/resolution Temp. time response Compass: Accuracy/resolution Tilt: Accuracy/resolution Maximum tilt Up or Down Pressure: Range Accuracy/precision → Analog inputs	N/A N/A Thermistor embedded in head -4 to +40 °C 0.1 °C/0.01 °C 10 min Magnetometer 2°/0.1° for tilt < 20° Liquid level 0.2°/0.1° 30° Automatic detect Piezoresistive 300 m 0.5% FS / 0.005% of full scale
Maximum profiling range Number of beams > Sensors Temperature: Temp. range Temp. accuracy/resolution Temp. time response Compass: Accuracy/resolution Tilt: Accuracy/resolution Maximum tilt Up or Down Pressure: Range Accuracy/precision	N/A N/A Thermistor embedded in head -4 to +40 °C 0.1 °C/0.01 °C 10 min Magnetometer 2°/0.1° for tilt < 20° Liquid level 0.2°/0.1° 30° Automatic detect Piezoresistive 300 m
Maximum profiling range Number of beams > Sensors Temperature: Temp. range Temp. accuracy/resolution Temp. time response Compass: Accuracy/resolution Tilt: Accuracy/resolution Maximum tilt Up or Down Pressure: Range Accuracy/precision > Analog inputs No. of channels	N/A N/A Thermistor embedded in head -4 to +40 °C 0.1 °C/0.01 °C 10 min Magnetometer 2°/0.1° for tilt < 20° Liquid level 0.2°/0.1° 30° Automatic detect Piezoresistive 300 m 0.5% FS / 0.005% of full scale 2 2 Three options selectable through firmware commands: • Battery voltage/500 mA • +5 V/250 mA

→ Data recording	
	9 MB, can add 4/16 GB
Capacity Data record	40 bytes
Diagnostics record Wave record	40 bytes
Mode	40 bytes
→ Real-time clock	Stop when full (default) or wrap mode
	+1 min/voor
Accuracy	±1 min/year 4 weeks
Backup in absence of power → Data communications	4 weeks
→ Data communications I/O	RS-232 or RS-422
Communication baud rate	
	300-115,200 Bd
Recorder download baud rate User control	600/1200 kBd for both RS-232 and RS-422 Handled via "AquaPro" software, ActiveX® function calls, or direct commands with binary or ASCII data output
→ Connectors	· ·
Bulkhead (Impulse)	MCBH-8-FS
Cable	PMCIL-8-MP on 10 m polyurethane cable
→ Software	
Functions	Deployment planning, instrument configuration, data retrieval and conversion (for Windows®)
→ Power	
DC input	9-15 V DC
Maximum peak current	3 A
Avg. power consumption ²⁾	0.01 W
Sleep current	< 100 μA
Transmit power	0.3-20 W, 3 adjustable levels
→ Batteries	
Battery capacity	 50 Wh (alkaline or Li-ion) 165 Wh (lithium) Single or dual
New battery voltage	13.5 V DC (alkaline)
→ Environmental	
Operating temperature	-5 to +40 °C
Storage temperature	-20 to +60 °C
Shock and vibration	IEC 721-3-2
EMC approval	IEC 61000
Depth rating	300 m
→ Materials	
Standard model	POM housing with titanium fasteners
→ Dimensions	
Maximum diameter	75 mm
Maximum length	~500 mm (single battery) +110 mm (double battery) depending on head configuration
→ Weight	
Weight in air	2.3 kg
Weight in water	Neutral
→ Options	
	 Alkaline, lithium or Li-ion external batteries Inquire for different head configurations Inductive modem

1) Inquire for higher ranges, 2) Default configuration, see instrument SW for details and other setups

Aquadopp, 3000 m



With all the features and capabilities of the standard Aquadopp, the deepwater Aquadopp 3000 m current meter has been used and proven by oceanographers around the world for almost 20 years. Thanks to innovative data diagnostic features for challenging environments, it provides exceptionally high-quality 3D currents in a form factor that is easy to install in any type of mooring line configuration, or simply attached to a bottom or surface platform.

Raw magnetometer data can be stored for post calibration of compass when used without the inductive modem option.

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Highlights

- → Single-point current meter
- → Designed for very long-term deployments
- → Diagnostics mode for mooring performance evaluation



- → Studies of deep-water currents
- \rightarrow Studies of tidal currents
- → Attached to mooring lines
- → In conjunction with riser monitoring systems
- → Measurements of unaffected currents from physical structures
- → Alternative to conventional current meters with errors due to fouling
- → Combination of currents and high-accuracy CTD data
- → Near-bed current measurements from landers
- → Deep ocean mining support



Aquadopp, 3000 m

ightarrow Water velocity measurem	nents
Maximum profiling range	N/A
Cell size	0.75 m
Minimum blanking	0.50 m
Maximum number of cells	1
Measurement cell position	0.5-5.0 m (user-selectable)
Default position (along beam)	0.50-2.0 m
Velocity range	±5 m/s 1)
Accuracy	±1% of measured value ±0.5 cm/s
Velocity precision	Consult instrument software
Maximum sampling rate (output)	1 Hz
Internal sampling rate	23 Hz
→ Echo intensity	
Sampling	Same as velocity
Resolution	0.45 dB
Dynamic range	90 dB
Transducer acoustic frequency	2 MHz
Number of beams	3
Beam width	3.4°
→ HR option	
Maximum profiling range	N/A
Cell size	N/A
Minimum blanking	N/A
Maximum number of cells	N/A
Range/velocity limitations	N/A
Accuracy	N/A
Max compling rate	N/A
Max. sampling rate	IN/A
Max. sampling rate → Z-Cell option	N/A
	N/A N/A
→ Z-Cell option	
→ Z-Cell option Cell zero acoustic frequency	N/A
 → Z-Cell option Cell zero acoustic frequency Maximum profiling range 	N/A N/A
 → Z-Cell option Cell zero acoustic frequency Maximum profiling range Number of beams 	N/A N/A
 → Z-Cell option Cell zero acoustic frequency Maximum profiling range Number of beams → Sensors 	N/A N/A N/A
 → Z-Cell option Cell zero acoustic frequency Maximum profiling range Number of beams → Sensors Temperature: 	N/A N/A N/A Thermistor embedded in head
 → Z-Cell option Cell zero acoustic frequency Maximum profiling range Number of beams → Sensors Temperature: Temp. range 	N/A N/A N/A Thermistor embedded in head -4 to +40 °C
 → Z-Cell option Cell zero acoustic frequency Maximum profiling range Number of beams → Sensors Temperature: Temp. range Temp. accuracy/resolution 	N/A N/A N/A N/A Thermistor embedded in head -4 to +40 °C 0.1 °C/0.01 °C
 → Z-Cell option Cell zero acoustic frequency Maximum profiling range Number of beams → Sensors Temperature: Temp. range Temp. accuracy/resolution Temp. time response 	N/A N/A N/A N/A Thermistor embedded in head -4 to +40 °C 0.1 °C/0.01 °C 10 min
 → Z-Cell option Cell zero acoustic frequency Maximum profiling range Number of beams → Sensors Temperature: Temp. range Temp. accuracy/resolution Temp. time response Compass: 	N/A N/A N/A N/A Thermistor embedded in head -4 to +40 °C 0.1 °C/0.01 °C 10 min Magnetometer
 → Z-Cell option Cell zero acoustic frequency Maximum profiling range Number of beams → Sensors Temperature: Temp. range Temp. accuracy/resolution Temp. time response Compass: Accuracy/resolution 	N/A N/A N/A N/A Thermistor embedded in head -4 to +40 °C 0.1 °C/0.01 °C 10 min Magnetometer 2°/0.1° for tilt < 20°
 → Z-Cell option Cell zero acoustic frequency Maximum profiling range Number of beams → Sensors Temperature: Temp. range Temp. accuracy/resolution Temp. time response Compass: Accuracy/resolution Tilt: 	N/A N/A N/A N/A Thermistor embedded in head -4 to +40 °C 0.1 °C/0.01 °C 0.1 °C/0.01 °C 10 min Magnetometer 2°/0.1° for tilt < 20° Liquid level
 Z-Cell option Cell zero acoustic frequency Maximum profiling range Number of beams Sensors Temperature: Temp. range Temp. accuracy/resolution Temp. time response Compass: Accuracy/resolution Tilt: Accuracy/resolution 	N/A N/A N/A N/A Thermistor embedded in head -4 to +40 °C 0.1 °C/0.01 °C 0.1 °C/0.01 °C 10 min Magnetometer 2°/0.1° for tilt < 20° Liquid level 0.2°/0.1°
 → Z-Cell option Cell zero acoustic frequency Maximum profiling range Number of beams → Sensors Temperature: Temp. range Temp. accuracy/resolution Temp. time response Compass: Accuracy/resolution Tilt: Accuracy/resolution Maximum tilt 	N/A N/A N/A N/A Thermistor embedded in head -4 to +40 °C 0.1 °C/0.01 °C 0.1 °C/0.01 °C 10 min Magnetometer 2°/0.1° for tilt < 20° Liquid level 0.2°/0.1° 30°
 Z-Cell option Cell zero acoustic frequency Maximum profiling range Number of beams Sensors Temperature: Temp. range Temp. accuracy/resolution Temp. time response Compass: Accuracy/resolution Tilt: Accuracy/resolution Maximum tilt Up or Down 	N/A N/A N/A N/A Thermistor embedded in head -4 to +40 °C 0.1 °C/0.01 °C 10 min Magnetometer 2°/0.1° for tilt < 20° Liquid level 0.2°/0.1° 30° Automatic detect
 Z-Cell option Cell zero acoustic frequency Maximum profiling range Number of beams Sensors Temperature: Temp. range Temp. accuracy/resolution Temp. time response Compass: Accuracy/resolution Tilt: Accuracy/resolution Maximum tilt Up or Down Pressure: 	N/A N/A N/A N/A Thermistor embedded in head -4 to +40 °C 0.1 °C/0.01 °C 10 min Magnetometer 2°/0.1° for tilt < 20° Liquid level 0.2°/0.1° 30° Automatic detect Piezoresistive
 Z-Cell option Cell zero acoustic frequency Maximum profiling range Number of beams Sensors Temperature: Temp. range Temp. accuracy/resolution Temp. time response Compass: Accuracy/resolution Tilt: Accuracy/resolution Maximum tilt Up or Down Pressure: Range 	N/A N/A N/A N/A Thermistor embedded in head -4 to +40 °C 0.1 °C/0.01 °C 10 min Magnetometer 2°/0.1° for tilt < 20° Liquid level 0.2°/0.1° 30° Automatic detect Piezoresistive 3000 m
 > Z-Cell option Cell zero acoustic frequency Maximum profiling range Number of beams > Sensors Temperature: Temp. range Temp. accuracy/resolution Temp. time response Compass: Accuracy/resolution Tilt: Accuracy/resolution Maximum tilt Up or Down Pressure: Range Accuracy/precision 	N/A N/A N/A N/A Thermistor embedded in head -4 to +40 °C 0.1 °C/0.01 °C 10 min Magnetometer 2°/0.1° for tilt < 20° Liquid level 0.2°/0.1° 30° Automatic detect Piezoresistive 3000 m
 > Z-Cell option Cell zero acoustic frequency Maximum profiling range Number of beams > Sensors Temperature: Temp. range Temp. accuracy/resolution Temp. time response Compass: Accuracy/resolution Tilt: Accuracy/resolution Maximum tilt Up or Down Pressure: Range Accuracy/precision > Analog inputs 	N/A N/A N/A N/A N/A Thermistor embedded in head -4 to +40 °C 0.1 °C/0.01 °C 10 min Magnetometer 2°/0.1° for tilt < 20° Liquid level 0.2°/0.1° 30° Automatic detect Piezoresistive 3000 m 0.5% FS / 0.005% of full scale
 Z-Cell option Cell zero acoustic frequency Maximum profiling range Number of beams Sensors Temperature: Temp. range Temp. accuracy/resolution Temp. time response Compass: Accuracy/resolution Tilt: Accuracy/resolution Maximum tilt Up or Down Pressure: Range Accuracy/precision Analog inputs No. of channels 	N/A N/A N/A N/A Thermistor embedded in head -4 to +40 °C 0.1 °C/0.01 °C 0.1 °C/0.01 °C 10 min Magnetometer 2°/0.1° for tilt < 20° Liquid level 0.2°/0.1° 30° Automatic detect Piezoresistive 3000 m 0.5% FS / 0.005% of full scale 2 Three options selectable through firmware commands: • Battery voltage/500 mA • +5 V/250 mA

→ Data recording	
Capacity	9 MB, can add 4/16 GB
Data record	40 bytes
Diagnostics record	40 bytes
Wave record	N/A
Mode	Stop when full (default) or wrap mode
→ Real-time clock	
Accuracy	±1 min/year
Backup in absence of power	4 weeks
→ Data communications	
I/0	RS-232 or RS-422
Communication baud rate	300-115200 Bd
Recorder download baud rate	600/1200 kBd for both RS-232 and RS-422
User control	Handled via "AquaPro" software, ActiveX® function calls, or direct commands with binary or ASCII data output
→ Connectors	
Bulkhead (Impulse)	MCBH-8-FS
Cable	PMCIL-8-MP on 10 m polyurethane cable
→ Software	
Functions	Deployment planning, instrument configuration, data retrieval and conversion (for Windows®)
→ Power	
DC input	9-15 V DC
Maximum peak current	3 A
Avg. power consumption ²⁾	0.015 W
Sleep current	< 100 µA
Transmit power	20 W
→ Batteries	
Battery capacity	 50 Wh (alkaline or Li-ion) 165 Wh (lithium) Single or dual
New battery voltage	13.5 V DC (alkaline)
→ Environmental	
Operating temperature	-5 to +40 °C
Storage temperature	-20 to +60 °C
Shock and vibration	IEC 721-3-2
EMC approval	IEC 61000
Depth rating	3000 m
→ Materials	
Standard model	POM housing with titanium fasteners
→ Dimensions	
Maximum diameter	84 mm
Maximum length	~500 mm (single battery) +110 mm (double battery) depending on head configuration
→ Weight	
Weight in air	3.6 kg
Weight in water	1.2 kg
→ Options	
	 Alkaline, lithium or Li-ion external batteries Inquire for different head configurations

1) Inquire for higher ranges, 2) Default configuration, see instrument SW for details and other setups

Aquadopp, 6000 m



With all the features and capabilities of the standard Aquadopp, the deepwater Aquadopp 6000 m current meter has been used and proven by oceanographers around the world for almost 20 years. Thanks to innovative data diagnostic features for challenging environments, it provides exceptionally high-quality 3D currents in a form factor that is easy to install in any type of mooring line configuration, or simply attached to a bottom or surface platform.

Raw magnetometer data can be stored for post calibration of compass when used without the inductive modem option.



Highlights

- → Full ocean-depth single-point current meter
- \rightarrow Titanium housing
- → Diagnostics mode for mooring performance evaluation



- → Studies of deep-water currents
- → Studies of tidal currents
- → Attached to mooring lines
- → In conjunction with riser monitoring systems
- → Measurements of unaffected currents from physical structures
- → Alternative to conventional current meters with errors due to fouling
- → Combination of currents and high-accuracy CTD data
- → Near-bed current measurements from landers
- → Deep ocean mining support



Aquadopp, 6000 m

\rightarrow Water velocity measure	ements
Maximum profiling range	N/A
Cell size	0.75 m
Minimum blanking	0.50 m
Maximum number of cells	1
Measurement cell position	0.5-5.0 m (user-selectable)
Default position (along beam)	0.50-2.0 m
Velocity range	±5 m/s ¹⁾
Accuracy	±1% of measured value ±0.5 cm/s
Velocity precision	Consult instrument software
Maximum sampling rate (output)	1 Hz
Internal sampling rate	23 Hz
→ Echo intensity	
Sampling	Same as velocity
Resolution	0.45 dB
Dynamic range	90 dB
Transducer acoustic frequency	2 MHz
Number of beams	3
Beam width	3.4°
→ HR option	
Maximum profiling range	N/A
Cell size	N/A
Minimum blanking	N/A
Maximum number of cells	N/A
Range/velocity limitations	N/A
Accuracy	N/A
Max. sampling rate	N/A
Z-Cell option	
→ Z-Cell option Cell zero acoustic frequency	N/A
	N/A N/A
Cell zero acoustic frequency	
Cell zero acoustic frequency Maximum profiling range	N/A
Cell zero acoustic frequency Maximum profiling range Number of beams	N/A
Cell zero acoustic frequency Maximum profiling range Number of beams → Sensors Temperature: Temp. range	N/A N/A Thermistor embedded in head -4 to +40 °C
Cell zero acoustic frequency Maximum profiling range Number of beams Sensors Temperature: Temp. range Temp. accuracy/resolution	N/A N/A Thermistor embedded in head -4 to +40 °C 0.1 °C/0.01 °C
Cell zero acoustic frequency Maximum profiling range Number of beams → Sensors Temperature: Temp. range	N/A N/A Thermistor embedded in head -4 to +40 °C
Cell zero acoustic frequency Maximum profiling range Number of beams Sensors Temperature: Temp. range Temp. accuracy/resolution	N/A N/A Thermistor embedded in head -4 to +40 °C 0.1 °C/0.01 °C 10 min Magnetometer
Cell zero acoustic frequency Maximum profiling range Number of beams > Sensors Temperature: Temp. range Temp. accuracy/resolution Temp. time response Compass: Accuracy/resolution	N/A N/A Thermistor embedded in head -4 to +40 °C 0.1 °C/0.01 °C 10 min Magnetometer 2°/0.1° for tilt < 20°
Cell zero acoustic frequency Maximum profiling range Number of beams → Sensors Temperature: Temp. range Temp. accuracy/resolution Temp. time response Compass:	N/A N/A Thermistor embedded in head -4 to +40 °C 0.1 °C/0.01 °C 10 min Magnetometer
Cell zero acoustic frequency Maximum profiling range Number of beams > Sensors Temperature: Temp. range Temp. accuracy/resolution Temp. time response Compass: Accuracy/resolution	N/A N/A Thermistor embedded in head -4 to +40 °C 0.1 °C/0.01 °C 10 min Magnetometer 2°/0.1° for tilt < 20° Liquid level 0.2°/0.1°
Cell zero acoustic frequency Maximum profiling range Number of beams > Sensors Temperature: Temp. range Temp. accuracy/resolution Temp. time response Compass: Accuracy/resolution Tilt:	N/A N/A Thermistor embedded in head -4 to +40 °C 0.1 °C/0.01 °C 10 min Magnetometer 2°/0.1° for tilt < 20° Liquid level
Cell zero acoustic frequency Maximum profiling range Number of beams > Sensors Temperature: Temp. range Temp. accuracy/resolution Temp. time response Compass: Accuracy/resolution Tilt: Accuracy/resolution	N/A N/A Thermistor embedded in head -4 to +40 °C 0.1 °C/0.01 °C 10 min Magnetometer 2°/0.1° for tilt < 20° Liquid level 0.2°/0.1°
Cell zero acoustic frequency Maximum profiling range Number of beams > Sensors Temperature: Temp. range Temp. accuracy/resolution Temp. time response Compass: Accuracy/resolution Tilt: Accuracy/resolution Maximum tilt	N/A N/A Thermistor embedded in head -4 to +40 °C 0.1 °C/0.01 °C 10 min Magnetometer 2°/0.1° for tilt < 20° Liquid level 0.2°/0.1°
Cell zero acoustic frequency Maximum profiling range Number of beams Sensors Temperature: Temp. range Temp. accuracy/resolution Temp. time response Compass: Accuracy/resolution Tilt: Accuracy/resolution Maximum tilt Up or Down	N/A N/A Thermistor embedded in head -4 to +40 °C 0.1 °C/0.01 °C 10 min Magnetometer 2°/0.1° for tilt < 20° Liquid level 0.2°/0.1° 30° Automatic detect
Cell zero acoustic frequency Maximum profiling range Number of beams > Sensors Temperature: Temp. range Temp. accuracy/resolution Temp. time response Compass: Accuracy/resolution Tilt: Accuracy/resolution Maximum tilt Up or Down Pressure: Range Accuracy/precision	N/A N/A Thermistor embedded in head -4 to +40 °C 0.1 °C/0.01 °C 10 min Magnetometer 2°/0.1° for tilt < 20° Liquid level 0.2°/0.1° 30° Automatic detect Piezoresistive
Cell zero acoustic frequency Maximum profiling range Number of beams > Sensors Temperature: Temp. range Temp. accuracy/resolution Temp. time response Compass: Accuracy/resolution Tilt: Accuracy/resolution Maximum tilt Up or Down Pressure: Range	N/A N/A Thermistor embedded in head -4 to +40 °C 0.1 °C/0.01 °C 10 min Magnetometer 2°/0.1° for tilt < 20° Liquid level 0.2°/0.1° 30° Automatic detect Piezoresistive 6000 m
Cell zero acoustic frequency Maximum profiling range Number of beams > Sensors Temperature: Temp. range Temp. accuracy/resolution Temp. time response Compass: Accuracy/resolution Tilt: Accuracy/resolution Maximum tilt Up or Down Pressure: Range Accuracy/precision	N/A N/A Thermistor embedded in head -4 to +40 °C 0.1 °C/0.01 °C 10 min Magnetometer 2°/0.1° for tilt < 20° Liquid level 0.2°/0.1° 30° Automatic detect Piezoresistive 6000 m
Cell zero acoustic frequency Maximum profiling range Number of beams > Sensors Temperature: Temp. range Temp. accuracy/resolution Temp. time response Compass: Accuracy/resolution Tilt: Accuracy/resolution Maximum tilt Up or Down Pressure: Range Accuracy/precision → Analog inputs	N/A N/A Thermistor embedded in head -4 to +40 °C 0.1 °C/0.01 °C 10 min Magnetometer 2°/0.1° for tilt < 20° Liquid level 0.2°/0.1° 30° Automatic detect Piezoresistive 6000 m 0.5% FS / 0.005% of full scale
Cell zero acoustic frequency Maximum profiling range Number of beams > Sensors Temperature: Temp. range Temp. accuracy/resolution Temp. time response Compass: Accuracy/resolution Tilt: Accuracy/resolution Maximum tilt Up or Down Pressure: Range Accuracy/precision > Analog inputs No. of channels	N/A Solution of the set

> Doto poconding	
→ Data recording	0 MP con odd (/16 CP
Capacity Data record	9 MB, can add 4/16 GB
	40 bytes
Diagnostics record	40 bytes
Wave record	N/A
Mode	Stop when full (default) or wrap mode
→ Real-time clock	+1 min/uppr
Accuracy	±1 min/year
Backup in absence of power	4 weeks
→ Data communications I/O	DC 222 or DC 422
	RS-232 or RS-422 300-115200 Bd
Communication baud rate	
Recorder download baud rate	600/1200 kBd for both RS-232 and RS-422
User control	Handled via "AquaPro" software, ActiveX® function calls, or direct commands with binary or ASCII data output
→ Connectors	
Bulkhead (Impulse)	MCBH-8-FS titanium
Cable	PMCIL-8-MP on 10 m polyurethane cable
→ Software	
Functions	Deployment planning, instrument configuration, data retrieval and conversion (for Windows®)
→ Power	
DC input	9-15 V DC
Maximum peak current	3 A
Avg. power consumption ²⁾	0.015 W
Sleep current	< 100 μA
Transmit power	20 W
→ Batteries	
Battery capacity	 50 Wh (alkaline or Li-ion) 165 Wh (lithium) Single or dual
New battery voltage	13.5 V DC (alkaline)
→ Environmental	
Operating temperature	-5 to +40 °C
Storage temperature	-20 to +60 °C
Shock and vibration	IEC 721-3-4
EMC approval	IEC 61000
Depth rating	6000 m
→ Materials	
Standard model	Titanium and POM
→ Dimensions	
Maximum diameter	84 mm
Maximum length	~500 mm (single battery) +110 mm (double battery) depending on head configuration
→ Weight	
Weight in air	7.6 kg
Weight in water	4.8 kg
→ Options	
	 Alkaline, lithium or Li-ion external batteries Inquire for different head configurations Inductive modem

1) Inquire for higher ranges, 2) Default configuration, see instrument SW for details and other setups

Aquadopp Profiler, 2 MHz



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The Aquadopp Profiler is a highly versatile Acoustic Doppler Current Profiler (ADCP) available in four profiling range options, from < 1 m to > 85 m. Designed for simple yet powerful operation, this current profiler is packed with features used by engineers and researchers to enable accurate and effective hydrodynamic data collection in a variety of environmental conditions.

1 1



Highlights

 \rightarrow Up to 10 m current profiling range

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- → Optional right-angle head
- → PUV-based directional wave measurements



- → Near-bed current profiles with fine vertical resolution
- → Mean flow measurements with high focus on ease of use and simplicity
- → Measurements in flow regimes with strong variations in flow speeds
- → Projects with needs for both high-resolution and normal-range current measurements
- → Measurements of combinations of waves and currents
- → Studies of deep-water currents
- → Studies of tidal currents
- → Mounted on surface buoys
- → Suitable for wave buoys



Aquadopp Profiler, 2 MHz

→ Water velocity measure	ements
Maximum profiling range ¹⁾	4-10 m
Cell size	0.1-2 m
Minimum blanking	0.05 m
Maximum number of cells	128
Measurement cell position	N/A
Default position (along beam)	N/A
Velocity range	±10 m/s ²⁾
Accuracy	±1% of measured value ±0.5 cm/s
	Consult instrument software
Velocity precision	Consult Instrument software
Maximum sampling rate (output)	1 Hz
Internal sampling rate	23 Hz
→ Echo intensity (along	slanted beams)
Sampling	Same as velocity
Resolution	0.45 dB
Dynamic range	90 dB
Transducer acoustic frequency	2 MHz
Number of beams	3
Beam width	5 1.7°
	1. <i>/</i>
HR option Maximum profiling range	3 m
Maximum profiling range	
Cell size	7-150 mm
Minimum blanking	0.03 m
Maximum number of cells	128
Range/velocity limitations	Product of profiling range and velocity should not exceed 0.5 m²/s (2 MHz system)
Accuracy	±1% of measured value ±0.5 cm/s
Max. sampling rate	1 Hz (continuous mode) 8 Hz (burst mode)
→ Z-Cell option	
Cell zero acoustic frequency	N/A
Maximum profiling range	N/A
Number of beams	N/A
→ Sensors	
Temperature:	
.oporacaro.	Thermistor embedded in head
Temp, range	Thermistor embedded in head
Temp. range	-4 to +40 °C
Temp. accuracy/resolution	-4 to +40 °C 0.1 °C/0.01 °C
Temp. accuracy/resolution Temp. time response	-4 to +40 °C 0.1 °C/0.01 °C 10 min
Temp. accuracy/resolution Temp. time response Compass:	-4 to +40 °C 0.1 °C/0.01 °C 10 min Magnetometer
Temp. accuracy/resolution Temp. time response Compass: Accuracy/resolution	-4 to +40 °C 0.1 °C/0.01 °C 10 min Magnetometer 2°/0.1° for tilt < 20°
Temp. accuracy/resolution Temp. time response Compass: Accuracy/resolution Tilt:	-4 to +40 °C 0.1 °C/0.01 °C 10 min Magnetometer 2°/0.1° for tilt < 20° Liquid level
Temp. accuracy/resolution Temp. time response Compass: Accuracy/resolution Tilt: Accuracy/resolution	-4 to +40 °C 0.1 °C/0.01 °C 10 min Magnetometer 2°/0.1° for tilt < 20° Liquid level 0.2°/0.1°
Temp. accuracy/resolution Temp. time response Compass: Accuracy/resolution Tilt: Accuracy/resolution Maximum tilt	-4 to +40 °C 0.1 °C/0.01 °C 10 min Magnetometer 2°/0.1° for tilt < 20° Liquid level 0.2°/0.1° 30°
Temp. accuracy/resolution Temp. time response Compass: Accuracy/resolution Tilt: Accuracy/resolution Maximum tilt Up or Down	-4 to +40 °C 0.1 °C/0.01 °C 10 min Magnetometer 2°/0.1° for tilt < 20° Liquid level 0.2°/0.1° 30° Automatic detect
Temp. accuracy/resolution Temp. time response Compass: Accuracy/resolution Tilt: Accuracy/resolution Maximum tilt	-4 to +40 °C 0.1 °C/0.01 °C 10 min Magnetometer 2°/0.1° for tilt < 20° Liquid level 0.2°/0.1° 30°
Temp. accuracy/resolution Temp. time response Compass: Accuracy/resolution Tilt: Accuracy/resolution Maximum tilt Up or Down	-4 to +40 °C 0.1 °C/0.01 °C 10 min Magnetometer 2°/0.1° for tilt < 20° Liquid level 0.2°/0.1° 30° Automatic detect
Temp. accuracy/resolution Temp. time response Compass: Accuracy/resolution Tilt: Accuracy/resolution Maximum tilt Up or Down Pressure:	-4 to +40 °C 0.1 °C/0.01 °C 10 min Magnetometer 2°/0.1° for tilt < 20° Liquid level 0.2°/0.1° 30° Automatic detect Piezoresistive
Temp. accuracy/resolution Temp. time response Compass: Accuracy/resolution Tilt: Accuracy/resolution Maximum tilt Up or Down Pressure: Range	-4 to +40 °C 0.1 °C/0.01 °C 10 min Magnetometer 2°/0.1° for tilt < 20° Liquid level 0.2°/0.1° 30° Automatic detect Piezoresistive 0-100 m (inquire for options)
Temp. accuracy/resolution Temp. time response Compass: Accuracy/resolution Tilt: Accuracy/resolution Maximum tilt Up or Down Pressure: Range Accuracy/precision	-4 to +40 °C 0.1 °C/0.01 °C 10 min Magnetometer 2°/0.1° for tilt < 20° Liquid level 0.2°/0.1° 30° Automatic detect Piezoresistive 0-100 m (inquire for options)
Temp. accuracy/resolution Temp. time response Compass: Accuracy/resolution Tilt: Accuracy/resolution Maximum tilt Up or Down Pressure: Range Accuracy/precision → Analog inputs	-4 to +40 °C 0.1 °C/0.01 °C 10 min Magnetometer 2°/0.1° for tilt < 20° Liquid level 0.2°/0.1° 30° Automatic detect Piezoresistive 0-100 m (inquire for options) 0.5% FS / 0.005% of full scale
Temp. accuracy/resolution Temp. time response Compass: Accuracy/resolution Tilt: Accuracy/resolution Maximum tilt Up or Down Pressure: Range Accuracy/precision → Analog inputs No. of channels	-4 to +40 °C 0.1 °C/0.01 °C 10 min Magnetometer 2°/0.1° for tilt < 20° Liquid level 0.2°/0.1° 30° Automatic detect Piezoresistive 0-100 m (inquire for options) 0.5% FS / 0.005% of full scale 2 Three options selectable through firmware commands: Battery voltage/500 mA +5 V/250 mA

→ Data recording	
Capacity	9 MB, can add 4/16 GB
Data record	9*Ncells + 32 bytes
Diagnostics record	N/A
Wave record	Nsamples * 24 + 60 bytes
Mode	Stop when full (default) or wrap mode
→ Real-time clock	and a second
Accuracy	±1 min/year
Backup in absence of power	4 weeks
→ Data communications	
I/0	RS-232 or RS-422
Communication baud rate	300-115200 Bd
Recorder download baud rate	600/1200 kBd for both RS-232 and RS-422
User control	Handled via "AquaPro" software, ActiveX® function calls, or direct commands with binary or ASCII data output
→ Connectors	
Bulkhead (Impulse)	MCBH-8-FS
Cable	PMCIL-8-MP on 10 m polyurethane cable
→ Software	
Functions	Deployment planning, instrument configuration, data retrieval and conversion (for Windows®)
→ Power	
DC input	9-15 V DC
Maximum peak current	3 A
Avg. power consumption ³⁾	0.03 W
Sleep current	< 100 µA
Transmit power	0.3-20 W, 3 adjustable levels
→ Batteries Battery capacity	 50 Wh (alkaline or Li-ion) 165 Wh (lithium) Single or dual
New battery voltage	13.5 V DC (alkaline)
→ Environmental	
Operating temperature	-5 to +40 °C
Storage temperature	-20 to +60 °C
Shock and vibration	IEC 721-3-8
EMC approval	IEC 61000
Depth rating	300 m 3000 m and 6000 m option
→ Materials	
Standard model	POM and polyurethane plastics with titanium fasteners
→ Dimensions	
Maximum diameter	75 mm
Maximum length	~550 mm (single battery) +110 mm (double battery) depending on head configuration
→ Weight	
Weight in air	2.2 kg
Weight in water	0.2 kg
→ Options	
	 Alkaline, lithium or Li-ion external batteries Inquire for different head configurations

 $^{\rm 1})$ Depends on local scattering conditions, $^{\rm 2})$ Inquire for higher ranges, $^{\rm 3})$ Default configuration, see instrument SW for details and other setups

Aquadopp Profiler, 1 MHz



Current profiler



The Aquadopp Profiler is a highly versatile Acoustic Doppler Current Profiler (ADCP) available in four profiling range options, from < 1 m to > 85 m. Designed for simple yet powerful operation, this current profiler is packed with features used by engineers and researchers to enable accurate and effective hydrodynamic data collection in a variety of environmental conditions.



Highlights

→ Up to 25 m current profiling range

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- → Optional right-angle head
- → PUV wave measurements



- → Mean flow measurements with high focus on ease of use and simplicity
- → Measurements in flow regimes with strong variations in flow speeds
- → Projects with needs for both high-resolution and normal-range current measurements
- → Studies of deep-water currents
- → Studies of tidal currents
- → Measurements of combinations of waves and currents
- → Suitable for wave buoys



Aquadopp Profiler, 1 MHz

→ Water velocity measur	ements
Maximum profiling range ¹⁾	12-25 m
Cell size	0.3-4 m
Minimum blanking	0.20 m
Maximum number of cells	128
Measurement cell position	N/A
Default position (along beam)	N/A
Velocity range	±10 m/s ²⁾
Accuracy	±1% of measured value ±0.5 cm/s
Velocity precision	Consult instrument software
Maximum sampling rate (output)	1 Hz
Internal sampling rate	7 Hz
→ Echo intensity (along	slanted beams)
Sampling	Same as velocity
Resolution	0.45 dB
Dynamic range	90 dB
Transducer acoustic frequency	1 MHz
Number of beams	3
Beam width	3.4°
→ HR option	
Maximum profiling range	6 m
Cell size	20-300 mm
Minimum blanking	0.2 m
Maximum number of cells	128
Range/velocity limitations	Product of profiling range and velocity should not exceed 1.0 m ² /s
Accuracy	±1% of measured value ±0.5 cm/s
Max. sampling rate	1 Hz (continuous mode)
max. sumpting rate	8 Hz (burst mode)
→ Z-Cell option	8 Hz (burst mode)
→ Z-Cell option	8 Hz (burst mode) N/A
→ Z-Cell option Cell zero acoustic frequency	
→ Z-Cell option	N/A
 → Z-Cell option Cell zero acoustic frequency Maximum profiling range 	N/A N/A
→ Z-Cell option Cell zero acoustic frequency Maximum profiling range Number of beams	N/A N/A
 → Z-Cell option Cell zero acoustic frequency Maximum profiling range Number of beams → Sensors Temperature: 	N/A N/A N/A
 → Z-Cell option Cell zero acoustic frequency Maximum profiling range Number of beams → Sensors Temperature: Temp. range 	N/A N/A N/A Thermistor embedded in head
 → Z-Cell option Cell zero acoustic frequency Maximum profiling range Number of beams → Sensors Temperature: 	N/A N/A N/A Thermistor embedded in head -4 to +40 °C
 → Z-Cell option Cell zero acoustic frequency Maximum profiling range Number of beams → Sensors → Sensors Temperature: Temp. range Temp. accuracy/resolution 	N/A N/A N/A Thermistor embedded in head -4 to +40 °C 0.1 °C/0.01 °C
 → Z-Cell option Cell zero acoustic frequency Maximum profiling range Number of beams → Sensors → Sensors Temperature: Temp. range Temp. accuracy/resolution Temp. time response Compass: 	N/A N/A N/A Thermistor embedded in head -4 to +40 °C 0.1 °C/0.01 °C 10 min
 → Z-Cell option Cell zero acoustic frequency Maximum profiling range Number of beams → Sensors → Sensors Temperature: Temp. range Temp. accuracy/resolution Temp. time response 	N/A N/A N/A N/A Thermistor embedded in head -4 to +40 °C 0.1 °C/0.01 °C 10 min Magnetometer 2°/0.1° for tilt < 20°
 → Z-Cell option Cell zero acoustic frequency Maximum profiling range Number of beams → Sensors → Sensors Temperature: Temp. range Temp. accuracy/resolution Temp. time response Compass: Accuracy/resolution Tilt: 	N/A N/A N/A Thermistor embedded in head -4 to +40 °C 0.1 °C/0.01 °C 10 min Magnetometer
 Z-Cell option Cell zero acoustic frequency Maximum profiling range Number of beams Sensors Temperature: Temp. range Temp. accuracy/resolution Temp. time response Compass: Accuracy/resolution 	N/A N/A N/A N/A Thermistor embedded in head -4 to +40 °C 0.1 °C/0.01 °C 0.1 °C/0.01 °C 10 min Magnetometer 2°/0.1° for tilt < 20° Liquid level
 Z-Cell option Cell zero acoustic frequency Maximum profiling range Number of beams Sensors Temperature: Temp. range Temp. accuracy/resolution Temp. time response Compass: Accuracy/resolution Tit: Accuracy/resolution 	N/A N/A N/A N/A Thermistor embedded in head -4 to +40 °C 0.1 °C/0.01 °C 0.1 °C/0.01 °C 10 min Magnetometer 2°/0.1° for tilt < 20° Liquid level 0.2°/0.1°
 Z-Cell option Cell zero acoustic frequency Maximum profiling range Number of beams Sensors Temperature: Temp. range Temp. accuracy/resolution Temp. time response Compass: Accuracy/resolution Tilt: Accuracy/resolution Maximum tilt 	N/A N/A N/A N/A Thermistor embedded in head -4 to +40 °C 0.1 °C/0.01 °C 0.1 °C/0.01 °C 10 min Magnetometer 2°/0.1° for tilt < 20° Liquid level 0.2°/0.1° 30°
 Z-Cell option Cell zero acoustic frequency Maximum profiling range Number of beams Sensors Temperature: Temp. range Temp. range Temp. accuracy/resolution Temp. time response Compass: Accuracy/resolution Tilt: Accuracy/resolution Maximum tilt Up or Down Pressure: 	N/A N/A N/A N/A Thermistor embedded in head -4 to +40 °C 0.1 °C/0.01 °C 10 min Magnetometer 2°/0.1° for tilt < 20° Liquid level 0.2°/0.1° 30° Automatic detect Piezoresistive
 Z-Cell option Cell zero acoustic frequency Maximum profiling range Number of beams Sensors Temperature: Temp. range Temp. accuracy/resolution Temp. time response Compass: Accuracy/resolution Tilt: Accuracy/resolution Tilt: Accuracy/resolution Pressure: Range 	N/A N/A N/A N/A Thermistor embedded in head -4 to +40 °C 0.1 °C/0.01 °C 10 min Magnetometer 2°/0.1° for tilt < 20° Liquid level 0.2°/0.1° 30° Automatic detect
 Z-Cell option Cell zero acoustic frequency Maximum profiling range Number of beams Sensors Temperature: Temp. range Temp. range Temp. accuracy/resolution Temp. time response Compass: Accuracy/resolution Tilt: Accuracy/resolution Maximum tilt Up or Down Pressure: 	N/A N/A N/A N/A Thermistor embedded in head -4 to +40 °C 0.1 °C/0.01 °C 10 min Magnetometer 2°/0.1° for tilt < 20° Liquid level 0.2°/0.1° 30° Automatic detect Piezoresistive 0-100 m (inquire for options)
 Z-Cell option Cell zero acoustic frequency Maximum profiling range Number of beams Sensors Temperature: Temp. range Temp. accuracy/resolution Temp. time response Compass: Accuracy/resolution Tilt: Accuracy/resolution Tilt: Down Pressure: Range Accuracy/precision 	N/A N/A N/A N/A Thermistor embedded in head -4 to +40 °C 0.1 °C/0.01 °C 10 min Magnetometer 2°/0.1° for tilt < 20° Liquid level 0.2°/0.1° 30° Automatic detect Piezoresistive 0-100 m (inquire for options)
 Z-Cell option Cell zero acoustic frequency Maximum profiling range Number of beams Sensors Temperature: Temp. range Temp. range Temp. accuracy/resolution Temp. time response Compass: Accuracy/resolution Tilt: Accuracy/resolution Maximum tilt Up or Down Pressure: Range Accuracy/precision Analog inputs 	N/A N/A N/A N/A Thermistor embedded in head -4 to +40 °C 0.1 °C/0.01 °C 10 min Magnetometer 2°/0.1° for tilt < 20° Liquid level 0.2°/0.1° 30° Automatic detect Piezoresistive 0-100 m (inquire for options) 0.5% FS / 0.005% of full scale
 Z-Cell option Cell zero acoustic frequency Maximum profiling range Number of beams Sensors Temperature: Temp. range Temp. accuracy/resolution Temp. time response Compass: Accuracy/resolution Tilt: Accuracy/resolution Maximum tilt Up or Down Pressure: Range Accuracy/precision Accuracy/precision Analog inputs No. of channels 	N/A N/A N/A N/A N/A Thermistor embedded in head -4 to +40 °C 0.1 °C/0.01 °C 0.1 °C/0.01 °C 10 min Magnetometer 2°/0.1° for tilt < 20° Liquid level 0.2°/0.1° for tilt < 20° Liquid level 0.2°/0.1° 30° Automatic detect Piezoresistive 0-100 m (inquire for options) 0.5% FS / 0.005% of full scale 2 Three options selectable through firmware commands: • Battery voltage/500 mA • +5 V/250 mA

→ Data recording	0 MP con odd (/16 CP
Capacity	9 MB, can add 4/16 GB
Data record	9*Ncells + 32 bytes N/A
Diagnostics record Wave record	
Mode	Nsamples * 24 + 60 bytes
→ Real-time clock	Stop when full (default) or wrap mode
Accuracy	±1 min/year
Backup in absence of power	4 weeks
→ Data communications	
1/0	RS-232 or RS-422
Communication baud rate	300-115200 Bd
Recorder download baud rate	600/1200 kBd for both RS-232 and RS-422
User control	Handled via "AquaPro" software, ActiveX® function calls, or direct commands with binary or ASCII data output
→ Connectors	
Bulkhead (Impulse)	MCBH-8-FS
Cable	PMCIL-8-MP on 10 m Polyurethane cable
→ Software	
Functions	Deployment planning, instrument configuration, data retrieval and conversion (for Windows®)
→ Power	
DC input	9-15 V DC
Maximum peak current	3 A
Avg. power consumption ³⁾	0.05 W
Sleep current	< 100 μA
Transmit power	0.3-20 W, 3 adjustable levels
→ Batteries	
Battery capacity	 50 Wh (alkaline or Li-ion) 165 Wh (lithium) Single or dual
New battery voltage	13.5 V DC (alkaline)
→ Environmental	
Operating temperature	-5 to +40 °C
Storage temperature	-20 to +60 °C
Shock and vibration	IEC 721-3-7
EMC approval	IEC 61000
Depth rating	300 m 3000 m option
→ Materials	
Standard model	POM and polyurethane plastics with titanium fasteners
→ Dimensions	
Maximum diameter	75 mm
Maximum length	~550 mm (single battery) +110 mm (double battery) depending on head configuration
→ Weight	
Weight in air	2.2 kg
Weight in water	0.2 kg
→ Options	
	 Alkaline, lithium or Li-ion external batteries Inquire for different head configurations

) Depends on local scattering conditions, ^) Inquire for higher ranges, ^) Default configuration, see instrument SW for details and other setups

Aquadopp Profiler, 600 kHz





The Aquadopp Profiler is a highly versatile Acoustic Doppler Current Profiler (ADCP) available in four profiling range options, from < 1 m to > 85 m. Designed for simple yet powerful operation, this current profiler is packed with features used by engineers and researchers to enable accurate and effective hydrodynamic data collection in a variety of environmental conditions.



Highlights

 \rightarrow Up to 40 m current profiling range

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- → Ideal for mean current measurements
- ightarrow Easy to operate and deploy



- → Mean flow measurements with high focus on ease of use and simplicity
- → Measurements in flow regimes with strong variations in flow speeds
- → Studies of tidal currents
- → Measurements of combinations of waves and currents
- → Suitable for wave buoys



Aquadopp Profiler, 600 kHz

\rightarrow Water velocity measured	ments
Maximum profiling range ¹⁾	30-40 m
Cell size	1-4 m
Minimum blanking	0.50 m
Maximum number of cells	128
Measurement cell position	N/A
Default position (along beam)	N/A
Velocity range	±10 m/s ²⁾
Accuracy	±1% of measured value ±0.5 cm/s
Velocity precision	Consult instrument software
Maximum sampling rate (output)	1 Hz
Internal sampling rate	4 Hz
→ Echo intensity (along	slanted beams)
Sampling	Same as velocity
Resolution	0.45 dB
Dynamic range	90 dB
Transducer acoustic frequency	600 kHz
Number of beams	3
Beam width	3.0°
→ HR option	
Maximum profiling range	N/A
Cell size	N/A
Minimum blanking	N/A
Maximum number of cells	N/A
Range/velocity limitations	N/A
Accuracy	N/A
Max. sampling rate	N/A
→7-Cell option	
→ Z-Cell option Cell zero acoustic frequency	N/A
Cell zero acoustic frequency	N/A N/A
Cell zero acoustic frequency Maximum profiling range	N/A
Cell zero acoustic frequency Maximum profiling range Number of beams	
Cell zero acoustic frequency Maximum profiling range Number of beams -> Sensors	N/A N/A
Cell zero acoustic frequency Maximum profiling range Number of beams → Sensors Temperature:	N/A N/A Thermistor embedded in head
Cell zero acoustic frequency Maximum profiling range Number of beams Sensors Temperature: Temp. range	N/A N/A Thermistor embedded in head -4 to +40 °C
Cell zero acoustic frequency Maximum profiling range Number of beams Sensors Temperature: Temp. range Temp. accuracy/resolution	N/A N/A Thermistor embedded in head
Cell zero acoustic frequency Maximum profiling range Number of beams Sensors Temperature: Temp. range Temp. accuracy/resolution Temp. time response	N/A N/A Thermistor embedded in head -4 to +40 °C 0.1 °C/0.01 °C 10 min
Cell zero acoustic frequency Maximum profiling range Number of beams	N/A N/A Thermistor embedded in head -4 to +40 °C 0.1 °C/0.01 °C 10 min Magnetometer
Cell zero acoustic frequency Maximum profiling range Number of beams → Sensors Temperature: Temp. range Temp. accuracy/resolution Temp. time response Compass: Accuracy/resolution	N/A N/A Thermistor embedded in head -4 to +40 °C 0.1 °C/0.01 °C 10 min Magnetometer 2°/0.1° for tilt < 20°
Cell zero acoustic frequency Maximum profiling range Number of beams → Sensors Temperature: Temp. range Temp. accuracy/resolution Temp. time response Compass: Accuracy/resolution Tilt:	N/A N/A Thermistor embedded in head -4 to +40 °C 0.1 °C/0.01 °C 10 min Magnetometer 2°/0.1° for tilt < 20° Liquid level
Cell zero acoustic frequency Maximum profiling range Number of beams -> Sensors Temperature: Temp. range Temp. accuracy/resolution Temp. time response Compass: Accuracy/resolution Tilt: Accuracy/resolution	N/A N/A Thermistor embedded in head -4 to +40 °C 0.1 °C/0.01 °C 10 min Magnetometer 2°/0.1° for tilt < 20° Liquid level 0.2°/0.1°
Cell zero acoustic frequency Maximum profiling range Number of beams → Sensors Temperature: Temp. range Temp. accuracy/resolution Temp. time response Compass: Accuracy/resolution Tilt: Accuracy/resolution Maximum tilt	N/A N/A Thermistor embedded in head -4 to +40 °C 0.1 °C/0.01 °C 10 min Magnetometer 2°/0.1° for tilt < 20° Liquid level 0.2°/0.1°
Cell zero acoustic frequency Maximum profiling range Number of beams	N/A N/A Thermistor embedded in head -4 to +40 °C 0.1 °C/0.01 °C 10 min Magnetometer 2°/0.1° for tilt < 20° Liquid level 0.2°/0.1° 30° Automatic detect
Cell zero acoustic frequency Maximum profiling range Number of beams • Sensors Temperature: Temp. range Temp. accuracy/resolution Temp. time response Compass: Accuracy/resolution Tilt: Accuracy/resolution Maximum tilt Up or Down Pressure:	N/A N/A Thermistor embedded in head -4 to +40 °C 0.1 °C/0.01 °C 10 min Magnetometer 2°/0.1° for tilt < 20° Liquid level 0.2°/0.1° 30° Automatic detect Piezoresistive
Cell zero acoustic frequency Maximum profiling range Number of beams • Sensors Temperature: Temp. range Temp. accuracy/resolution Temp. time response Compass: Accuracy/resolution Tilt: Accuracy/resolution Maximum tilt Up or Down Pressure: Range	N/A N/A Thermistor embedded in head -4 to +40 °C 0.1 °C/0.01 °C 10 min Magnetometer 2°/0.1° for tilt < 20° Liquid level 0.2°/0.1° 30° Automatic detect Piezoresistive 0-100 m (inquire for options)
Cell zero acoustic frequency Maximum profiling range Number of beams > Sensors Temperature: Temp. range Temp. accuracy/resolution Temp. time response Compass: Accuracy/resolution Tilt: Accuracy/resolution Maximum tilt Up or Down Pressure: Range Accuracy/precision	N/A N/A Thermistor embedded in head -4 to +40 °C 0.1 °C/0.01 °C 10 min Magnetometer 2°/0.1° for tilt < 20° Liquid level 0.2°/0.1° 30° Automatic detect Piezoresistive
Cell zero acoustic frequency Maximum profiling range Number of beams > Sensors Temperature: Temp. range Temp. accuracy/resolution Temp. time response Compass: Accuracy/resolution Tilt: Accuracy/resolution Maximum tilt Up or Down Pressure: Range Accuracy/precision → Analog inputs	N/A N/A Thermistor embedded in head -4 to +40 °C 0.1 °C/0.01 °C 10 min Magnetometer 2°/0.1° for tilt < 20° Liquid level 0.2°/0.1° 30° Automatic detect Piezoresistive 0-100 m (inquire for options) 0.5% FS / 0.005% of full scale
Cell zero acoustic frequency Maximum profiling range Number of beams > Sensors Temperature: Temp. range Temp. accuracy/resolution Temp. time response Compass: Accuracy/resolution Tilt: Accuracy/resolution Maximum tilt Up or Down Pressure: Range Accuracy/precision	N/A N/A Thermistor embedded in head -4 to +40 °C 0.1 °C/0.01 °C 10 min Magnetometer 2°/0.1° for tilt < 20° Liquid level 0.2°/0.1° 30° Automatic detect Piezoresistive 0-100 m (inquire for options)
Cell zero acoustic frequency Maximum profiling range Number of beams Sensors Temperature: Temp. range Temp. accuracy/resolution Temp. time response Compass: Accuracy/resolution Tilt: Accuracy/resolution Maximum tilt Up or Down Pressure: Range Accuracy/precision Accuracy/precision Analog inputs No. of channels	N/A N/A Thermistor embedded in head -4 to +40 °C 0.1 °C/0.01 °C 10 min Magnetometer 2°/0.1° for tilt < 20° Liquid level 0.2°/0.1° 30° Automatic detect Piezoresistive 0-100 m (inquire for options) 0.5% FS / 0.005% of full scale 2 2 Three options selectable through firmware commands: • Battery voltage/500 mA • +5 V/250 mA

-> Data maganding	
→ Data recording	OND some odd (/4C OD
Capacity	9 MB, can add 4/16 GB
Data record	9*Ncells + 32 bytes
Diagnostics record	N/A
Wave record	Nsamples * 24 + 60 bytes
Mode	Stop when full (default) or wrap mode
→Real-time clock	
Accuracy	±1 min/year
Backup in absence of power	4 weeks
→ Data communications	
1/0	RS-232 or RS-422
Communication baud rate	300-115200 Bd
Recorder download baud rate User control	600/1200 kBd for both RS-232 and RS-422 Handled via "AquaPro" software, ActiveX® function calls, or direct commands with binary or ASCII data output
→ Connectors	
Bulkhead (Impulse)	MCBH-8-FS
Cable	PMCIL-8-MP on 10m polyurethane cable
→ Software	
Functions	Deployment planning, instrument configuration, data retrieval and conversion (for Windows®)
→ Power	
DC input	9-15 V DC
Maximum peak current	3 A
Avg. power consumption ³⁾	0.06 W
Sleep current	< 100 µA
Transmit power	0.3-20 W, 3 adjustable levels
→ Batteries	
Battery capacity	• 50 Wh (alkaline or Li-ion) • 165 Wh (lithium) • Single or dual
New battery voltage	13.5 V DC (alkaline)
→ Environmental	
Operating temperature	-5 to +40 °C
Storage temperature	-20 to +60 °C
Shock and vibration	IEC 721-3-6
EMC approval	IEC 61000
Depth rating	300 m
→ Materials	
Standard model	POM and polyurethane plastics with titanium fasteners
→ Dimensions	
Maximum diameter	100 mm
Maximum length	~550 mm (single battery) +110 mm (double battery) depending on head configuration
→Weight	
Weight in air	2.9 kg
Weight in water	0.4 kg
→ Options	
	 Alkaline, lithium or Li-ion external batteries Inquire for different head configurations

 $^{\rm 1})$ Depends on local scattering conditions, $^{\rm 2})$ Inquire for higher ranges, $^{\rm 3})$ Default configuration, see instrument SW for details and other setups

Aquadopp Profiler, 400 kHz





The Aquadopp Profiler is a highly versatile Acoustic Doppler Current Profiler (ADCP) available in four profiling range options, from < 1 m to > 85 m. Designed for simple yet powerful operation, this current profiler is packed with features used by engineers and researchers to enable accurate and effective hydrodynamic data collection in a variety of environmental conditions.

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Highlights

- \rightarrow Up to 90 m current profiling range
- → Ideal for mean current measurements
- → Easy to operate and deploy



- → Mean flow measurements with high focus on ease of use and simplicity
- → Measurements in flow regimes with strong variations in flow speeds
- → Studies of tidal currents
- → Measurements of combinations of waves and currents
- → Mounted on surface buoys
- \rightarrow Suitable for wave buoys



Aquadopp Profiler, 400 kHz

→ Water velocity measurem	nents
Maximum profiling range ¹⁾	60-90 m
Cell size	2-8 m
Minimum blanking	1 m
Maximum number of cells	128
Measurement cell position	N/A
Default position (along beam)	N/A
Velocity range	±10 m/s ²⁾
Accuracy	±1% of measured value ±0.5 cm/s
Velocity precision	Consult instrument software
Maximum sampling rate (output)	1 Hz
Internal sampling rate	2 Hz
→ Echo intensity (along s	slanted beams)
Sampling	Same as velocity
Resolution	0.45 dB
Dynamic range	90 dB
Transducer acoustic frequency	400 kHz
Number of beams	3
Beam width	3.7°
→ HR option	
Maximum profiling range	N/A
Cell size	N/A
Minimum blanking	N/A
Maximum number of cells	N/A
Range/velocity limitations	N/A
Accuracy	N/A
Max. sampling rate	N/A
→ Z-Cell option	
Cell zero acoustic frequency	N/A
Maximum profiling range	N/A
Maximum profiling range Number of beams	N/A N/A
Number of beams	
Number of beams	N/A
Number of beams → Sensors Temperature:	N/A Thermistor embedded in head
Number of beams Sensors Temperature: Temp. range	N/A Thermistor embedded in head -4 to +40 °C
Number of beams Sensors Temperature: Temp. range Temp. accuracy/resolution	N/A Thermistor embedded in head -4 to +40 °C 0.1 °C/0.01 °C
Number of beams Sensors Temperature: Temp. range Temp. accuracy/resolution Temp. time response	N/A Thermistor embedded in head -4 to +40 °C 0.1 °C/0.01 °C 10 min
Number of beams Sensors Temperature: Temp. range Temp. accuracy/resolution Temp. time response Compass:	N/A Thermistor embedded in head -4 to +40 °C 0.1 °C/0.01 °C 10 min Magnetometer
Number of beams → Sensons Temperature: Temp. range Temp. accuracy/resolution Temp. time response Compass: Accuracy/resolution	N/A Thermistor embedded in head -4 to +40 °C 0.1 °C/0.01 °C 10 min Magnetometer 2°/0.1° for tilt < 20°
Number of beams > Sensors Temperature: Temp. range Temp. accuracy/resolution Temp. time response Compass: Accuracy/resolution Tilt:	N/A Thermistor embedded in head -4 to +40 °C 0.1 °C/0.01 °C 10 min Magnetometer 2°/0.1° for tilt < 20° Liquid level
Number of beams Sensors Temperature: Temp. range Temp. accuracy/resolution Temp. time response Compass: Accuracy/resolution Tilt: Accuracy/resolution	N/A Thermistor embedded in head -4 to +40 °C 0.1 °C/0.01 °C 10 min Magnetometer 2°/0.1° for tilt < 20° Liquid level 0.2°/0.1°
Number of beams Sensors Temperature: Temp. range Temp. accuracy/resolution Temp. time response Compass: Accuracy/resolution Tilt: Accuracy/resolution Maximum tilt	N/A Thermistor embedded in head -4 to +40 °C 0.1 °C/0.01 °C 10 min Magnetometer 2°/0.1° for tilt < 20° Liquid level 0.2°/0.1° 30°
Number of beams Sensors Temperature: Temp. range Temp. accuracy/resolution Temp. time response Compass: Accuracy/resolution Tilt: Accuracy/resolution Maximum tilt Up or Down	N/A Thermistor embedded in head -4 to +40 °C 0.1 °C/0.01 °C 10 min Magnetometer 2°/0.1° for tilt < 20° Liquid level 0.2°/0.1° 30° Automatic detect
Number of beams Sensors Temperature: Temp. range Temp. accuracy/resolution Temp. time response Compass: Accuracy/resolution Tilt: Accuracy/resolution Maximum tilt Up or Down Pressure:	N/A Thermistor embedded in head -4 to +40 °C 0.1 °C/0.01 °C 10 min Magnetometer 2°/0.1° for tilt < 20° Liquid level 0.2°/0.1° 30° Automatic detect Piezoresistive
Number of beams Sensors Temperature: Temp. range Temp. accuracy/resolution Temp. time response Compass: Accuracy/resolution Tilt: Accuracy/resolution Maximum tilt Up or Down Pressure: Range	N/A Thermistor embedded in head -4 to +40 °C 0.1 °C/0.01 °C 10 min Magnetometer 2°/0.1° for tilt < 20° Liquid level 0.2°/0.1° 30° Automatic detect Piezoresistive 0-100 m (inquire for options)
Number of beams Sensors Temperature: Temp. range Temp. accuracy/resolution Temp. time response Compass: Accuracy/resolution Tilt: Accuracy/resolution Maximum tilt Up or Down Pressure: Range Accuracy/precision	N/A Thermistor embedded in head -4 to +40 °C 0.1 °C/0.01 °C 10 min Magnetometer 2°/0.1° for tilt < 20° Liquid level 0.2°/0.1° 30° Automatic detect Piezoresistive 0-100 m (inquire for options)
Number of beams > Sensors Temperature: Temp. range Temp. accuracy/resolution Temp. time response Compass: Accuracy/resolution Tilt: Accuracy/resolution Maximum tilt Up or Down Pressure: Range Accuracy/precision > Analog inputs	N/A Thermistor embedded in head -4 to +40 °C 0.1 °C/0.01 °C 10 min Magnetometer 2°/0.1° for tilt < 20° Liquid level 0.2°/0.1° 30° Automatic detect Piezoresistive 0-100 m (inquire for options) 0.5% FS / 0.005% of full scale
Number of beams Sensors Temperature: Temp. range Temp. accuracy/resolution Temp. time response Compass: Accuracy/resolution Tilt: Accuracy/resolution Maximum tilt Up or Down Pressure: Range Accuracy/precision Analog inputs No. of channels Supply voltage to analog output	N/A Thermistor embedded in head -4 to +40 °C 0.1 °C/0.01 °C 10 min Magnetometer 2°/0.1° for tilt < 20° Liquid level 0.2°/0.1° 30° Automatic detect Piezoresistive 0-100 m (inquire for options) 0.5% FS / 0.005% of full scale Z Three options selectable through firmware commands: • Battery voltage/500 mA +5 V/250 mA

→ Data recording	
Capacity	9 MB, can add 4/16 GB
Data record	9*Ncells + 32 bytes
Diagnostics record	N/A
Wave record	Nsamples * 24 + 60 bytes
Mode	Stop when full (default) or wrap mode
→ Real-time clock	
Accuracy	±1 min/year
Backup in absence of power	4 weeks
Data communications	
I/O	RS-232 or RS-422
Communication baud rate	300-115200 Bd
Recorder download baud rate	600/1200 kBd for both RS-232 and RS-422
User control	Handled via "AquaPro" software, ActiveX® function calls, or direct commands with binary or ASCII data output
→ Connectors	
Bulkhead (Impulse)	MCBH-8-FS
Cable	PMCIL-8-MP on 10m polyurethane cable
→ Software	
Functions	Deployment planning, instrument configuration, data retrieval and conversion (for Windows®)
→ Power	
DC input	9-15 V DC
Maximum peak current	3 A
Avg. power consumption ³⁾	0.1 W
Sleep current	< 100 μA
Transmit power	0.3-20 W, 3 adjustable levels
→ Batteries	
Battery capacity	 50 Wh (alkaline or Li-ion) 165 Wh (lithium) Single or dual
New battery voltage	13.5 V DC (alkaline)
→ Environmental	
Operating temperature	-5 to +40 °C
Storage temperature	-20 to +60 °C
Shock and vibration	IEC 721-3-4
EMC approval	IEC 61000
Depth rating	300 m
→ Materials	
Standard model	POM and polyurethane plastics with titanium fasteners
→ Dimensions	
Maximum diameter	117 mm
Maximum length	~600 mm (single battery) +110 mm (double battery) depending on head configuration
→ Weight	
Weight in air	3.4 kg
Weight in water	0.2 kg
→ Options	
	 Alkaline, lithium or Li-ion external batteries Inquire for different head configurations

 $^{1)}$ Depends on local scattering conditions, $^{2})$ Inquire for higher ranges, $^{3}) Default configuration, see instrument SW for details and other setups$

Aquadopp Profiler Z-Cell, 1 MHz



Current profiler



Need to collect accurate 3D currents very near the seabed or sea surface, in addition to a full water-column profile?

The Z-Cell (Zero Cell) Aquadopp Profiler allows current measurement to start right at the instrument's level through an innovative approach: it has side-looking beams fully integrated into the instrument's head, effectively removing the blanking distance normally applicable to ADCPs.

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Highlights

- → Up to 25 m current profiling range
- → Capable of measuring surface or bottom currents
- → PUV-based directional wave measurements



Applications

- → Mounted on bottom frames, with ability to measure also near-bed currents
- → Mean flow measurements with high focus on ease of use and simplicity
- → Measurements in flow regimes with strong variations in flow speeds
- → Projects with needs for both high-resolution and normal-range current measurements
- → Studies of tidal currents

- → Measurements of combinations of waves and currents
- → Mounted on surface buoys, with the ability to measure also surface currents

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Aquadopp Profiler Z-Cell, 1 MHz

-> Water velocity measure	mente
→ Water velocity measure Maximum profiling range ¹⁾	12-25 m
Cell size	0.3-4 m
Minimum blanking	0.20 m when profiling; 0 m when Z-Cell enabled
Maximum number of cells	
Measurement cell position	N/A
Default position (along beam)	N/A
Velocity range	±10 m/s ²⁾
Accuracy	±1% of measured value ±0.5 cm/s
Velocity precision	Consult instrument software
Maximum sampling rate (output)	1 Hz
Internal sampling rate	6 Hz
\rightarrow Echo intensity (along s	slanted beams)
Sampling	Same as velocity
Resolution	0.45 dB
Dynamic range	90 dB
Transducer acoustic frequency	1 MHz
Number of beams	3
Beam width	3.4°
\rightarrow HR option (Z-Cell will	be disabled)
Maximum profiling range	6 m
Cell size	20-300 mm
Minimum blanking	0.2 m
Maximum number of cells	128
Range/velocity limitations	Product of profiling range and velocity should not exceed 1.0 m²/s
Accuracy	±1% of measured value ±0.5 cm/s
	1 Hz (continuous mode)
Max. sampling rate	
	8 Hz (burst mode)"
→Z-Cell option	
→ Z-Cell option Cell zero acoustic frequency	8 Hz (burst mode)"
→Z-Cell option	8 Hz (burst mode)" 2 MHz
→ Z-Cell option Cell zero acoustic frequency Maximum profiling range Number of beams	8 Hz (burst mode)" 2 MHz 0.4-0.9 m
→ Z-Cell option Cell zero acoustic frequency Maximum profiling range Number of beams → Sensors	8 Hz (burst mode)" 2 MHz 0.4-0.9 m 3
→ Z-Cell option Cell zero acoustic frequency Maximum profiling range Number of beams → Sensors Temperature:	8 Hz (burst mode)" 2 MHz 0.4-0.9 m
 → Z-Cell option Cell zero acoustic frequency Maximum profiling range Number of beams → Sensors Temperature: Temp. range 	8 Hz (burst mode)" 2 MHz 0.4-0.9 m 3 Thermistor embedded in head -4 to +40 °C
→ Z-Cell option Cell zero acoustic frequency Maximum profiling range Number of beams → Sensors Temperature: Temp. range Temp. accuracy/resolution	8 Hz (burst mode)" 2 MHz 0.4-0.9 m 3 Thermistor embedded in head -4 to +40 °C 0.1 °C/0.01 °C
 → Z-Cell option Cell zero acoustic frequency Maximum profiling range Number of beams → Sensors Temperature: Temp. range Temp. accuracy/resolution Temp. time response 	8 Hz (burst mode)" 2 MHz 0.4-0.9 m 3 Thermistor embedded in head -4 to +40 °C 0.1 °C/0.01 °C 10 min
→ Z-Cell option Cell zero acoustic frequency Maximum profiling range Number of beams → Sensors Temperature: Temp. range Temp. accuracy/resolution Temp. time response Compass:	8 Hz (burst mode)" 2 MHz 0.4-0.9 m 3 Thermistor embedded in head -4 to +40 °C 0.1 °C/0.01 °C 10 min Magnetometer
→ Z-Cell option Cell zero acoustic frequency Maximum profiling range Number of beams → Sensors Temperature: Temp. range Temp. accuracy/resolution Temp. time response Compass: Accuracy/resolution	8 Hz (burst mode)" 2 MHz 0.4-0.9 m 3 Thermistor embedded in head -4 to +40 °C 0.1 °C/0.01 °C 10 min Magnetometer 2°/0.1° for tilt < 20°
→ Z-Cell option Cell zero acoustic frequency Maximum profiling range Number of beams → Sensors Temperature: Temp. range Temp. accuracy/resolution Temp. time response Compass: Accuracy/resolution Tilt:	8 Hz (burst mode)" 2 MHz 0.4-0.9 m 3 Thermistor embedded in head -4 to +40 °C 0.1 °C/0.01 °C 10 min Magnetometer 2°/0.1° for tilt < 20° Liquid level
 → Z-Cell option Cell zero acoustic frequency Maximum profiling range Number of beams → Sensors → Sensors Temperature: Temp. range Temp. accuracy/resolution Temp. time response Compass: Accuracy/resolution Tilt: Accuracy/resolution 	8 Hz (burst mode)" 2 MHz 0.4-0.9 m 3 Thermistor embedded in head -4 to +40 °C 0.1 °C/0.01 °C 10 min Magnetometer 2°/0.1° for tilt < 20° Liquid level 0.2°/0.1°
 → Z-Cell option Cell zero acoustic frequency Maximum profiling range Number of beams → Sensors Temperature: Temp. range Temp. accuracy/resolution Temp. time response Compass: Accuracy/resolution Tilt: Accuracy/resolution Maximum tilt 	8 Hz (burst mode)" 2 MHz 0.4-0.9 m 3 7 7 7 7 7 7 7 7 7 7 7 7 7
 → Z-Cell option Cell zero acoustic frequency Maximum profiling range Number of beams → Sensors Temperature: Temp. range Temp. accuracy/resolution Temp. time response Compass: Accuracy/resolution Tilt: Accuracy/resolution Maximum tilt Up or Down 	8 Hz (burst mode)" 2 MHz 0.4-0.9 m 3 Thermistor embedded in head -4 to +40 °C 0.1 °C/0.01 °C 10 min Magnetometer 2°/0.1° for tilt < 20° Liquid level 0.2°/0.1° 30° Automatic detect
 → Z-Cell option Cell zero acoustic frequency Maximum profiling range Number of beams → Sensors Temperature: Temp. range Temp. accuracy/resolution Temp. time response Compass: Accuracy/resolution Tilt: Accuracy/resolution Tilt: Accuracy/resolution Maximum tilt Up or Down Pressure: 	8 Hz (burst mode)" 2 MHz 0.4-0.9 m 3 Thermistor embedded in head -4 to +40 °C 0.1 °C/0.01 °C 10 min Magnetometer 2°/0.1° for tilt < 20° Liquid level 0.2°/0.1° 30° Automatic detect Piezoresistive
 → Z-Cell option Cell zero acoustic frequency Maximum profiling range Number of beams → Sensors Temperature: Temp. range Temp. accuracy/resolution Temp. time response Compass: Accuracy/resolution Tilt: Accuracy/resolution Maximum tilt Up or Down Pressure: Range 	8 Hz (burst mode)" 2 MHz 0.4-0.9 m 3 Thermistor embedded in head -4 to +40 °C 0.1 °C/0.01 °C 10 min Magnetometer 2°/0.1° for tilt < 20° Liquid level 0.2°/0.1° 30° Automatic detect Piezoresistive 0-100 m (inquire for options)
 > Z-Cell option Cell zero acoustic frequency Maximum profiling range Number of beams > Sensors Temperature: Temp. range Temp. accuracy/resolution Temp. time response Compass: Accuracy/resolution Tilt: Accuracy/resolution Maximum tilt Up or Down Pressure: Range Accuracy/precision 	8 Hz (burst mode)" 2 MHz 0.4-0.9 m 3 Thermistor embedded in head -4 to +40 °C 0.1 °C/0.01 °C 10 min Magnetometer 2°/0.1° for tilt < 20° Liquid level 0.2°/0.1° 30° Automatic detect Piezoresistive
 → Z-Cell option Cell zero acoustic frequency Maximum profiling range Number of beams → Sensors Temperature: Temp. range Temp. accuracy/resolution Temp. time response Compass: Accuracy/resolution Tilt: Accuracy/resolution Maximum tilt Up or Down Pressure: Range Accuracy/precision → Analog inputs 	8 Hz (burst mode)" 2 MHz 0.4-0.9 m 3 Thermistor embedded in head -4 to +40 °C 0.1 °C/0.01 °C 10 min Magnetometer 2°/0.1° for tilt < 20° Liquid level 0.2°/0.1° 30° Automatic detect Piezoresistive 0-100 m (inquire for options) 0.5% FS / 0.005% of full scale
 Z-Cell option Cell zero acoustic frequency Maximum profiling range Number of beams Sensors Temperature: Temp. range Temp. range Temp. accuracy/resolution Temp. time response Compass: Accuracy/resolution Tilt: Accuracy/resolution Maximum tilt Up or Down Pressure: Range Accuracy/precision 	8 Hz (burst mode)" 2 MHz 0.4-0.9 m 3 Thermistor embedded in head -4 to +40 °C 0.1 °C/0.01 °C 10 min Magnetometer 2°/0.1° for tilt < 20° Liquid level 0.2°/0.1° 30° Automatic detect Piezoresistive 0-100 m (inquire for options)
 > Z-Cell option Cell zero acoustic frequency Maximum profiling range Number of beams > Sensors Temperature: Temp. range Temp. accuracy/resolution Temp. time response Compass: Accuracy/resolution Tilt: Accuracy/resolution Maximum tilt Up or Down Pressure: Range Accuracy/precision > Analog inputs 	8 Hz (burst mode)" 2 MHz 0.4-0.9 m 3 Thermistor embedded in head -4 to +40 °C 0.1 °C/0.01 °C 10 min Magnetometer 2°/0.1° for tilt < 20° Liquid level 0.2°/0.1° 30° Automatic detect Piezoresistive 0-100 m (inquire for options) 0.5% FS / 0.005% of full scale
 Z-Cell option Cell zero acoustic frequency Maximum profiling range Number of beams Sensors Temperature: Temp. range Temp. accuracy/resolution Temp. time response Compass: Accuracy/resolution Tilt: Accuracy/resolution Maximum tilt Up or Down Pressure: Range Accuracy/precision Accuracy/precision Analog inputs No. of channels 	8 Hz (burst mode)" 2 MHz 0.4-0.9 m 3 Thermistor embedded in head -4 to +40 °C 0.1 °C/0.01 °C 10 min Magnetometer 2°/0.1° for tilt < 20° Liquid level 0.2°/0.1° 30° Automatic detect Piezoresistive 0-100 m (inquire for options) 0.5% FS / 0.005% of full scale 2 Three options selectable through firmware commands: Battery voltage/500 mA + 5 V/250 mA

→Data recording	
Capacity	9 MB, can add 4/16 GB
Data record	9*Ncells + 32 bytes
Diagnostics record	N/A
Wave record	Nsamples * 24 + 60 bytes
Mode	Stop when full (default) or wrap mode
→ Real-time clock	
Accuracy	±1 min/year
Backup in absence of power	4 weeks
→ Data communications	
I/0	RS-232 or RS-422
Communication baud rate	300-115200 Bd
Recorder download baud rate	600/1200~kBd for both RS-232 and RS-422
User control	Handled via "AquaPro" software, ActiveX® function calls, or direct commands with binary or ASCII data output
→ Connectors	
Bulkhead (Impulse)	MCBH-8-FS
Cable	PMCIL-8-MP on 10 m polyurethane cable
→ Software	
Functions	Deployment planning, instrument configuration, data retrieval and conversion (for Windows $\ensuremath{\mathbb{B}}$).
→ Power	
DC input	9-15 V DC
Maximum peak current	3 A
Avg. power consumption ³⁾	0.05 W
Sleep current	< 100 μA
Transmit power	0.3-20 W, 3 adjustable levels
→ Batteries	
Battery capacity	 50 Wh (alkaline or Li-ion) 165 Wh (lithium) Single or dual
New battery voltage	13.5 V DC (alkaline)
→ Environmental	
Operating temperature	-5 to +40 °C
Storage temperature	-20 to +60 °C
Shock and vibration	IEC 721-3-7
EMC approval	IEC 61000
Depth rating	300 m
→ Materials	
Standard model	POM and polyurethane plastics with titanium fasteners
→ Dimensions	
Maximum diameter	75 mm
Maximum length	~550 mm (single battery) +110 mm (double battery) depending on head configuration
→Weight	
Weight in air	2.2 kg
Weight in water	0.2 kg
→ Options	
	 Alkaline, lithium or Li-ion external batteries Inquire for different head configurations

 $^{\rm 1})$ Depends on local scattering conditions, $^{\rm 2})$ Inquire for higher ranges, $^{\rm 3})$ Default configuration, see instrument SW for details and other setups

Aquadopp Profiler Z-Cell, 600 kHz



Need to collect accurate 3D currents very near the seabed or sea surface, in addition to a full water-column profile?

The Z-Cell (Zero Cell) Aquadopp Profiler allows current measurement to start right at the instrument's level through an innovative approach: it has side-looking beams fully integrated into the instrument's head, effectively removing the blanking distance normally applicable to ADCPs.

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Highlights

 \rightarrow Up to 40 m current profiling range

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- → Capable of measuring surface or bottom currents
- → Ideal for mean current measurements



- → Mounted on bottom frames, with ability to also measure near-bed currents
- → Mean flow measurements with high focus on ease of use and simplicity
- → Measurements in flow regimes with strong variations in flow speeds
- → Studies of tidal currents
- → Measurements of combinations of waves and currents
- → Mounted on surface buoys, with the ability to also measure surface currents



Aquadopp Profiler Z-Cell, 600 kHz

\rightarrow Water velocity measure	ments
Maximum profiling range ¹⁾	30-40 m
Cell size	1-4 m
Minimum blanking	0.50 m when profiling; 0 m when Z-Cell enabled
Maximum number of cells	128
Measurement cell position	N/A
Default position (along beam)	N/A
Velocity range	±10 m/s ²⁾
Accuracy	±1% of measured value ±0.5 cm/s
Velocity precision	Consult instrument software
Maximum sampling rate (output)	1 Hz
Internal sampling rate	3 Hz
	slanted beams)
Sampling	Same as velocity
Resolution	0.45 dB
Dynamic range	90 dB
Transducer acoustic frequency	600 kHz
Number of beams	2
Beam width	3.0°
→ HR option	
Maximum profiling range	N/A
Cell size	N/A
Minimum blanking	N/A
Maximum number of cells	N/A
Range/velocity limitations	N/A
Accuracy	N/A
Max. sampling rate	N/A
\rightarrow Z-Cell option	
→ Z-Cell option Cell zero acoustic frequency	2 MHz
	2 MHz 0.4-0.9 m
Cell zero acoustic frequency	
Cell zero acoustic frequency Maximum profiling range	0.4-0.9 m
Cell zero acoustic frequency Maximum profiling range Number of beams	0.4-0.9 m
Cell zero acoustic frequency Maximum profiling range Number of beams → Sensors	0.4-0.9 m 3
Cell zero acoustic frequency Maximum profiling range Number of beams Sensors Temperature:	0.4-0.9 m 3 Thermistor embedded in head
Cell zero acoustic frequency Maximum profiling range Number of beams Sensors Temperature: Temp. range	0.4-0.9 m 3 Thermistor embedded in head -4 to +40 °C
Cell zero acoustic frequency Maximum profiling range Number of beams Sensors Temperature: Temp. range Temp. accuracy/resolution	0.4-0.9 m 3 Thermistor embedded in head -4 to +40 °C 0.1 °C/0.01 °C
Cell zero acoustic frequency Maximum profiling range Number of beams Sensors Temperature: Temp. range Temp. accuracy/resolution Temp. time response	0.4-0.9 m 3 Thermistor embedded in head -4 to +40 °C 0.1 °C/0.01 °C 10 min Magnetometer 2°/0.1° for tilt < 20°
Cell zero acoustic frequency Maximum profiling range Number of beams	0.4-0.9 m 3 Thermistor embedded in head -4 to +40 °C 0.1 °C/0.01 °C 10 min Magnetometer
Cell zero acoustic frequency Maximum profiling range Number of beams → Sensors Temperature: Temp. range Temp. accuracy/resolution Temp. time response Compass: Accuracy/resolution	0.4-0.9 m 3 Thermistor embedded in head -4 to +40 °C 0.1 °C/0.01 °C 10 min Magnetometer 2°/0.1° for tilt < 20°
Cell zero acoustic frequency Maximum profiling range Number of beams → Sensors Temperature: Temp. range Temp. accuracy/resolution Temp. time response Compass: Accuracy/resolution Tilt:	0.4-0.9 m 3 Thermistor embedded in head -4 to +40 °C 0.1 °C/0.01 °C 10 min Magnetometer 2°/0.1° for tilt < 20° Liquid level
Cell zero acoustic frequency Maximum profiling range Number of beams -> Sensors Temperature: Temp. range Temp. accuracy/resolution Temp. time response Compass: Accuracy/resolution Tilt: Accuracy/resolution	0.4-0.9 m 3 Thermistor embedded in head -4 to +40 °C 0.1 °C/0.01 °C 10 min Magnetometer 2°/0.1° for tilt < 20° Liquid level 0.2°/0.1°
Cell zero acoustic frequency Maximum profiling range Number of beams Sensors Temperature: Temp. range Temp. accuracy/resolution Temp. time response Compass: Accuracy/resolution Tilt: Accuracy/resolution Maximum tilt	0.4-0.9 m 3 Thermistor embedded in head -4 to +40 °C 0.1 °C/0.01 °C 10 min Magnetometer 2°/0.1° for tilt < 20° Liquid level 0.2°/0.1° 30°
Cell zero acoustic frequency Maximum profiling range Number of beams Sensors Temperature: Temp. range Temp. accuracy/resolution Temp. time response Compass: Accuracy/resolution Tilt: Accuracy/resolution Maximum tilt Up or Down	0.4-0.9 m 3 Thermistor embedded in head -4 to +40 °C 0.1 °C/0.01 °C 10 min Magnetometer 2°/0.1° for tilt < 20° Liquid level 0.2°/0.1° 30° Automatic detect Piezoresistive 0-100 m (inquire for options)
Cell zero acoustic frequency Maximum profiling range Number of beams • Sensors Temperature: Temp. range Temp. accuracy/resolution Temp. time response Compass: Accuracy/resolution Tilt: Accuracy/resolution Maximum tilt Up or Down Pressure: Range Accuracy/precision	0.4-0.9 m 3 Thermistor embedded in head -4 to +40 °C 0.1 °C/0.01 °C 10 min Magnetometer 2°/0.1° for tilt < 20° Liquid level 0.2°/0.1° 30° Automatic detect Piezoresistive
Cell zero acoustic frequency Maximum profiling range Number of beams Sensors Temperature: Temp. range Temp. accuracy/resolution Temp. time response Compass: Accuracy/resolution Tilt: Accuracy/resolution Maximum tilt Up or Down Pressure: Range Accuracy/precision Analog inputs	0.4-0.9 m 3 Thermistor embedded in head -4 to +40 °C 0.1 °C/0.01 °C 10 min Magnetometer 2°/0.1° for tilt < 20° Liquid level 0.2°/0.1° 30° Automatic detect Piezoresistive 0-100 m (inquire for options) 0.5% FS / 0.005% of full scale
Cell zero acoustic frequency Maximum profiling range Number of beams > Sensors Temperature: Temp. range Temp. accuracy/resolution Temp. time response Compass: Accuracy/resolution Tilt: Accuracy/resolution Maximum tilt Up or Down Pressure: Range Accuracy/precision	0.4-0.9 m 3 Thermistor embedded in head -4 to +40 °C 0.1 °C/0.01 °C 10 min Magnetometer 2°/0.1° for tilt < 20° Liquid level 0.2°/0.1° 30° Automatic detect Piezoresistive 0-100 m (inquire for options)
Cell zero acoustic frequency Maximum profiling range Number of beams Sensors Temperature: Temp. range Temp. accuracy/resolution Temp. time response Compass: Accuracy/resolution Tilt: Accuracy/resolution Maximum tilt Up or Down Pressure: Range Accuracy/precision Analog inputs	0.4-0.9 m 3 Thermistor embedded in head -4 to +40 °C 0.1 °C/0.01 °C 10 min Magnetometer 2°/0.1° for tilt < 20° Liquid level 0.2°/0.1° 30° Automatic detect Piezoresistive 0-100 m (inquire for options) 0.5% FS / 0.005% of full scale
Cell zero acoustic frequency Maximum profiling range Number of beams Sensors Temperature: Temp. range Temp. accuracy/resolution Temp. time response Compass: Accuracy/resolution Tilt: Accuracy/resolution Maximum tilt Up or Down Pressure: Range Accuracy/precision Accuracy/precision Analog inputs No. of channels	0.4-0.9 m 3 7 Thermistor embedded in head -4 to +40 °C 0.1 °C/0.01 °C 10 min Magnetometer 2°/0.1° for tilt < 20° Liquid level 0.2°/0.1° 30° Automatic detect Piezoresistive 0-100 m (inquire for options) 0.5% FS / 0.005% of full scale 2 2 2 2 Three options selectable through firmware commands: - Battery voltage/500 mA + 5 V/250 mA
Cell zero acoustic frequency Maximum profiling range Number of beams Sensors Temperature: Temp. range Temp. accuracy/resolution Temp. time response Compass: Accuracy/resolution Tilt: Accuracy/resolution Maximum tilt Up or Down Pressure: Range Accuracy/precision Accuracy/precision Accuracy/resolution No. of channels Supply voltage to analog output	0.4-0.9 m 3 7 Thermistor embedded in head -4 to +40 °C 0.1 °C/0.01 °C 10 min Magnetometer 2°/0.1° for tilt < 20° Liquid level 0.2°/0.1° 30° Automatic detect Piezoresistive 0-100 m (inquire for options) 0.5% FS / 0.005% of full scale 2 2 Three options selectable through firmware commands: • Battery voltage/500 mA • +5 V/250 mA • +12 V/100 mA

-> Data recording	
→ Data recording Capacity	9 MB, can add 4/16 GB
Data record	9*Ncells + 32 bytes
Diagnostics record	N/A
Wave record	
Mode	Nsamples * 24 + 60 bytes
	Stop when full (default) or wrap mode
→ Real-time clock	+1 min/yoar
Accuracy	±1 min/year
Backup in absence of power	4 weeks
→ Data communications	RS-232 or RS-422
I/O	
Communication baud rate	300-115200 Bd
Recorder download baud rate User control	600/1200 kBd for both RS-232 and RS-422 Handled via "AquaPro" software, ActiveX® function calls, or direct commands with binary or ASCII data output
→ Connectors	
Bulkhead (Impulse)	MCBH-8-FS
Cable	PMCIL-8-MP on 10 m polyurethane cable
→ Software	
Functions	Deployment planning, instrument configuration, data retrieval and conversion (for Windows®)
→ Power	
DC input	9-15 V DC
Maximum peak current	3 A
Avg. power consumption ³⁾	0.06 W
Sleep current	< 100 µA
Transmit power	0.3-20 W, 3 adjustable levels
→ Batteries	
Battery capacity	• 50 Wh (alkaline or Li-ion) • 165 Wh (lithium) • Single or dual
New battery voltage	13.5 V DC
→ Environmental	
Operating temperature	-5 to +40 °C
Storage temperature	-20 to +60 °C
Shock and vibration	IEC 721-3-6
EMC approval	IEC 61000
Depth rating	300 m
\rightarrow Materials	
Standard model	POM and polyurethane plastics with titanium fasteners
→ Dimensions	
Maximum diameter	100 mm
Maximum length	~550 mm (single battery) +110 mm (double battery) depending on head configuration
\rightarrow Weight	
Weight in air	2.9 kg
Weight in water	0.4 kg
\rightarrow Options	
	 Alkaline, lithium or Li-ion external batteries Inquire for different head configurations

 $^{\rm 1})$ Depends on local scattering conditions, $^{\rm 2})$ Inquire for higher ranges, $^{\rm 3})$ Default configuration, see instrument SW for details and other setups

2D Horizontal Profiler, 400 kHz





The 2D Horizontal Profiler is the ideal tool for current measurements from a physical structure in, for example, port entrances. This ADCP provides the two horizontal flow components at multiple distances from the mounting and is commonly used in online applications where immediate access to current data is critical.

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Highlights

- → Up to 130 m horizontal profiling range
- → Ideal for wall-mounted applications

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→ Corrosion-free housing

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- → Port entrances with challenging flow conditions
- → Flow measurements upstream and downstream of tidal turbines
- → Flow measurements from marine structures at draft depth



2D Horizontal Profiler, 400 kHz

→Water velocity measure	
Maximum profiling range ¹⁾	100-130 m
Cell size	1.0-8.0 m
Number of cells	Typical 20-40, max. 128
Velocity range	±10 m/s horizontal, ±5 m/s along beam
Accuracy	$\pm 1\%$ of measured value ± 0.5 cm/s
Velocity precision	Consult instrument software
Maximum output rate	1 Hz
Internal sampling rate	3 Hz
\rightarrow Echo intensity (along	slanted beams)
Sampling	Same as velocity
Resolution	0.45 dB
Dynamic range	90 dB
Transducer acoustic frequency	400 kHz
Number of beams	2, slanted at 25°
Beam width	1.7°
Beam width vertical beam	N/A
→ Wave measurement optic	n (AST)
Maximum depth	N/A
Data types	N/A
Sampling rate velocity (output)	N/A
Sampling rate AST (output)	N/A
No. of samples per burst	N/A
→ Wave estimates	
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
→ Sensors	
Temperature:	Thermistor embedded in housing
Temp. range	-4 to +40 °C
Temp. accuracy/resolution	0.1 °C/0.01 °C
Temp. time response	< 5 min
Compass:	Magnetoresistive
Accuracy/resolution	2°/0.1° for tilt <15°
Tilt:	Liquid level
Accuracy/resolution	0.2°/0.1°
Maximum tilt	30°
Up or Down	Automatic detect
Pressure:	Piezoresistive
Range	0-100 m
-	0.5% of full scale (optional 0.1% of full scale)
Accuracy	
Resolution → Analog inputs	0.005% of full scale
No. of channels	2
Supply voltage to analog out- put devices	Three options selectable through firmware commands: • Battery voltage/500 mA • +5 V/250 mA • +12 V/100 mA
Voltage input	0-5 V
Voltage input Resolution	0-5 V 16-bit A/D

→Data recording	
Capacity	9 MB, can add 4/16 GB
Profile record	Ncells*9 + 120 bytes
Wave record	N/A
Mode	Stop when full (default) or wrap mode
→Real-time clock	
Accuracy	±1 min/year
Backup in absence of power	1 year
\rightarrow Data communications	
I/O	RS-232 or RS-422. Software supports most commercially available USB–RS-232 converters
Communication baud rate	300-115200 Bd
Recorder download baud rate	600/1200 kBd for both RS-232 and RS-422
User control	Handled via "AWAC" software, or ActiveX® controls. "Seastate" for online systems
Output formats	NMEA, Binary. Prolog provides same types also for processed wave and current data
→ Connectors	
Bulkhead (Impulse)	MCBH-2-FS, MCBH-8-FS, optional Souriau M-series metal connector for online use
Cable	PMCIL-8-MP on 10 m polyurethane cable
→ Software	
Functions	Deployment planning, instrument configuration, data retrieval and conversion (for Windows®)
→ Power	
DC input	9-18 V DC
Maximum peak current	3 A
Avg. power consumption ²⁾	Turinal 1 Mushan compliant
Avg. power consumption	Typical 1 W when sampling
Sleep current	< 100 μA
•	
Sleep current	< 100 µA
Sleep current Transmit power	< 100 µA
Sleep current Transmit power → Environmental	< 100 µA 1-30 W, 3 adjustable levels
Sleep current Transmit power ⇒ Environmental Operating temperature	< 100 µA 1-30 W, 3 adjustable levels -4 to +40 °C
Sleep current Transmit power ⇒ Environmental Operating temperature Storage temperature	< 100 µA 1-30 W, 3 adjustable levels -4 to +40 °C -20 to +60 °C
Sleep current Transmit power ⇒ Environmental Operating temperature Storage temperature Shock and vibration	< 100 µA 1-30 W, 3 adjustable levels -4 to +40 °C -20 to +60 °C IEC 721-3-2
Sleep current Transmit power → Environmental Operating temperature Storage temperature Shock and vibration EMC approval	< 100 µA 1-30 W, 3 adjustable levels -4 to +40 °C -20 to +60 °C IEC 721-3-2 IEC 61000
Sleep current Transmit power	< 100 µA 1-30 W, 3 adjustable levels -4 to +40 °C -20 to +60 °C IEC 721-3-2 IEC 61000
Sleep current Transmit power Environmental Operating temperature Storage temperature Shock and vibration EMC approval Depth rating Materials	< 100 µA 1-30 W, 3 adjustable levels -4 to +40 °C -20 to +60 °C IEC 721-3-2 IEC 61000 300 m POM and polyurethane plastics with titanium
Sleep current Transmit power	< 100 µA 1-30 W, 3 adjustable levels -4 to +40 °C -20 to +60 °C IEC 721-3-2 IEC 61000 300 m POM and polyurethane plastics with titanium
Sleep current Transmit power	< 100 µA 1-30 W, 3 adjustable levels -4 to +40 °C -20 to +60 °C IEC 721-3-2 IEC 61000 300 m POM and polyurethane plastics with titanium fasteners
Sleep current Transmit power Environmental Operating temperature Storage temperature Shock and vibration EMC approval Depth rating Materials Standard model Dimensions Maximum diameter Maximum length	< 100 µA 1-30 W, 3 adjustable levels -4 to +40 °C -20 to +60 °C IEC 721-3-2 IEC 61000 300 m POM and polyurethane plastics with titanium fasteners 306 mm
Sleep current Transmit power → Environmental Operating temperature Storage temperature Shock and vibration EMC approval Depth rating → Materials Standard model → Dimensions Maximum diameter Maximum length → Weight	< 100 µA 1-30 W, 3 adjustable levels -4 to +40 °C -20 to +60 °C IEC 721-3-2 IEC 61000 300 m POM and polyurethane plastics with titanium fasteners 306 mm 203 mm
Sleep current Transmit power → Environmental Operating temperature Storage temperature Shock and vibration EMC approval Depth rating → Materials Standard model → Dimensions Maximum length → Weight Weight in air	< 100 µA 1-30 W, 3 adjustable levels -4 to +40 °C -20 to +60 °C IEC 721-3-2 IEC 61000 300 m POM and polyurethane plastics with titanium fasteners 306 mm 203 mm 8.8 kg
Sleep current Transmit power → Environmental Operating temperature Storage temperature Shock and vibration EMC approval Depth rating → Materials Standard model → Dimensions Maximum diameter Maximum length → Weight	< 100 µA 1-30 W, 3 adjustable levels -4 to +40 °C -20 to +60 °C IEC 721-3-2 IEC 61000 300 m POM and polyurethane plastics with titanium fasteners 306 mm 203 mm

 $^{\circ})$ Depends on local scattering conditions and depth, $^{\circ})$ Default configuration, see instrument SW for details and other setups.



AWAC, 1 MHz



The AWAC 1 MHz ADCP has become the standard reference technology in submerged wave-measurement applications. Thousands of these ADCPs have been deployed to capture the full wave spectrum in combination with current profiles. With a 35 m maximum range for wave measurements and 4 Hz sampling of the surface elevation, the AWAC 1 MHz is the optimal tool for shallow current and wave measurements.

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Highlights

- → Real-time current profiles to 30 m range
- → Real-time directional waves to 35 m range
- → Acoustic surface tracking (AST) with vertical beam
- → Can be used both with fixed frames and subsurface buoys



- → Online measurements of currents and waves
- → Design data for planning of new coastal structures
- → Site studies for offshore wind platforms
- → Coastal erosion studies
- → Measurement campaigns where the full wave spectrum is needed
- → Monitoring of transient waves for channel wall protection
- → Studies of tidal currents



Technical specifications AWAC, 1 MHz

→ Water velocity measur	ements
Maximum profiling range ¹⁾	30 m
Cell size	0.25-4.0 m
Number of cells	Typical 20-40, max. 128
Velocity range	±10 m/s horizontal, ±5 m/s along beam
Accuracy	±1% of measured value ±0.5 cm/s
Velocity precision	Consult instrument software
Maximum output rate	1 Hz
Internal sampling rate	7 Hz
\rightarrow Echo intensity (along	slanted beams)
Sampling	Same as velocity
Resolution	0.45 dB
Dynamic range	90 dB
Transducer acoustic frequency	1 MHz
Number of beams	3 beams 120° apart, one vertical beam (90° apart, one at 5° for platform mount)
Beam width	1.7°
Beam width vertical beam	1.7°
→Wave measurement optic	on (AST)
Maximum depth	35 m
Data types	Pressure, one velocity along each beam, AST $^{\scriptscriptstyle 2)}$
Sampling rate velocity (output)	2 Hz
Sampling rate AST (output)	4 Hz
No. of samples per burst	512, 1024 or 2048 ³⁾
→Wave estimates	
Range	-15 to 15 m
Range Accuracy/resolution (Hs)	-15 to 15 m < 1% of measured value / 1 cm
Accuracy/resolution (Hs)	< 1% of measured value / 1 cm
Accuracy/resolution (Hs) Accuracy/resolution (Dir)	< 1% of measured value / 1 cm 2° / 0.1°
Accuracy/resolution (Hs) Accuracy/resolution (Dir) Period range	< 1% of measured value / 1 cm 2° / 0.1° 0.5-50 s 5 m depth: 0.5 sec 20 m depth: 0.9 sec
Accuracy/resolution (Hs) Accuracy/resolution (Dir) Period range Cut-off period (Hs)	< 1% of measured value / 1 cm 2° / 0.1° 0.5-50 s 5 m depth: 0.5 sec 20 m depth: 0.9 sec 60 m depth: 1.5 sec 5 m depth: 1.5 sec 20 m depth: 3.1 sec
Accuracy/resolution (Hs) Accuracy/resolution (Dir) Period range Cut-off period (Hs) Cut-off period (dir)	< 1% of measured value / 1 cm 2° / 0.1° 0.5-50 s 5 m depth: 0.5 sec 20 m depth: 0.9 sec 60 m depth: 1.5 sec 5 m depth: 1.5 sec 20 m depth: 3.1 sec
Accuracy/resolution (Hs) Accuracy/resolution (Dir) Period range Cut-off period (Hs) Cut-off period (dir) → Sensors	< 1% of measured value / 1 cm 2° / 0.1° 0.5-50 s 5 m depth: 0.5 sec 20 m depth: 0.9 sec 60 m depth: 1.5 sec 5 m depth: 1.5 sec 20 m depth: 3.1 sec 60 m depth: 5.5 sec
Accuracy/resolution (Hs) Accuracy/resolution (Dir) Period range Cut-off period (Hs) Cut-off period (dir) → Sensors Temperature:	< 1% of measured value / 1 cm 2° / 0.1° 0.5-50 s 5 m depth: 0.5 sec 20 m depth: 0.9 sec 60 m depth: 1.5 sec 5 m depth: 1.5 sec 20 m depth: 3.1 sec 60 m depth: 5.5 sec Hermistor embedded in housing
Accuracy/resolution (Hs) Accuracy/resolution (Dir) Period range Cut-off period (Hs) Cut-off period (dir) → Sensors Temperature: Temp. range	< 1% of measured value / 1 cm 2° / 0.1° 0.5-50 s 5 m depth: 0.5 sec 20 m depth: 0.9 sec 60 m depth: 1.5 sec 5 m depth: 1.5 sec 20 m depth: 3.1 sec 60 m depth: 5.5 sec Thermistor embedded in housing -4 to +40 °C
Accuracy/resolution (Hs) Accuracy/resolution (Dir) Period range Cut-off period (Hs) Cut-off period (dir) > Sensors Temperature: Temp. range Temp. accuracy/resolution	< 1% of measured value / 1 cm 2° / 0.1° 0.5-50 s 5 m depth: 0.5 sec 20 m depth: 0.9 sec 60 m depth: 1.5 sec 5 m depth: 1.5 sec 20 m depth: 3.1 sec 60 m depth: 3.1 sec 60 m depth: 5.5 sec Thermistor embedded in housing -4 to +40 °C 0.1 °C/0.01 °C
Accuracy/resolution (Hs) Accuracy/resolution (Dir) Period range Cut-off period (Hs) Cut-off period (dir) → Sensors Temperature: Temp. range Temp. accuracy/resolution Temp. time response	< 1% of measured value / 1 cm 2° / 0.1° 0.5-50 s 5 m depth: 0.5 sec 20 m depth: 0.9 sec 60 m depth: 1.5 sec 20 m depth: 1.5 sec 20 m depth: 3.1 sec 60 m depth: 5.5 sec Thermistor embedded in housing -4 to +40 °C 0.1 °C/0.01 °C < 5 min
Accuracy/resolution (Hs) Accuracy/resolution (Dir) Period range Cut-off period (Hs) Cut-off period (dir) Sensors Temperature: Temp. range Temp. accuracy/resolution Temp. time response Compass:	< 1% of measured value / 1 cm 2° / 0.1° 0.5-50 s 5 m depth: 0.5 sec 20 m depth: 0.9 sec 60 m depth: 1.5 sec 20 m depth: 1.5 sec 20 m depth: 3.1 sec 60 m depth: 5.5 sec Thermistor embedded in housing -4 to +40 °C 0.1 °C/0.01 °C < 5 min Magnetoresistive
Accuracy/resolution (Hs) Accuracy/resolution (Dir) Period range Cut-off period (Hs) Cut-off period (dir) Sensors Temperature: Temp. range Temp. accuracy/resolution Temp. time response Compass: Accuracy/resolution	< 1% of measured value / 1 cm 2° / 0.1° 0.5-50 s 5 m depth: 0.5 sec 20 m depth: 0.9 sec 60 m depth: 1.5 sec 20 m depth: 3.1 sec 60 m depth: 3.1 sec 60 m depth: 5.5 sec Thermistor embedded in housing -4 to +40 °C 0.1 °C/0.01 °C < 5 min Magnetoresistive 2°/0.1° for tilt <15°
Accuracy/resolution (Hs) Accuracy/resolution (Dir) Period range Cut-off period (Hs) Cut-off period (dir) → Sensors Temperature: Temp. range Temp. accuracy/resolution Temp. time response Compass: Accuracy/resolution Tilt:	< 1% of measured value / 1 cm 2° / 0.1° 0.5-50 s 5 m depth: 0.5 sec 20 m depth: 0.9 sec 60 m depth: 1.5 sec 20 m depth: 3.1 sec 60 m depth: 3.1 sec 60 m depth: 5.5 sec Thermistor embedded in housing -4 to +40 °C 0.1 °C/0.01 °C < 5 min Magnetoresistive 2°/0.1° for tilt <15° Liquid level
Accuracy/resolution (Hs) Accuracy/resolution (Dir) Period range Cut-off period (Hs) Cut-off period (dir) → Sensors Temperature: Temp. range Temp. accuracy/resolution Temp. time response Compass: Accuracy/resolution Tilt: Accuracy/resolution	< 1% of measured value / 1 cm 2° / 0.1° 0.5-50 s 5 m depth: 0.5 sec 20 m depth: 0.9 sec 60 m depth: 1.5 sec 5 m depth: 1.5 sec 20 m depth: 3.1 sec 60 m depth: 5.5 sec Thermistor embedded in housing -4 to +40 °C 0.1 °C/0.01 °C < 5 min Magnetoresistive 2°/0.1° for tilt <15° Liquid level 0.2°/0.1°
Accuracy/resolution (Hs) Accuracy/resolution (Dir) Period range Cut-off period (Hs) Cut-off period (dir) → Sensors Temperature: Temp. range Temp. accuracy/resolution Temp. time response Compass: Accuracy/resolution Tilt: Accuracy/resolution Maximum tilt	<pre>< 1% of measured value / 1 cm 2° / 0.1° 0.5-50 s 5 m depth: 0.5 sec 20 m depth: 0.5 sec 20 m depth: 1.5 sec 5 m depth: 1.5 sec 5 m depth: 3.1 sec 60 m depth: 3.1 sec 60 m depth: 5.5 sec University Comparison of the sec Comparison of the</pre>
Accuracy/resolution (Hs) Accuracy/resolution (Dir) Period range Cut-off period (Hs) Cut-off period (dir) > Sensors Temperature: Temp. range Temp. accuracy/resolution Temp. time response Compass: Accuracy/resolution Tilt: Accuracy/resolution Maximum tilt Up or Down	< 1% of measured value / 1 cm 2° / 0.1° 0.5-50 s 5 m depth: 0.5 sec 20 m depth: 0.9 sec 60 m depth: 1.5 sec 5 m depth: 1.5 sec 20 m depth: 3.1 sec 60 m depth: 5.5 sec Thermistor embedded in housing -4 to +40 °C 0.1 °C/0.01 °C < 5 min Magnetoresistive 2°/0.1° for tilt <15° Liquid level 0.2°/0.1° 30°, AST requires < 10° instrument tilt Automatic detect
Accuracy/resolution (Hs) Accuracy/resolution (Dir) Period range Cut-off period (Hs) Cut-off period (dir) > Sensors Temperature: Temp. range Temp. accuracy/resolution Temp. time response Compass: Accuracy/resolution Tilt: Accuracy/resolution Maximum tilt Up or Down Pressure:	< 1% of measured value / 1 cm 2° / 0.1° 0.5-50 s 5 m depth: 0.5 sec 20 m depth: 0.9 sec 60 m depth: 1.5 sec 5 m depth: 1.5 sec 20 m depth: 3.1 sec 60 m depth: 5.5 sec Thermistor embedded in housing -4 to +40 °C 0.1 °C/0.01 °C < 5 min Magnetoresistive 2°/0.1° for tilt <15° Liquid level 0.2°/0.1° 30°, AST requires < 10° instrument tilt Automatic detect Piezoresistive

¹) Depends on local scattering conditions, ²) Acoustic surface tracking,

3) Inquire for options, 4) Default configuration, see instrument SW for details and other setups

→Analog inputs	
No. of channels	2
Supply voltage to analog output devices	 Three options selectable through firmware commands: Battery voltage/500 mA +5 V /250 mA +12 V/100 mA
Voltage input	0-5 V
Resolution	16-bit A/D
→Data recording	
Capacity	9 MB standard, 4/16 GB (Prolog)
Profile record	Ncells*9 + 120 bytes
Wave record	Nsamples*24 + 1k bytes
Mode	Stop when full (default and Prolog) or wrap mode
→Real-time clock	
Accuracy	±1 min/year
Backup in absence of power	1 year
→ Data communications	
I/O	RS-232 or RS-422. Software supports most commercially available USB–RS-232 converters
Communication baud rate	300-115200 Bd
Recorder download baud rate	600/1200 kBd for both RS-232 and RS-422
User control	Handled via "AWAC AST" software, or ActiveX® controls. "Seastate" for online systems
Output formats	NMEA, Binary. Prolog provides same types also for processed wave and current data
→ Connectors	
Bulkhead (Impulse)	MCBH-2-FS, MCBH-8-FS, optional Souriau M-series metal connector for online use
Cable	PMCIL-8-MP on 10m polyurethane cable, metal connector optional
→Software	
Functions	Deployment planning, instrument configuration, data retrieval and conversion (for Windows®)
→ Power	
DC input	9-18 V DC
Maximum peak current	3 A
Avg. power consumption 4)	0.65 W
Sleep current	< 100 µA
Transmit Power	1-30 W, 3 adjustable levels
→ Environmental	-4 to +40 °C
Operating temperature	-20 to +60 °C
Storage temperature Shock and vibration	IEC 721-3-2
EMC approval	IEC 61000
Depth rating	300 m
→ Materials	
Standard model	POM and polyurethane plastics with titanium fasteners
→ Dimensions	
Maximum diameter	210 mm
Maximum length	175 mm
→ Weight	
Weight in air	6.1 kg
Weight in water	2.9 kg
→ Online cable	
	Polyurethane jacket, Shore D hardness, 13 mm in diameter, max 2 km, Inquire for longer cables

in diameter, max 2 km. Inquire for longer cables



AWAC, 600 kHz



The AWAC 600 kHz ADCP has become the standard reference technology in submerged wave-measurement applications. Thousands of these ADCPs have been deployed to capture the full wave spectrum in combination with current profiles. With a 60 m maximum range for wave measurements and 2 Hz sampling of the surface elevation, the AWAC 600 kHz is the optimal tool for medium water-depth current and wave measurements.

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Highlights

- → Real-time current profiles to 50 m range
- \rightarrow Real-time waves to 60 m range
- \rightarrow Acoustic surface tracking (AST) with vertical beam
- \rightarrow Can be used both with fixed frames and subsurface buoys

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- → Online measurements of currents and waves
- → Design data for planning of new coastal structures
- → Site studies for offshore wind platforms
- → Coastal erosion studies
- → Measurement campaigns where the full wave spectrum is needed
- → Monitoring of transient waves for channel wall protection
- → Studies of tidal currents



Technical specifications AWAC, 600 kHz

\rightarrow Water velocity measu	rements
Maximum profiling range 1)	50 m
Cell size	0.5-8.0 m
Number of cells	Typical 20-40, max. 128
Velocity range	±10 m/s horizontal, ±5 m/s along beam
Accuracy	±1% of measured value ±0.5 cm/s
Velocity precision	Consult instrument software
Maximum output rate	1 Hz
Internal sampling rate	4 Hz
\rightarrow Echo intensity (along	g slanted beams)
Sampling	Same as velocity
Resolution	0.45 dB
Dynamic range	90 dB
Transducer acoustic frequency	600 kHz
Number of beams	3 beams 120° apart, one vertical beam (90° apart, one at 5° for platform mount)
Beam width	3.1°
Beam width vertical beam	1.7°
→ Wave measurement opt	ion (AST)
Maximum depth	60 m
Data types	Pressure, one velocity along each beam, AST $^{\scriptscriptstyle 2)}$
Sampling rate velocity (output)	1 Hz
Sampling rate AST (output)	2 Hz
No. of samples per burst	512, 1024 or 2048 ³⁾
\rightarrow Wave estimates	
Range	-15 to 15 m
-	
Accuracy/resolution (Hs)	< 1% of measured value / 1 cm
	< 1% of measured value / 1 cm 2° / 0.1°
Accuracy/resolution (Hs)	
Accuracy/resolution (Hs) Accuracy/resolution (Dir)	2°/0.1°
Accuracy/resolution (Hs) Accuracy/resolution (Dir) Period range	2° / 0.1° 1-50 s 5 m depth: 0.5 sec 20 m depth: 0.9 sec
Accuracy/resolution (Hs) Accuracy/resolution (Dir) Period range Cut-off period (Hs)	2° / 0.1° 1-50 s 5 m depth: 0.5 sec 20 m depth: 0.9 sec 60 m depth: 1.5 sec 5 m depth: 1.5 sec 20 m depth: 3.1 sec
Accuracy/resolution (Hs) Accuracy/resolution (Dir) Period range Cut-off period (Hs) Cut-off period (dir)	2° / 0.1° 1-50 s 5 m depth: 0.5 sec 20 m depth: 0.9 sec 60 m depth: 1.5 sec 5 m depth: 1.5 sec 20 m depth: 3.1 sec
Accuracy/resolution (Hs) Accuracy/resolution (Dir) Period range Cut-off period (Hs) Cut-off period (dir) → Sensors	2° / 0.1° 1-50 s 5 m depth: 0.5 sec 20 m depth: 0.9 sec 60 m depth: 1.5 sec 5 m depth: 1.5 sec 20 m depth: 3.1 sec 60 m depth: 5.5 sec
Accuracy/resolution (Hs) Accuracy/resolution (Dir) Period range Cut-off period (Hs) Cut-off period (dir) → Sensors Temperature:	2° / 0.1° 1-50 s 5 m depth: 0.5 sec 20 m depth: 0.9 sec 60 m depth: 1.5 sec 5 m depth: 1.5 sec 20 m depth: 3.1 sec 60 m depth: 5.5 sec Thermistor embedded in housing
Accuracy/resolution (Hs) Accuracy/resolution (Dir) Period range Cut-off period (Hs) Cut-off period (dir) Sensors Temperature: Temp. range	2° / 0.1° 1-50 s 5 m depth: 0.5 sec 20 m depth: 0.9 sec 60 m depth: 1.5 sec 5 m depth: 1.5 sec 20 m depth: 3.1 sec 60 m depth: 5.5 sec Thermistor embedded in housing -4 to +40 °C
Accuracy/resolution (Hs) Accuracy/resolution (Dir) Period range Cut-off period (Hs) Cut-off period (dir) Sensors Temperature: Temp. range Temp. accuracy/resolution 	2° / 0.1° 1-50 s 5 m depth: 0.5 sec 20 m depth: 0.9 sec 60 m depth: 1.5 sec 5 m depth: 1.5 sec 20 m depth: 3.1 sec 60 m depth: 3.1 sec 60 m depth: 5.5 sec Thermistor embedded in housing -4 to +40 °C 0.1 °C/0.01 °C
Accuracy/resolution (Hs) Accuracy/resolution (Dir) Period range Cut-off period (Hs) Cut-off period (dir) Sensors Temperature: Temp. range Temp. accuracy/resolution Temp. time response	2° / 0.1° 1-50 s 5 m depth: 0.5 sec 20 m depth: 0.9 sec 60 m depth: 1.5 sec 20 m depth: 3.1 sec 60 m depth: 5.5 sec Thermistor embedded in housing -4 to +40 °C 0.1 °C/0.01 °C < 5 min
Accuracy/resolution (Hs) Accuracy/resolution (Dir) Period range Cut-off period (Hs) Cut-off period (dir) Sensors Temperature: Temp. range Temp. accuracy/resolution Temp. time response Compass:	2° / 0.1° 1-50 s 5 m depth: 0.5 sec 20 m depth: 0.9 sec 60 m depth: 1.5 sec 20 m depth: 3.1 sec 60 m depth: 5.5 sec Thermistor embedded in housing -4 to +40 °C 0.1 °C/0.01 °C < 5 min Magnetoresistive
Accuracy/resolution (Hs) Accuracy/resolution (Dir) Period range Cut-off period (Hs) Cut-off period (dir) → Sensors Temperature: Temp. range Temp. accuracy/resolution Temp. time response Compass: Accuracy/resolution	2° / 0.1° 1-50 s 5 m depth: 0.5 sec 20 m depth: 0.9 sec 60 m depth: 1.5 sec 5 m depth: 1.5 sec 20 m depth: 3.1 sec 60 m depth: 5.5 sec Thermistor embedded in housing -4 to +40 °C 0.1 °C/0.01 °C < 5 min Magnetoresistive 2°/0.1° for tilt < 15°
Accuracy/resolution (Hs) Accuracy/resolution (Dir) Period range Cut-off period (Hs) Cut-off period (dir) → Sensors Temperature: Temp. range Temp. accuracy/resolution Temp. time response Compass: Accuracy/resolution Tilt:	2° / 0.1° 1-50 s 5 m depth: 0.5 sec 20 m depth: 0.9 sec 60 m depth: 1.5 sec 5 m depth: 1.5 sec 20 m depth: 3.1 sec 60 m depth: 5.5 sec Thermistor embedded in housing -4 to +40 °C 0.1 °C/0.01 °C < 5 min Magnetoresistive 2°/0.1° for tilt < 15° Liquid level
Accuracy/resolution (Hs) Accuracy/resolution (Dir) Period range Cut-off period (Hs) Cut-off period (dir) → Sensors Temperature: Temp. range Temp. accuracy/resolution Temp. time response Compass: Accuracy/resolution Tilt: Accuracy/resolution	2° / 0.1° 1-50 s 5 m depth: 0.5 sec 20 m depth: 0.9 sec 60 m depth: 1.5 sec 5 m depth: 1.5 sec 20 m depth: 3.1 sec 60 m depth: 5.5 sec Thermistor embedded in housing -4 to +40 °C 0.1 °C/0.01 °C < 5 min Magnetoresistive 2°/0.1° for tilt < 15° Liquid level 0.2°/0.1°
Accuracy/resolution (Hs) Accuracy/resolution (Dir) Period range Cut-off period (Hs) Cut-off period (dir) Sensors Temperature: Temp. range Temp. time response Compass: Accuracy/resolution Tilt: Accuracy/resolution Maximum tilt	2° / 0.1° 1-50 s 5 m depth: 0.5 sec 20 m depth: 1.5 sec 5 m depth: 1.5 sec 5 m depth: 3.1 sec 60 m depth: 3.1 sec 60 m depth: 5.5 sec Thermistor embedded in housing -4 to +40 °C 0.1 °C/0.01 °C < 5 min Magnetoresistive 2°/0.1° for tilt < 15° Liquid level 0.2°/0.1° 30°, AST requires < 10° instrument tilt
Accuracy/resolution (Hs) Accuracy/resolution (Dir) Period range Cut-off period (Hs) Cut-off period (dir) Sensors Sensors Temperature: Temp. range Temp. accuracy/resolution Temp. time response Compass: Accuracy/resolution Tilt: Accuracy/resolution Maximum tilt Up or Down 	2° / 0.1° 1-50 s 5 m depth: 0.5 sec 20 m depth: 0.9 sec 60 m depth: 1.5 sec 20 m depth: 3.1 sec 60 m depth: 3.1 sec 60 m depth: 5.5 sec Thermistor embedded in housing -4 to +40 °C 0.1 °C/0.01 °C < 5 min Magnetoresistive 2°/0.1° for tilt < 15° Liquid level 0.2°/0.1° 30°, AST requires < 10° instrument tilt Automatic detect
Accuracy/resolution (Hs) Accuracy/resolution (Dir) Period range Cut-off period (Hs) Cut-off period (dir) Sensors Temperature: Temp. range Temp. accuracy/resolution Temp. time response Compass: Accuracy/resolution Tilt: Accuracy/resolution Maximum tilt Up or Down Pressure: 	2° / 0.1° 1-50 s 5 m depth: 0.5 sec 20 m depth: 0.9 sec 60 m depth: 1.5 sec 20 m depth: 3.1 sec 60 m depth: 3.1 sec 60 m depth: 5.5 sec Thermistor embedded in housing -4 to +40 °C 0.1 °C/0.01 °C < 5 min Magnetoresistive 2°/0.1° for tilt < 15° Liquid level 0.2°/0.1° 30°, AST requires < 10° instrument tilt Automatic detect Piezoresistive

1)	Depends o	on local scatterin	a conditions. ²	²) Acoustic surface tracking,

³) Inquire for options, ⁴) Default configuration, see instrument SW for details and other setups

→ Analog inputs	
No. of channels	2
Supply voltage to analog output devices	Three options selectable through firmware commands: • Battery voltage/500 mA • +5 V/250 mA
Valtara input	• +12 V/100 mA 0-5 V
Voltage input	16-bit A/D
Resolution → Data recording	16-bit A/D
	9 MB standard, 4/16 GB (Prolog)
Capacity Profile record	
Wave record	Ncells*9 + 120 bytes Nsamples*24 + 1k bytes
Mode	Stop when full (default and Prolog) or wrap mode
→ Real-time clock	Stop when full (default and fiblog) of whap mode
Accuracy	±1 min/year
Backup in absence of power	1 year
→ Data communications	
	RS-232 or RS-422. Software supports most
1/0	commercially available USB-RS-232 converters
Communication baud rate	300-115200 Bd
Recorder download baud rate	600/1200 kBd for both RS-232 and RS-422
User control	Handled via "AWAC AST" software, or ActiveX® controls. "Seastate" for online systems
Output formats	NMEA, Binary. Prolog provides same types also for processed wave and current data
→ Connectors	
Bulkhead (Impulse)	MCBH-2-FS, MCBH-8-FS, optional Souriau M-series metal connector for online use
Cable	PMCIL-8-MP on 10m polyurethane cable
Cable → Software	PMCIL-8-MP on 10m polyurethane cable
	Deployment planning, instrument configuration, data retrieval and conversion (for Windows®)
→ Software	Deployment planning, instrument configuration, data retrieval and conversion (for Windows®)
→ Software Functions	Deployment planning, instrument configuration,
 → Software Functions → Power DC input Maximum peak current 	Deployment planning, instrument configuration, data retrieval and conversion (for Windows®) 9-18 V DC 3 A
 → Software Functions → Power DC input Maximum peak current Avg. power consumption ⁴) 	Deployment planning, instrument configuration, data retrieval and conversion (for Windows®) 9-18 V DC 3 A 0.76 W
 → Software Functions → Power DC input Maximum peak current Avg. power consumption ⁴⁾ Sleep current 	Deployment planning, instrument configuration, data retrieval and conversion (for Windows®) 9-18 V DC 3 A 0.76 W < 100 µA
 → Software Functions → Power DC input Maximum peak current Avg. power consumption ⁴) Sleep current Transmit Power 	Deployment planning, instrument configuration, data retrieval and conversion (for Windows®) 9-18 V DC 3 A 0.76 W
 → Software Functions → Power DC input Maximum peak current Avg. power consumption ⁴⁾ Sleep current Transmit Power → Environmental 	Deployment planning, instrument configuration, data retrieval and conversion (for Windows®) 9-18 V DC 3 A 0.76 W < 100 µA 1-30W, 3 adjustable levels
 → Software Functions → Power DC input Maximum peak current Avg. power consumption ⁴⁾ Sleep current Transmit Power → Environmental Operating temperature 	Deployment planning, instrument configuration, data retrieval and conversion (for Windows®) 9-18 V DC 3 A 0.76 W < 100 µA 1-30W, 3 adjustable levels -4 to +40 °C
 → Software Functions → Power DC input Maximum peak current Avg. power consumption 4) Sleep current Transmit Power → Environmental Operating temperature Storage temperature 	Deployment planning, instrument configuration, data retrieval and conversion (for Windows®) 9-18 V DC 3 A 0.76 W < 100 μA 1-30W, 3 adjustable levels -4 to +40 °C -20 to +60 °C
 → Software Functions → Power DC input Maximum peak current Avg. power consumption 4) Sleep current Transmit Power → Environmental Operating temperature Storage temperature Shock and vibration 	Deployment planning, instrument configuration, data retrieval and conversion (for Windows®) 9-18 V DC 3 A 0.76 W < 100 μA 1-30W, 3 adjustable levels -4 to +40 °C -20 to +60 °C IEC 721-3-2
 → Software Functions → Power DC input Maximum peak current Avg. power consumption 4) Sleep current Transmit Power → Environmental Operating temperature Storage temperature Shock and vibration EMC approval 	Deployment planning, instrument configuration, data retrieval and conversion (for Windows®) 9-18 V DC 3 A 0.76 W < 100 μA 1-30W, 3 adjustable levels -4 to +40 °C -20 to +60 °C IEC 721-3-2 IEC 61000
 → Software Functions → Power DC input Maximum peak current Avg. power consumption 4) Sleep current Transmit Power → Environmental Operating temperature Storage temperature Shock and vibration EMC approval Depth rating 	Deployment planning, instrument configuration, data retrieval and conversion (for Windows®) 9-18 V DC 3 A 0.76 W < 100 μA 1-30W, 3 adjustable levels -4 to +40 °C -20 to +60 °C IEC 721-3-2
 → Software Functions → Power DC input Maximum peak current Avg. power consumption 4) Sleep current Transmit Power → Environmental Operating temperature Storage temperature Shock and vibration EMC approval 	Deployment planning, instrument configuration, data retrieval and conversion (for Windows®) 9-18 V DC 3 A 0.76 W < 100 µA 1-30W, 3 adjustable levels -4 to +40 °C -20 to +60 °C IEC 721-3-2 IEC 61000 300 m
 → Software Functions → Power DC input Maximum peak current Avg. power consumption ⁴⁾ Sleep current Transmit Power → Environmental Operating temperature Storage temperature Shock and vibration EMC approval Depth rating → Materials Standard model 	Deployment planning, instrument configuration, data retrieval and conversion (for Windows®) 9-18 V DC 3 A 0.76 W < 100 μA 1-30W, 3 adjustable levels -4 to +40 °C -20 to +60 °C IEC 721-3-2 IEC 61000
 → Software Functions → Power DC input Maximum peak current Avg. power consumption 4) Sleep current Transmit Power → Environmental Operating temperature Storage temperature Shock and vibration EMC approval Depth rating → Materials 	Deployment planning, instrument configuration, data retrieval and conversion (for Windows®) 9-18 V DC 3 A 0.76 W < 100 μA 1-30W, 3 adjustable levels -4 to +40 °C -20 to +60 °C IEC 721-3-2 IEC 61000 300 m POM and polyurethane plastics with titanium
 → Software Functions → Power DC input Maximum peak current Avg. power consumption ⁴⁾ Sleep current Transmit Power → Environmental Operating temperature Storage temperature Shock and vibration EMC approval Depth rating → Materials Standard model 	Deployment planning, instrument configuration, data retrieval and conversion (for Windows®) 9-18 V DC 3 A 0.76 W < 100 μA 1-30W, 3 adjustable levels -4 to +40 °C -20 to +60 °C IEC 721-3-2 IEC 61000 300 m POM and polyurethane plastics with titanium
 → Software Functions → Power DC input Maximum peak current Avg. power consumption ⁴⁾ Sleep current Transmit Power → Environmental Operating temperature Storage temperature Shock and vibration EMC approval Depth rating → Materials Standard model → Dimensions 	Deployment planning, instrument configuration, data retrieval and conversion (for Windows®) 9-18 V DC 3 A 0.76 W < 100 μA 1-30W, 3 adjustable levels -4 to +40 °C -20 to +60 °C IEC 721-3-2 IEC 61000 300 m POM and polyurethane plastics with titanium fasteners
 → Software Functions → Power DC input Maximum peak current Avg. power consumption ⁴) Sleep current Transmit Power → Environmental Operating temperature Storage temperature Shock and vibration EMC approval Depth rating → Materials Standard model → Dimensions Maximum diameter 	Deployment planning, instrument configuration, data retrieval and conversion (for Windows®) 9-18 V DC 3 A 0.76 W < 100 μA 1-30W, 3 adjustable levels -4 to +40 °C -20 to +60 °C IEC 721-3-2 IEC 61000 300 m POM and polyurethane plastics with titanium fasteners 210 mm
 → Software Functions → Power DC input Maximum peak current Avg. power consumption ⁴) Sleep current Transmit Power → Environmental Operating temperature Storage temperature Shock and vibration EMC approval Depth rating → Materials Standard model → Dimensions Maximum diameter Maximum length 	Deployment planning, instrument configuration, data retrieval and conversion (for Windows®) 9-18 V DC 3 A 0.76 W < 100 μA 1-30W, 3 adjustable levels -4 to +40 °C -20 to +60 °C IEC 721-3-2 IEC 61000 300 m POM and polyurethane plastics with titanium fasteners 210 mm
 → Software Functions → Power DC input Maximum peak current Avg. power consumption 4) Sleep current Transmit Power → Environmental Operating temperature Storage temperature Shock and vibration EMC approval Depth rating → Materials Standard model → Dimensions Maximum diameter Maximum length → Weight Weight in air Weight in water 	Deployment planning, instrument configuration, data retrieval and conversion (for Windows®) 9-18 V DC 3 A 0.76 W < 100 μA 1-30W, 3 adjustable levels -4 to +40 °C -20 to +60 °C IEC 721-3-2 IEC 61000 300 m POM and polyurethane plastics with titanium fasteners 210 mm 203 mm
 → Software Functions → Power DC input Maximum peak current Avg. power consumption 4) Sleep current Transmit Power → Environmental Operating temperature Storage temperature Shock and vibration EMC approval Depth rating → Materials Standard model → Dimensions Maximum length → Weight Weight in air 	Deployment planning, instrument configuration, data retrieval and conversion (for Windows®) 9-18 V DC 3 A 0.76 W < 100 μA 1-30W, 3 adjustable levels -4 to +40 °C -20 to +60 °C IEC 721-3-2 IEC 61000 300 m POM and polyurethane plastics with titanium fasteners 210 mm 203 mm



AWAC, 400 kHz



The AWAC 400 kHz ADCP has become Highlights the standard reference technology in submerged wave-measurement applications. Thousands of these ADCPs have been deployed to capture the full wave spectrum, in combination with current profiles. With a 100 m maximum range for wave measurements and 1.5 Hz sampling of the surface elevation, the AWAC 400 kHz is the optimal tool for deeper-water current and wave measurements.



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- \rightarrow Real-time current profiles and waves to 100 m range
- \rightarrow Acoustic surface tracking (AST) with vertical beam
- \rightarrow Can be used both with fixed frames and subsurface buoys



- → Online measurements of currents and waves
- → Design data for planning of new coastal structures
- → Site studies for offshore wind platforms
- → Coastal erosion studies
- → Measurement campaigns where the full wave spectrum is needed
- → Monitoring of transient waves for channel wall protection
- → Studies of tidal currents



Technical specifications AWAC, 400 kHz

ightarrow Water velocity measur	rements
Maximum profiling range 1)	100 m
Cell size	1.0-8.0 m
Number of cells	Typical 20-40, max. 128
Velocity range	±10 m/s horizontal, ±5 m/s along beam
Accuracy	±1% of measured value ±0.5 cm/s
Velocity precision	Consult instrument software
Maximum output rate	1 Hz
Internal sampling rate	2 Hz
→ Echo intensity (along	g slanted beams)
Sampling	Same as velocity
Resolution	0.45 dB
Dynamic range	90 dB
Transducer acoustic frequency	400 kHz, 600 kHz for vertical beam
Number of beams	3 beams 120° apart, one vertical beam (90° apart, one at 5° for platform mount)
Beam width	2.4°
Beam width vertical beam	1.7°
→ Wave measurement opti	Lon (AST)
Maximum depth	100 m
Data types	Pressure, one velocity along each beam, AST $^{\mbox{\tiny 2)}}$
Sampling rate velocity (output)	0.75 Hz
Sampling rate AST (output)	1.5 Hz
No. of samples per burst	512, 1024 or 2048 ³⁾
\rightarrow Wave estimates	
Range	-15 to 15 m
Range Accuracy/resolution (Hs)	-15 to 15 m < 1% of measured value / 1 cm
-	
Accuracy/resolution (Hs)	< 1% of measured value / 1 cm
Accuracy/resolution (Hs) Accuracy/resolution (Dir)	< 1% of measured value / 1 cm 2° / 0.1°
Accuracy/resolution (Hs) Accuracy/resolution (Dir) Period range	< 1% of measured value / 1 cm 2° / 0.1° 1-50 s 20 m depth: 0.9 sec 60 m depth: 1.5 sec
Accuracy/resolution (Hs) Accuracy/resolution (Dir) Period range Cut-off period (Hs)	< 1% of measured value / 1 cm 2° / 0.1° 1-50 s 20 m depth: 0.9 sec 60 m depth: 1.5 sec 100 m depth: 2 sec 20 m depth: 3.1 sec 60 m depth: 5.5 sec
Accuracy/resolution (Hs) Accuracy/resolution (Dir) Period range Cut-off period (Hs) Cut-off period (dir)	< 1% of measured value / 1 cm 2° / 0.1° 1-50 s 20 m depth: 0.9 sec 60 m depth: 1.5 sec 100 m depth: 2 sec 20 m depth: 3.1 sec 60 m depth: 5.5 sec
Accuracy/resolution (Hs) Accuracy/resolution (Dir) Period range Cut-off period (Hs) Cut-off period (dir) → Sensors	< 1% of measured value / 1 cm 2° / 0.1° 1-50 s 20 m depth: 0.9 sec 60 m depth: 1.5 sec 100 m depth: 2 sec 20 m depth: 3.1 sec 60 m depth: 5.5 sec 100 m depth: 7.1 sec
Accuracy/resolution (Hs) Accuracy/resolution (Dir) Period range Cut-off period (Hs) Cut-off period (dir) → Sensors Temperature:	< 1% of measured value / 1 cm 2° / 0.1° 1-50 s 20 m depth: 0.9 sec 60 m depth: 1.5 sec 100 m depth: 2 sec 20 m depth: 3.1 sec 60 m depth: 5.5 sec 100 m depth: 7.1 sec Thermistor embedded in housing
Accuracy/resolution (Hs) Accuracy/resolution (Dir) Period range Cut-off period (Hs) Cut-off period (dir) → Sensors Temperature: Temp. range	< 1% of measured value / 1 cm 2° / 0.1° 1-50 s 20 m depth: 0.9 sec 60 m depth: 1.5 sec 100 m depth: 3.1 sec 60 m depth: 5.5 sec 100 m depth: 7.1 sec Thermistor embedded in housing -4 to +40 °C
Accuracy/resolution (Hs) Accuracy/resolution (Dir) Period range Cut-off period (Hs) Cut-off period (dir) Sensors Temperature: Temp. range Temp. accuracy/resolution 	< 1% of measured value / 1 cm 2° / 0.1° 1-50 s 20 m depth: 0.9 sec 60 m depth: 1.5 sec 100 m depth: 2 sec 20 m depth: 3.1 sec 60 m depth: 5.5 sec 100 m depth: 7.1 sec Hermistor embedded in housing -4 to +40 °C 0.1 °C/0.01 °C
Accuracy/resolution (Hs) Accuracy/resolution (Dir) Period range Cut-off period (Hs) Cut-off period (dir) Sensors Temperature: Temp. range Temp. accuracy/resolution Temp. time response 	< 1% of measured value / 1 cm 2° / 0.1° 1-50 s 20 m depth: 0.9 sec 60 m depth: 1.5 sec 100 m depth: 2 sec 20 m depth: 3.1 sec 60 m depth: 5.5 sec 100 m depth: 7.1 sec Thermistor embedded in housing -4 to +40 °C 0.1 °C/0.01 °C < 5 min
Accuracy/resolution (Hs) Accuracy/resolution (Dir) Period range Cut-off period (Hs) Cut-off period (dir) Sensors Temperature: Temp. range Temp. range Temp. time response Compass: 	< 1% of measured value / 1 cm 2° / 0.1° 1-50 s 20 m depth: 0.9 sec 60 m depth: 1.5 sec 100 m depth: 2 sec 20 m depth: 3.1 sec 60 m depth: 5.5 sec 100 m depth: 7.1 sec Thermistor embedded in housing -4 to +40 °C 0.1 °C/0.01 °C < 5 min Magnetoresistive
Accuracy/resolution (Hs) Accuracy/resolution (Dir) Period range Cut-off period (Hs) Cut-off period (dir) → Sensors Temperature: Temp. range Temp. accuracy/resolution Temp. time response Compass: Accuracy/resolution	< 1% of measured value / 1 cm 2° / 0.1° 1-50 s 20 m depth: 0.9 sec 60 m depth: 1.5 sec 100 m depth: 2 sec 20 m depth: 3.1 sec 60 m depth: 5.5 sec 100 m depth: 7.1 sec Thermistor embedded in housing -4 to +40 °C 0.1 °C/0.01 °C < 5 min Magnetoresistive 2°/0.1° for tilt < 15°
Accuracy/resolution (Hs) Accuracy/resolution (Dir) Period range Cut-off period (Hs) Cut-off period (dir) → Sensors Temperature: Temp. range Temp. accuracy/resolution Temp. time response Compass: Accuracy/resolution Tilt:	< 1% of measured value / 1 cm 2° / 0.1° 1-50 s 20 m depth: 0.9 sec 60 m depth: 1.5 sec 100 m depth: 2.1 sec 60 m depth: 5.5 sec 100 m depth: 7.1 sec Thermistor embedded in housing -4 to +40 °C 0.1 °C/0.01 °C < 5 min Magnetoresistive 2°/0.1° for tilt < 15° Liquid level
Accuracy/resolution (Hs) Accuracy/resolution (Dir) Period range Cut-off period (Hs) Cut-off period (dir) → Sensors Temperature: Temp. range Temp. accuracy/resolution Temp. time response Compass: Accuracy/resolution Tilt: Accuracy/resolution	< 1% of measured value / 1 cm 2° / 0.1° 1-50 s 20 m depth: 0.9 sec 60 m depth: 1.5 sec 100 m depth: 2 sec 20 m depth: 3.1 sec 60 m depth: 5.5 sec 100 m depth: 7.1 sec Thermistor embedded in housing -4 to +40 °C 0.1 °C/0.01 °C < 5 min Magnetoresistive 2°/0.1° for tilt < 15° Liquid level 0.2°/0.1°
Accuracy/resolution (Hs) Accuracy/resolution (Dir) Period range Cut-off period (Hs) Cut-off period (dir) → Sensors Temperature: Temp. range Temp. accuracy/resolution Temp. time response Compass: Accuracy/resolution Tilt: Accuracy/resolution Maximum tilt	<pre>< 1% of measured value / 1 cm 2° / 0.1° 1-50 s 20 m depth: 0.9 sec 60 m depth: 1.5 sec 100 m depth: 2 sec 20 m depth: 3.1 sec 60 m depth: 5.5 sec 100 m depth: 5.5 sec 100 m depth: 7.1 sec Thermistor embedded in housing -4 to +40 °C 0.1 °C/0.01 °C < 5 min Magnetoresistive 2°/0.1° for tilt < 15° Liquid level 0.2°/0.1° 30°, AST requires < 10° instrument tilt</pre>
Accuracy/resolution (Hs) Accuracy/resolution (Dir) Period range Cut-off period (Hs) Cut-off period (dir) Sensors Temperature: Temp. range Temp. accuracy/resolution Temp. time response Compass: Accuracy/resolution Tilt: Accuracy/resolution Maximum tilt Up or Down 	<pre>< 1% of measured value / 1 cm 2° / 0.1° 1-50 s 20 m depth: 0.9 sec 60 m depth: 1.5 sec 100 m depth: 2 sec 20 m depth: 3.1 sec 60 m depth: 5.5 sec 100 m depth: 5.5 sec 100 m depth: 7.1 sec Thermistor embedded in housing -4 to +40 °C 0.1 °C/0.01 °C < 5 min Magnetoresistive 2°/0.1° for tilt < 15° Liquid level 0.2°/0.1° 30°, AST requires < 10° instrument tilt Automatic detect</pre>
Accuracy/resolution (Hs) Accuracy/resolution (Dir) Period range Cut-off period (Hs) Cut-off period (dir) Sensors Temperature: Temp. range Temp. accuracy/resolution Temp. time response Compass: Accuracy/resolution Tilt: Accuracy/resolution Maximum tilt Up or Down Pressure:	< 1% of measured value / 1 cm 2° / 0.1° 1-50 s 20 m depth: 0.9 sec 60 m depth: 1.5 sec 100 m depth: 2 sec 20 m depth: 3.1 sec 60 m depth: 5.5 sec 100 m depth: 5.5 sec 100 m depth: 7.1 sec Thermistor embedded in housing -4 to +40 °C 0.1 °C/0.01 °C < 5 min Magnetoresistive 2°/0.1° for tilt < 15° Liquid level 0.2°/0.1° 30°, AST requires < 10° instrument tilt Automatic detect Piezoresistive

1) Depends on loca	I scattering	conditions, ²	²) Acoustic surface tracking,	
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³) Inquire for options, ⁴) Default configuration, see instrument SW for details and other setups

→ Analog inputs	
No. of channels	2
	Three options selectable through firmware
Supply voltage to analog	commands: • Battery voltage/500 mA
output devices	• +5 V/250 mA
	• +12 V/100 mA
Voltage input	0-5 V
Resolution	16-bit A/D
→ Data recording	
Capacity	9 MB standard, 4/16 GB (Prolog)
Profile record	Ncells*9 + 120 bytes
Wave record Mode	Nsamples*24 + 1k bytes
→ Real-time clock	Stop when full (default and Prolog) or wrap mode
Accuracy	±1 min/year
Backup in absence of power	1 year
→ Data communications	, you,
	RS-232 or RS-422. Software supports most
1/0	commercially available USB-RS-232 converters
Communication baud rate	300-115200 Bd
Recorder download baud rate	600/1200 kBd for both RS-232 and RS-422
User control	Handled via "AWAC AST" software, or ActiveX® controls. "Seastate" for online systems
Output formats	NMEA, Binary. Prolog provides same types also for processed wave and current data
→ Connectors	
Bulkhead (Impulse)	MCBH-2-FS, MCBH-8-FS, optional Souriau M-series metal connector for online use
Cabla	DMOUL 0 MD an 10 m makementh and a shire
Cable	PMCIL-8-MP on 10 m polyurethane cable
→ Software	PMCIL-8-MP on 10 m polyurethane cable
	Deployment planning, instrument configuration, data retrieval and conversion (for Windows®)
→ Software	Deployment planning, instrument configuration,
→ Software Functions	Deployment planning, instrument configuration,
 → Software Functions → Power 	Deployment planning, instrument configuration, data retrieval and conversion (for Windows®)
 → Software Functions → Power DC input 	Deployment planning, instrument configuration, data retrieval and conversion (for Windows®) 9-18 V DC
 → Software Functions → Power DC input Maximum peak current 	Deployment planning, instrument configuration, data retrieval and conversion (for Windows®) 9-18 V DC 3 A
 → Software Functions → Power DC input Maximum peak current Avg. power consumption 4) Sleep current Transmit Power 	Deployment planning, instrument configuration, data retrieval and conversion (for Windows®) 9-18 V DC 3 A 0.23 W
 → Software Functions → Power DC input Maximum peak current Avg. power consumption ⁴) Sleep current Transmit Power → Environmental 	Deployment planning, instrument configuration, data retrieval and conversion (for Windows®) 9-18 V DC 3 A 0.23 W < 100 µA 1-30 W, 3 adjustable levels
 → Software Functions → Power DC input Maximum peak current Avg. power consumption ⁴) Sleep current Transmit Power → Environmental Operating temperature 	Deployment planning, instrument configuration, data retrieval and conversion (for Windows®) 9-18 V DC 3 A 0.23 W < 100 μA 1-30 W, 3 adjustable levels -4 to +40 °C
 → Software Functions → Power DC input Maximum peak current Avg. power consumption ⁴) Sleep current Transmit Power → Environmental Operating temperature Storage temperature 	Deployment planning, instrument configuration, data retrieval and conversion (for Windows®) 9-18 V DC 3 A 0.23 W < 100 μA 1-30 W, 3 adjustable levels -4 to +40 °C -20 to +60 °C
 → Software Functions → Power DC input Maximum peak current Avg. power consumption 4) Sleep current Transmit Power → Environmental Operating temperature Storage temperature Shock and vibration 	Deployment planning, instrument configuration, data retrieval and conversion (for Windows®) 9-18 V DC 3 A 0.23 W < 100 μA 1-30 W, 3 adjustable levels -4 to +40 °C -20 to +60 °C IEC 721-3-2
 → Software Functions → Power DC input Maximum peak current Avg. power consumption 4) Sleep current Transmit Power → Environmental Operating temperature Storage temperature Shock and vibration EMC approval 	Deployment planning, instrument configuration, data retrieval and conversion (for Windows®) 9-18 V DC 3 A 0.23 W < 100 μA 1-30 W, 3 adjustable levels -4 to +40 °C -20 to +60 °C IEC 721-3-2 IEC 61000
 → Software Functions → Power DC input Maximum peak current Avg. power consumption 4) Sleep current Transmit Power → Environmental Operating temperature Storage temperature Shock and vibration EMC approval Depth rating 	Deployment planning, instrument configuration, data retrieval and conversion (for Windows®) 9-18 V DC 3 A 0.23 W < 100 μA 1-30 W, 3 adjustable levels -4 to +40 °C -20 to +60 °C IEC 721-3-2
 → Software Functions → Power DC input Maximum peak current Avg. power consumption 4) Sleep current Transmit Power → Environmental Operating temperature Storage temperature Shock and vibration EMC approval 	Deployment planning, instrument configuration, data retrieval and conversion (for Windows®) 9-18 V DC 3 A 0.23 W < 100 µA 1-30 W, 3 adjustable levels -4 to +40 °C -20 to +60 °C IEC 721-3-2 IEC 61000 300 m
 → Software Functions → Power DC input Maximum peak current Avg. power consumption ⁴) Sleep current Transmit Power → Environmental Operating temperature Storage temperature Shock and vibration EMC approval Depth rating 	Deployment planning, instrument configuration, data retrieval and conversion (for Windows®) 9-18 V DC 3 A 0.23 W < 100 μA 1-30 W, 3 adjustable levels -4 to +40 °C -20 to +60 °C IEC 721-3-2 IEC 61000
 → Software Functions → Power DC input Maximum peak current Avg. power consumption 4) Sleep current Transmit Power → Environmental Operating temperature Storage temperature Shock and vibration EMC approval Depth rating → Materials Standard model → Dimensions 	Deployment planning, instrument configuration, data retrieval and conversion (for Windows®) 9-18 V DC 3 A 0.23 W < 100 μA 1-30 W, 3 adjustable levels -4 to +40 °C -20 to +60 °C IEC 721-3-2 IEC 61000 300 m POM and polyurethane plastics with titanium
 → Software Functions → Power DC input Maximum peak current Avg. power consumption 4) Sleep current Transmit Power → Environmental Operating temperature Storage temperature Shock and vibration EMC approval Depth rating → Materials Standard model → Dimensions Maximum diameter 	Deployment planning, instrument configuration, data retrieval and conversion (for Windows®) 9-18 V DC 3 A 0.23 W < 100 μA 1-30 W, 3 adjustable levels -4 to +40 °C -20 to +60 °C IEC 721-3-2 IEC 61000 300 m POM and polyurethane plastics with titanium fasteners 200 m
 → Software Functions → Power DC input Maximum peak current Avg. power consumption 4) Sleep current Transmit Power → Environmental Operating temperature Storage temperature Shock and vibration EMC approval Depth rating → Materials Standard model → Dimensions Maximum diameter Maximum length 	Deployment planning, instrument configuration, data retrieval and conversion (for Windows®) 9-18 V DC 3 A 0.23 W < 100 µA 1-30 W, 3 adjustable levels -4 to +40 °C -20 to +60 °C IEC 721-3-2 IEC 61000 300 m POM and polyurethane plastics with titanium fasteners
 → Software Functions → Power DC input Maximum peak current Avg. power consumption 4) Sleep current Transmit Power → Environmental Operating temperature Storage temperature Shock and vibration EMC approval Depth rating → Materials Standard model → Dimensions Maximum diameter Maximum length → Weight 	Deployment planning, instrument configuration, data retrieval and conversion (for Windows®) 9-18 V DC 3 A 0.23 W < 100 μA 1-30 W, 3 adjustable levels -4 to +40 °C -20 to +60 °C IEC 721-3-2 IEC 61000 300 m POM and polyurethane plastics with titanium fasteners 306 mm 203 mm
 → Software Functions → Power DC input Maximum peak current Avg. power consumption 4) Sleep current Transmit Power → Environmental Operating temperature Storage temperature Shock and vibration EMC approval Depth rating → Materials Standard model → Dimensions Maximum length → Weight Weight in air 	Deployment planning, instrument configuration, data retrieval and conversion (for Windows®) 9-18 V DC 3 A 0.23 W < 100 μA 1-30 W, 3 adjustable levels -4 to +40 °C -20 to +60 °C IEC 721-3-2 IEC 61000 300 m POM and polyurethane plastics with titanium fasteners 206 mm 203 mm
 → Software Functions → Power DC input Maximum peak current Avg. power consumption 4) Sleep current Transmit Power → Environmental Operating temperature Storage temperature Shock and vibration EMC approval Depth rating → Materials Standard model → Dimensions Maximum diameter Maximum length → Weight Weight in air Weight in water 	Deployment planning, instrument configuration, data retrieval and conversion (for Windows®) 9-18 V DC 3 A 0.23 W < 100 μA 1-30 W, 3 adjustable levels -4 to +40 °C -20 to +60 °C IEC 721-3-2 IEC 61000 300 m POM and polyurethane plastics with titanium fasteners 306 mm 203 mm
 → Software Functions → Power DC input Maximum peak current Avg. power consumption 4) Sleep current Transmit Power → Environmental Operating temperature Storage temperature Shock and vibration EMC approval Depth rating → Materials Standard model → Dimensions Maximum length → Weight Weight in air 	Deployment planning, instrument configuration, data retrieval and conversion (for Windows®) 9-18 V DC 3 A 0.23 W < 100 μA 1-30 W, 3 adjustable levels -4 to +40 °C -20 to +60 °C IEC 721-3-2 IEC 61000 300 m POM and polyurethane plastics with titanium fasteners 206 mm 203 mm

DVL1000, 300 m





The DVL1000 is the world's smallest commercially available Doppler Velocity Log. It combines compact design with unprecedented functionality, being able to fly higher in the water column and closer to the seabed than similar equipment. This version has a maximum operational depth of 300 m and is ideally suited for subsea navigation where size and weight are a concern. This 1 MHz Doppler Velocity Log is used by industry leaders in the subsea market because of its high accuracy and state-of-the-art technology.

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Highlights

- → Industry's smallest DVL
- → Bottom track from 0.2-75 m range
- ightarrow Quality estimates per beam and ping

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- → Diver navigation systems
- → Hand-portable unmanned
- underwater vehicles (UUVs)
- → Shallow-water UUVs


Technical specifications DVL1000, 300 m

→ Bottom velocity		
Single ping std @ 3 m/s	0.5 cm/s	
Long-term accuracy ¹⁾	±0.1% / ±0.1 cm/s	
Minimum altitude	0.2 m	
Maximum altitude	75 m	
Velocity resolution	0.01 mm/s	
Maximum ping rate ²⁾	8 Hz max	
→ Water tracking		
Minimum accuracy	0.3% of measured value \pm	0.3 cm/s
Minimum range	2.0 m	
→ Current profiling		
Minimum accuracy	0.3% of measured value ±	0.3 cm/s
Velocity resolution	0.1 cm/s	
Interval	User-specified N th ping	
Maximum range	30 m	
Blanking	0.1 m	
Cell size	0.2-2.0 m	
Max # cells	150	
→ Environmental		
Operating temperature	-4 to +40 °C	
Storage temperature	-20 to +60 °C	
→ Mechanical	Head & electronics	Complete DVL
Depth rating	300 m	300 m
Weight	0.84 kg	1.30 kg
Weight in water	-	0.15 kg
Height	(contact Nortek)	158 mm
Diameter	(contact Nortek)	ø 114 mm

→ Hardware	
Frequency of operation	1 MHz
Beam width	2.9°
Configuration	4-beam Janus array convex transducer, 25° beam angle
Internal memory	16 GB / 64 GB optional
→ Interfaces	
Serial (either serial or Ethernet)	Configurable RS-232 or RS-422 Subconn connector, 8-pin male
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. IEEE1588/PTP and NTP for absolute time stamping. Multiple simultaneous data format transmission possible.
Data formats	Nortek proprietary w/ 1 ms time stamp accuracy NMEA0183 Variants of PDx
Trigger	Internal 1, 2, 3, 4, 5, 6, 7 or 8 Hz or Trigger In. Trigger option through command (Ethernet or serial) External TTL or 485 lines: (configurable Rising/Falling/Edges)
→ Sensors	
Pressure	0.1% FS /precision better than 0.002% of full scale per sample
Temperature	-4° to +40 °C ± 0.1 °C
→ Power	
DC input	12-48 V
Maximum peak current	1.5 A
Average power	1.3 W
→ Materials	
Standard models	POM housing

¹) Following standard calibration procedures, ²) Inquire for more options

DVL1000, 4000 m





The DVL1000 is the world's smallest commercially available Doppler Velocity Log. It combines compact design with unprecedented functionality, being able to fly higher in the water column and closer to the seabed than similar equipment. It has a maximum operational depth of 4000 m and is ideally suited for subsea navigation where size and weight are a concern. This 1 MHz Doppler Velocity Log is used by industry leaders in the subsea market because of its high accuracy and state-of-the-art technology.



Highlights

- → Industry's smallest DVL
- → Bottom track from 0.2-75 m range
- ightarrow Quality estimates per beam and ping



- → Observation-class ROVs and AUVs
- → Near-bottom operations
- \rightarrow Highly accurate subsea surveys
- → Easy integration with high-grade INS



Technical specifications DVL1000, 4000 m

→ Bottom velocity		
Single ping std @ 3 m/s	0.5 cm/s	
Long-term accuracy ¹⁾	±0.1% / ±0.1 cm/s	
Minimum altitude	0.2 m	
Maximum altitude	75 m	
Velocity resolution	0.01 mm/s	
Maximum ping rate ²⁾	8 Hz max	
→ Water tracking		
Minimum accuracy	0.3% of measured value	± 0.3 cm/s
Minimum range	2.0 m	
→ Current profiling		
Minimum accuracy	0.3% of measured value ±	± 0.3 cm/s
Velocity resolution	0.1 cm/s	
Interval	User-specified N th ping	
Maximum range	30 m	
Blanking	0.1 m	
Cell size	0.2-2.0 m	
Max # cells	150	
→ Environmental		
Operating temperature	-4 to +40 °C	
Storage temperature	-20 to +60 °C	
→ Mechanical	Head & electronics	Titanium DVL
Depth rating	4000 m	4000 m
Weight	1.7 kg	2.7 kg
Weight in water	-	1.7 kg
Height	(contact Nortek)	164 mm
Diameter	(contact Nortek)	ø 114 mm
1) Following standard calibration proced	ures ²) Inquire for more options	

→ Hardware	
Frequency of operation	1 MHz
Beam width	2.9°
Configuration	4-beam Janus array convex transducer, 25° beam angle
Internal memory	16 GB / 64 GB optional
→ Interfaces	
Serial (either serial or Ethernet)	Configurable RS-232 or RS-422 Subconn connector, 8-pin male
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. IEEE1588/PTP and NTP for absolute time stamping. Multiple simultaneous data format transmission possible.
Data formats	Nortek proprietary w/ 1 ms time stamp accuracy NMEA0183 Variants of PDx
Trigger	Internal 1, 2, 3, 4, 5, 6, 7 or 8 Hz or Trigger In. Trigger option through command (Ethernet or serial) External TTL or 485 lines: (configurable Rising/Falling/Edges)
→ Sensors	
Pressure	0.1% FS /precision better than 0.002% of full scale per sample
Temperature	-4° to +40 °C ± 0.1 °C
→ Power	
DC input	12-48 V
Maximum peak current	1.5 A
Average power	1.3 W
→ Materials	
Standard models	POM and titanium housing

1) Following standard calibration procedures, 2) Inquire for more options

DVL500, 300 m





The DVL500 is a universal Doppler Velocity Log that combines compact design with unprecedented functionality. It can fly higher in the water column and closer to the seabed than similar equipment. This 500 kHz Doppler Velocity Log is used by industry leaders in the subsea market because of its high accuracy and state-of-the-art technology.

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Highlights

- → Bottom track from 0.3-200 m range
- → Per-ping and per-beam data quality estimates

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 \rightarrow 300 m operational depth



- → Highly accurate subsea surveys
- → AUVs with long missions or high accuracy requirements
- → Easy integration with leading inertial navigation systems (INS)



Technical specifications DVL500, 300 m

→ Bottom velocity		
Single ping std @ 3 m/s	0.5 cm/s	
Long-term accuracy ¹⁾	±0.1% / ±0.1 cm/s	
Minimum altitude	0.3 m	
Maximum altitude	200 m	
Velocity resolution	0.01 mm/s	
Maximum ping rate ²⁾	8 Hz max	
ightarrow Water tracking		
Minimum accuracy	0.3% of measured value ±	0.3 cm/s
Minimum range	4.0 m	
→ Current profiling		
Minimum accuracy	0.3% of measured value \pm	0.3 cm/s
Velocity resolution	0.1 cm/s	
Interval	User-specified N th ping	
Maximum range	70 m	
Blanking	0.5 m	
Cell size	0.5-4.0 m	
Max # cells	140	
→ Environmental		
Operating temperature	-4 to +40 °C	
Storage temperature	-20 to +60 °C	
→ Mechanical	Head & electronics	Complete DVL
Depth rating	300 m	300 m
Weight	2.25 kg	3.5 kg
Weight in water	-	0.5 kg
Height	(contact Nortek)	203 mm
Diameter	(contact Nortek)	ø 186 mm

Frequency of operation	500 kHz
Beam width	2.9°
Configuration	4-beam Janus array convex transducer, 25° beam angle
Internal memory	16 GB / 64 GB optional
→ Interfaces	
Serial (either serial or Ethernet)	Configurable RS-232 or RS-422 Subconn connector, 8-pin male
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. IEEE1588/PTP and NTP for absolute time stamping. Multiple simultaneous data format transmission possible.
Data formats	Nortek proprietary w/ 1 ms time stamp accuracy NMEA0183 Variants of PDx
Trigger	Internal 1, 2, 3, 4, 5, 6, 7 or 8 Hz or Trigger In. Trigger option through command (Ethernet or serial) External TTL or 485 lines: (configurable Rising/Falling/Edges)
→ Sensors	
Pressure	0.1% FS /precision better than 0.002% of full scale per sample
Temperature	-4° to 40 °C ± 0.1 °C
→ Power	
DC input	12-48 V
Maximum peak current	1.5 A
Average power	3.0 W
→ Materials	
Standard models	POM housing

→ Hardware

1) Following standard calibration procedures, 2) Inquire for more options

DVL500, 6000 m





The DVL500 is a universal Doppler Velocity Log that combines compact design with unprecedented functionality. It can fly higher in the water column and closer to the seabed than similar equipment, and maximum operational depth is 6000 m. This 500 kHz Doppler Velocity Log is used by industry leaders in the subsea market because of its high accuracy and state-of-the-art technology.



Highlights

- → Bottom track from 0.3-200 m range
- → Per-ping and per-beam data quality estimates

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 \rightarrow 6000 m operational depth



- → Highly accurate subsea surveys
- → AUVs with long missions or high accuracy requirements
- → Easy integration with leading inertial navigation systems (INS)



Technical specifications DVL500,6000 m

→ Bottom velocity		
Single ping std @ 3 m/s	0.5 cm/s	
Long-term accuracy ¹⁾	±0.1% / ±0.1 cm/s	
Minimum altitude	0.3 m	
Maximum altitude	200 m	
Velocity resolution	0.01 mm/s	
Maximum ping rate ²⁾	8 Hz max	
→ Water tracking		
Minimum accuracy	0.3% of measured value ±	0.3 cm/s
Minimum range	4.0 m	
→ Current profiling		
Minimum accuracy	0.3% of measured value ±	0.3 cm/s
Velocity resolution	0.1 cm/s	
Interval	User-specified N th ping	
Maximum range	70 m	
Blanking	0.5 m	
Cell size	0.5-4.0 m	
Max # cells	140	
→ Environmental		
Operating temperature	-4 to +40 °C	
Storage temperature	-20 to +60 °C	
→ Mechanical	Head & electronics	Titanium DVL
Depth rating	6000 m	6000 m
Weight	3.5 kg	5.9 kg
Weight in water	-	3.1 kg
Height	(contact Nortek)	203 mm
Diameter	(contact Nortek)	ø 186 mm
1) Following standard solibration pro	aduras 2) Inquire for more entires	

→ Hardware	
Frequency of operation	500 kHz
Beam width	2.9°
Configuration	4-beam Janus array convex transducer, 25° beam angle
Internal memory	16 GB / 64 GB optional
→ Interfaces	
Serial (either serial or Ethernet)	Configurable RS-232 or RS-422 Subconn connector, 8-pin male
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. IEEE1588/PTP and NTP for absolute time stamping. Multiple simultaneous data format transmission possible.
Data formats	Nortek proprietary w/ 1 ms time stamp accuracy NMEA0183 Variants of PDx
Trigger	Internal 1, 2, 3, 4, 5, 6, 7 or 8 Hz or Trigger In. Trigger option through command (Ethernet or serial) External TTL or 485 lines: (configurable Rising/Falling/Edges)
→ Sensors	
Pressure	0.1% FS /precision better than 0.002% of full scale per sample
Temperature	-4° to 40 °C ± 0.1 °C
→ Power	
DC input	12-48 V
Maximum peak current	1.5 A
Average power	3.0 W
\rightarrow Materials	
Standard models	POM and titanium housing

¹) Following standard calibration procedures, ²) Inquire for more options



Signature1000



Current profiler



The Signature 1000 ADCP is the optimal Highlights tool for turbulence measurements. With a maximum sampling frequency of 16 Hz, it gives the scientific community an unprecedented opportunity to study a part of the turbulence spectrum that has never been accessible before. Vertical resolution current profiles of 2 cm over a range of up to 8 m further increase the Signature1000's versatility, as does its ability to measure wave height and direction. The center beam also functions as a biological echosounder, enabling high-resolution measurements of biomass in the water column.

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- → Five beams for mean currents and turbulence
- → Wave height and direction
- → Very small size and weight



- → Turbulence studies
- → Sediment transport studies
- → 3D profiling using a wire walker
- → Surf zone dynamics
- → Studies of tidal currents
- → Fine-scale mixing studies
- → Vessel-mounted coastal surveying
- Directional wave measurements
- Oastal studies
- → Suitable for wave buoys



Technical specifications Signature1000

ightarrow Water velocity measu	ramanta
Maximum profiling range ¹⁾	25 m (burst mode), 30 m (average mode)
Cell size	0.2-2 m
Minimum blanking	0.1 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
	Broadband processing, consult instrument
Velocity precision	software
Velocity resolution	0.1 cm/s
Max sampling rate	16 Hz (8 Hz using 5 beams)
→ HR option (on 5th be	-
Velocity range	3 cm/s - 1.4 m/s
Cell size	2-25 cm
Profiling range	10 cm - 8 m
Range velocity limitations	Product of profiling range and velocity should not exceed 3.0 m ² /s
\rightarrow AD2CP measurement mo	des ²⁾
Single	Burst or average
Concurrent	Burst and average
Alternate	Single and/or concurrent
→ Echo intensity (alon	g slanted beams)
Sampling	Same as velocity
Resolution/dynamic range	0.5 dB / 70 dB
Transducer acoustic frequency	1 MHz
Number of beams	5; 4 slanted at 25°, 1 vertical
Beam width	2.9°
ightarrow Echosounder option	
Resolution	3 mm - 0.25 m
Number of bins	10,000
Transmit pulse length	16 μs - 0.5 ms
Transmit pulse	Monochromatic or pulse compressed (25% BW)
Resolution / dynamic range	0.01 dB / 70 dB
ightarrow Wave measurement opt	ion
AST ³⁾ frequency	1 MHz
AST max distance	34 m ³⁾
Maximum wave	30 m
measurement depth	-15 to +15 m
Height range Accuracy/resolution (Hs)	< 1% of measured value / 2 cm
Accuracy/resolution (Dir)	2° / 0.1°
Period range	0.5-50 s
Cut-off period (Hs)	5 m depth: 0.6 sec, 20 m depth; 1.1 sec
Cut-off period (dir)	5 m depth: 1.5 sec, 20 m depth; 3.1 sec
Sampling rate	
(velocity and AST)	8 Hz
→ Ice measurement opti	on
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)
Accuracy/resolution	0.2° for tilt < 30°/0.01°
Maximum tilt	Full 3D
Up or Down	Automatic detect
	_

¹ Maximum range depends on transmit power and acoustic scattering conditions. ²) US Patent 8223588. ³ Acoustic surface tracking. ⁴) Dynamic specifications depends on the type of motion.
 ⁵) 10 min. avg. profile, 1 cm/sec hor. Prec., Max cell size, max power, long range mode. Consult SW for other configurations.

Pressure:	Piezoresistive (sampled at meas. rate)
Standard range	0-100 m (inquire for options)
Accuracy/precision	0.1% FS / Better than 0.002% of full scale
\rightarrow AHRS option	
Accelerometer dynamic range	5
Gyro dynamic range	± 250°/sec
Magnetometer dynamic range	
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 16 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	1 1 min / yoon
Accuracy Clock retention in absence	± 1 min/year
of external power	1 year. Rechargeable backup battery.
→ Data communications	
	10/100 Mbits Auto MDI-X
Ethernet	TCP/IP, UDP/IP, HTTP protocols Fixed IP / DHCP client /Auto IP address assignment
Ethernet	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), MCB- H2F-G2 (pwr), optional Souriau M-series metal connector for online use (10M)
	,
-> Software	
→ Software	Deployment planning instrument configuration
→ Software Functions	Deployment planning, instrument configuration, data retrieval and conversion (for Windows®)
Functions	
Functions → Power	
Functions → Power DC input	data retrieval and conversion (for Windows®)
Functions → Power DC input Maximum peak current	data retrieval and conversion (for Windows®) 12-48 V DC 1.5 A
Functions → Power DC input Maximum peak current Max. average consumption at 1 Hz	data retrieval and conversion (for Windows®) 12-48 V DC
Functions → Power DC input Maximum peak current Max. average consumption at 1 Hz Typical average consumption ⁵	data retrieval and conversion (for Windows®) 12-48 V DC 1.5 A 8 W at 1 Hz, Ethernet adds 0.75 W 15 mW
Functions → Power DC input Maximum peak current Max. average consumption at 1 Hz Typical average consumption ⁵⁾ Sleep consumption	data retrieval and conversion (for Windows®) 12-48 V DC 1.5 A 8 W at 1 Hz, Ethernet adds 0.75 W 15 mW 100 μA, power depending on supply voltage
Functions → Power DC input Maximum peak current Max. average consumption at 1 Hz Typical average consumption ⁵	data retrieval and conversion (for Windows®) 12-48 V DC 1.5 A 8 W at 1 Hz, Ethernet adds 0.75 W 15 mW
Functions Power DC input Maximum peak current Max. average consumption at 1 Hz Typical average consumption ⁵⁾ Sleep consumption Transmit power per beam	data retrieval and conversion (for Windows®) 12-48 V DC 1.5 A 8 W at 1 Hz, Ethernet adds 0.75 W 15 mW 100 µA, power depending on supply voltage 0.3-30 W, adjustable levels
Functions Power DC input Maximum peak current Max. average consumption at 1 Hz Typical average consumption ⁵⁾ Sleep consumption Transmit power per beam Ping sequence	data retrieval and conversion (for Windows®) 12-48 V DC 1.5 A 8 W at 1 Hz, Ethernet adds 0.75 W 15 mW 100 µA, power depending on supply voltage 0.3-30 W, adjustable levels
Functions → Power DC input Maximum peak current Max. average consumption at 1 Hz Typical average consumption ⁵⁾ Sleep consumption Transmit power per beam Ping sequence → Batteries	data retrieval and conversion (for Windows®) 12-48 V DC 1.5 A 8 W at 1 Hz, Ethernet adds 0.75 W 15 mW 100 μA, power depending on supply voltage 0.3-30 W, adjustable levels Parallel
Functions → Power DC input Maximum peak current Max. average consumption at 1 Hz Typical average consumption ⁵⁾ Sleep consumption Transmit power per beam Ping sequence → Batteries Internal	data retrieval and conversion (for Windows®) 12-48 V DC 1.5 A 8 W at 1 Hz, Ethernet adds 0.75 W 15 mW 100 µA, power depending on supply voltage 0.3-30 W, adjustable levels Parallel 90 Wh alkaline
Functions → Power DC input Maximum peak current Max. average consumption at 1 Hz Typical average consumption ⁵⁾ Sleep consumption Transmit power per beam Ping sequence → Batteries Internal Duration	data retrieval and conversion (for Windows®) 12-48 V DC 1.5 A 8 W at 1 Hz, Ethernet adds 0.75 W 15 mW 100 µA, power depending on supply voltage 0.3-30 W, adjustable levels Parallel 90 Wh alkaline
Functions → Power DC input Maximum peak current Max. average consumption at 1 Hz Typical average consumption ⁵⁾ Sleep consumption Transmit power per beam Ping sequence → Batteries Internal Duration → Environmental	data retrieval and conversion (for Windows®) 12-48 V DC 1.5 A 8 W at 1 Hz, Ethernet adds 0.75 W 15 mW 100 µA, power depending on supply voltage 0.3-30 W, adjustable levels Parallel 90 Wh alkaline Depending on configuration, consult software
Functions → Power DC input Maximum peak current Max. average consumption at 1 Hz Typical average consumption ⁵⁾ Sleep consumption Transmit power per beam Ping sequence → Batteries Internal Duration → Environmental Operating temperature	data retrieval and conversion (for Windows®) 12-48 V DC 1.5 A 8 W at 1 Hz, Ethernet adds 0.75 W 15 mW 100 μA, power depending on supply voltage 0.3-30 W, adjustable levels Parallel 90 Wh alkaline Depending on configuration, consult software -4 to +40 °C
Functions → Power DC input Maximum peak current Max. average consumption at 1 Hz Typical average consumption ⁵⁾ Sleep consumption Transmit power per beam Ping sequence → Batteries Internal Duration → Environmental Operating temperature Storage temperature	data retrieval and conversion (for Windows®) 12-48 V DC 1.5 A 8 W at 1 Hz, Ethernet adds 0.75 W 15 mW 100 μA, power depending on supply voltage 0.3-30 W, adjustable levels Parallel 90 Wh alkaline Depending on configuration, consult software -4 to +40 °C -20 to +60 °C
Functions Power DC input Maximum peak current Max. average consumption at 1 Hz Typical average consumption ⁵⁾ Sleep consumption Transmit power per beam Ping sequence Batteries Internal Duration Pervironmental Operating temperature Storage temperature Shock and vibration	data retrieval and conversion (for Windows®) 12-48 V DC 1.5 A 8 W at 1 Hz, Ethernet adds 0.75 W 15 mW 100 μA, power depending on supply voltage 0.3-30 W, adjustable levels Parallel 90 Wh alkaline Depending on configuration, consult software -4 to +40 °C -20 to +60 °C IEC 60068-1/IEC60068-2-64
Functions → Power DC input Maximum peak current Max. average consumption at 1 Hz Typical average consumption ⁵⁾ Sleep consumption Transmit power per beam Ping sequence → Batteries Internal Duration → Environmental Operating temperature Storage temperature Shock and vibration EMC approval	data retrieval and conversion (for Windows®) 12-48 V DC 1.5 A 8 W at 1 Hz, Ethernet adds 0.75 W 15 mW 100 μA, power depending on supply voltage 0.3-30 W, adjustable levels Parallel 90 Wh alkaline Depending on configuration, consult software 4 to +40 °C -20 to +60 °C IEC 60068-1/IEC60068-2-64 IEC 61000
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Functions → Power DC input Maximum peak current Max. average consumption at 1 Hz Typical average consumption ⁵⁹ Sleep consumption Transmit power per beam Ping sequence → Batteries Internal Duration → Environmental Operating temperature Storage temperature Storage temperature Shock and vibration EMC approval Depth rating → Materials Standard model → Dimensions Maximum diameter	data retrieval and conversion (for Windows®) 12-48 V DC 1.5 A 8 W at 1 Hz, Ethernet adds 0.75 W 15 mW 100 µA, power depending on supply voltage 0.3-30 W, adjustable levels Parallel 90 Wh alkaline Depending on configuration, consult software -4 to +40 °C -20 to +60 °C IEC 60068-1/IEC60068-2-64 IEC 61000 300 m
Functions Power DC input Maximum peak current Max. average consumption at 1 Hz Typical average consumption ⁵⁹ Sleep consumption Transmit power per beam Ping sequence Patteries Internal Duration Pervironmental Operating temperature Storage temperature Shock and vibration EMC approval Depth rating Materials Standard model Dimensions Maximum diameter Maximum length with	data retrieval and conversion (for Windows®) 12-48 V DC 1.5 A 8 W at 1 Hz, Ethernet adds 0.75 W 15 mW 100 µA, power depending on supply voltage 0.3-30 W, adjustable levels Parallel 90 Wh alkaline Depending on configuration, consult software -4 to +40 °C -20 to +60 °C IEC 60068-1/IEC60068-2-64 IEC 61000 300 m POM with titanium fasteners
Functions → Power DC input Maximum peak current Max. average consumption at 1 Hz Typical average consumption ⁵⁹ Sleep consumption Transmit power per beam Ping sequence → Batteries Internal Duration → Environmental Operating temperature Storage temperature Storage temperature Shock and vibration EMC approval Depth rating → Materials Standard model → Dimensions Maximum diameter	data retrieval and conversion (for Windows®) 12-48 V DC 1.5 A 8 W at 1 Hz, Ethernet adds 0.75 W 15 mW 100 µA, power depending on supply voltage 0.3-30 W, adjustable levels Parallel 90 Wh alkaline Depending on configuration, consult software -4 to +40 °C -20 to +60 °C IEC 60068-1/IEC60068-2-64 IEC 61000 300 m POM with titanium fasteners 142 mm 212 mm
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Functions → Power DC input Maximum peak current Max. average consumption at 1 Hz Typical average consumption ⁵⁹ Sleep consumption Transmit power per beam Ping sequence → Batteries Internal Duration → Environmental Operating temperature Storage t	data retrieval and conversion (for Windows®) 12-48 V DC 1.5 A 8 W at 1 Hz, Ethernet adds 0.75 W 15 mW 100 µA, power depending on supply voltage 0.3-30 W, adjustable levels Parallel 90 Wh alkaline Depending on configuration, consult software -4 to +40 °C -20 to +60 °C IEC 60068-1/IEC60068-2-64 IEC 61000 300 m POM with titanium fasteners 142 mm 212 mm 152 mm
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Signature500





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 ice thickness and drift.

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.

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Highlights

- → Five beams for mean currents and turbulence
- ightarrow Wave height and direction
- ightarrow Ice thickness and ice tracking

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



Technical specifications Signature500

-> Waton volocity model	inomonto
→ Water velocity measu Maximum profiling range ¹⁾	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
_	Broadband processing, consult instrument
Velocity precision	software
Velocity resolution	0.1 cm/s
Max sampling rate	8 Hz (4 Hz using 5 beams)
	eam only)
Velocity range Cell size	N/A
	N/A N/A
Profiling range	N/A N/A
AD2CP measurement model	odes ²⁾
Single	Burst or average
Concurrent	Burst and average
Alternate	Single and/or concurrent
→ Echo intensity (alor	
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°
\rightarrow Echosounder option	
Resolution	6 mm - 0.5 m
Number of bins	11,000
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 opt	
AST ³⁾ frequency	500 kHz
AST max distance	75 m ³⁾
Maximum wave	75 m ³⁾ 60 m
Maximum wave measurement depth	60 m
Maximum wave measurement depth Height range	60 m -15 to +15 m
Maximum wave measurement depth Height range Accuracy/resolution (Hs)	60 m -15 to +15 m < 1% of measured value / 2 cm
Maximum wave measurement depth Height range Accuracy/resolution (Hs) Accuracy/resolution (Dir) Period range	60 m -15 to +15 m < 1% of measured value / 2 cm 2° / 0.1° 1-50 s 5 m depth: 0.6 sec, 20 m depth: 1.1 sec,
Maximum wave measurement depth Height range Accuracy/resolution (Hs) Accuracy/resolution (Dir) Period range Cut-off period (Hs)	60 m -15 to +15 m < 1% of measured value / 2 cm 2° / 0.1° 1-50 s 5 m depth: 0.6 sec, 20 m depth: 1.1 sec, 60 m depth: 1.9 sec
Maximum wave measurement depth Height range Accuracy/resolution (Hs) Accuracy/resolution (Dir) Period range	60 m -15 to +15 m < 1% of measured value / 2 cm 2° / 0.1° 1-50 s 5 m depth: 0.6 sec, 20 m depth: 1.1 sec,
Maximum wave measurement depth Height range Accuracy/resolution (Hs) Accuracy/resolution (Dir) Period range Cut-off period (Hs) Cut-off period (dir) Sampling rate	60 m -15 to +15 m < 1% of measured value / 2 cm 2° / 0.1° 1-50 s 5 m depth: 0.6 sec, 20 m depth: 1.1 sec, 60 m depth: 1.9 sec 5 m depth: 1.5 sec, 20 m depth: 3.1 sec, 60 m depth: 5.5 sec
Maximum wave measurement depth Height range Accuracy/resolution (Hs) Accuracy/resolution (Dir) Period range Cut-off period (Hs) Cut-off period (dir) Sampling rate (velocity and AST)	60 m -15 to +15 m < 1% of measured value / 2 cm 2° / 0.1° 1-50 s 5 m depth: 0.6 sec, 20 m depth: 1.1 sec, 60 m depth: 1.9 sec 5 m depth: 1.5 sec, 20 m depth: 3.1 sec, 60 m depth: 5.5 sec 4 Hz
Maximum wave measurement depth Height range Accuracy/resolution (Hs) Accuracy/resolution (Dir) Period range Cut-off period (Hs) Cut-off period (dir) Sampling rate (velocity and AST) > Ice measurement option	60 m -15 to +15 m < 1% of measured value / 2 cm 2° / 0.1° 1-50 s 5 m depth: 0.6 sec, 20 m depth: 1.1 sec, 60 m depth: 1.9 sec 5 m depth: 1.5 sec, 20 m depth: 3.1 sec, 60 m depth: 5.5 sec 4 Hz
Maximum wave measurement depth Height range Accuracy/resolution (Hs) Accuracy/resolution (Dir) Period range Cut-off period (Hs) Cut-off period (dir) Sampling rate (velocity and AST)	60 m -15 to +15 m < 1% of measured value / 2 cm 2° / 0.1° 1-50 s 5 m depth: 0.6 sec, 20 m depth: 1.1 sec, 60 m depth: 1.9 sec 5 m depth: 1.5 sec, 20 m depth: 3.1 sec, 60 m depth: 5.5 sec 4 Hz
Maximum wave measurement depth Height range Accuracy/resolution (Hs) Accuracy/resolution (Dir) Period range Cut-off period (Hs) Cut-off period (dir) Sampling rate (velocity and AST) > Ice measurement option	60 m -15 to +15 m < 1% of measured value / 2 cm 2° / 0.1° 1-50 s 5 m depth: 0.6 sec, 20 m depth: 1.1 sec, 60 m depth: 1.9 sec 5 m depth: 1.5 sec, 20 m depth: 3.1 sec, 60 m depth: 5.5 sec 4 Hz con Ice thickness, speed and direction, echosounder
Maximum wave measurement depth Height range Accuracy/resolution (Hs) Accuracy/resolution (Dir) Period range Cut-off period (Hs) Cut-off period (dir) Sampling rate (velocity and AST) → Ice measurement optic Parameters	60 m -15 to +15 m < 1% of measured value / 2 cm 2° / 0.1° 1-50 s 5 m depth: 0.6 sec, 20 m depth: 1.1 sec, 60 m depth: 1.9 sec 5 m depth: 1.5 sec, 20 m depth: 3.1 sec, 60 m depth: 5.5 sec 4 Hz con Ice thickness, speed and direction, echosounder data Thermistor in head (sampled at meas. rate)
Maximum wave measurement depth Height range Accuracy/resolution (Hs) Accuracy/resolution (Dir) Period range Cut-off period (Hs) Cut-off period (dir) Sampling rate (velocity and AST) → Ice measurement opti Parameters → Sensors Temperature: Temp. range	60 m -15 to +15 m < 1% of measured value / 2 cm 2° / 0.1° 1-50 s 5 m depth: 0.6 sec, 20 m depth: 1.1 sec, 60 m depth: 1.9 sec 5 m depth: 1.5 sec, 20 m depth: 3.1 sec, 60 m depth: 5.5 sec 4 Hz con Ice thickness, speed and direction, echosounder data Thermistor in head (sampled at meas. rate) -4 to +40 °C
Maximum wave measurement depth Height range Accuracy/resolution (Hs) Accuracy/resolution (Dir) Period range Cut-off period (Hs) Cut-off period (dir) Sampling rate (velocity and AST) > Ice measurement opti Parameters > Sensors Temperature: Temp. range Temp. accuracy/resolution	60 m -15 to +15 m < 1% of measured value / 2 cm 2° / 0.1° 1-50 s 5 m depth: 0.6 sec, 20 m depth: 1.1 sec, 60 m depth: 1.9 sec 5 m depth: 1.5 sec, 20 m depth: 3.1 sec, 60 m depth: 5.5 sec 4 Hz con Ice thickness, speed and direction, echosounder data Thermistor in head (sampled at meas. rate) -4 to +40 °C 0.1 °C/0.01 °C
Maximum wave measurement depth Height range Accuracy/resolution (Hs) Accuracy/resolution (Dir) Period range Cut-off period (Hs) Cut-off period (dir) Sampling rate (velocity and AST) → Ice measurement opti Parameters → Sensors Temperature: Temp. range	60 m -15 to +15 m < 1% of measured value / 2 cm 2° / 0.1° 1-50 s 5 m depth: 0.6 sec, 20 m depth: 1.1 sec, 60 m depth: 1.9 sec 5 m depth: 1.5 sec, 20 m depth: 3.1 sec, 60 m depth: 5.5 sec 4 Hz on Ice thickness, speed and direction, echosounder data Thermistor in head (sampled at meas. rate) -4 to +40 °C 0.1 °C/0.01 °C 2 min
Maximum wave measurement depth Height range Accuracy/resolution (Hs) Accuracy/resolution (Dir) Period range Cut-off period (Hs) Cut-off period (dir) Sampling rate (velocity and AST) > Ice measurement opti Parameters > Sensors Temperature: Temp. range Temp. accuracy/resolution	60 m -15 to +15 m < 1% of measured value / 2 cm 2° / 0.1° 1-50 s 5 m depth: 0.6 sec, 20 m depth: 1.1 sec, 60 m depth: 1.9 sec 5 m depth: 1.5 sec, 20 m depth: 3.1 sec, 60 m depth: 5.5 sec 4 Hz on Ice thickness, speed and direction, echosounder data Thermistor in head (sampled at meas. rate) -4 to +40 °C 0.1 °C/0.01 °C 2 min Solid State magnetometer (max 1 Hz sample
Maximum wave measurement depth Height range Accuracy/resolution (Hs) Accuracy/resolution (Dir) Period range Cut-off period (Hs) Cut-off period (dir) Sampling rate (velocity and AST) > Ice measurement opti Parameters > Sensors Temperature: Temp. range Temp. accuracy/resolution Temp. time response	60 m -15 to +15 m < 1% of measured value / 2 cm 2° / 0.1° 1-50 s 5 m depth: 0.6 sec, 20 m depth: 1.1 sec, 60 m depth: 1.9 sec 5 m depth: 1.5 sec, 20 m depth: 3.1 sec, 60 m depth: 5.5 sec 4 Hz on Ice thickness, speed and direction, echosounder data Thermistor in head (sampled at meas. rate) -4 to +40 °C 0.1 °C/0.01 °C 2 min
Maximum wave measurement depth Height range Accuracy/resolution (Hs) Accuracy/resolution (Dir) Period range Cut-off period (Hs) Cut-off period (dir) Sampling rate (velocity and AST) > Ice measurement opti Parameters > Sensors Temperature: Temp. range Temp. accuracy/resolution Temp. time response Compass: Accuracy/resolution	60 m -15 to +15 m < 1% of measured value / 2 cm 2° / 0.1° 1-50 s 5 m depth: 0.6 sec, 20 m depth: 1.1 sec, 60 m depth: 1.9 sec 5 m depth: 1.5 sec, 20 m depth: 3.1 sec, 60 m depth: 5.5 sec 4 Hz Con Ice thickness, speed and direction, echosounder data Thermistor in head (sampled at meas. rate) -4 to +40 °C 0.1 °C/0.01 °C 2 min Solid State magnetometer (max 1 Hz sample rate) 2° for tilt < 30°/0.01° Solid State accelerometer (max 1 Hz sample
Maximum wave measurement depth Height range Accuracy/resolution (Hs) Accuracy/resolution (Dir) Period range Cut-off period (Hs) Cut-off period (dir) Sampling rate (velocity and AST) > Ice measurement opt: Parameters > Sensors Temperature: Temp. range Temp. accuracy/resolution Temp. time response Compass: Accuracy/resolution Tilt:	60 m -15 to +15 m < 1% of measured value / 2 cm 2° / 0.1° 1-50 s 5 m depth: 0.6 sec, 20 m depth: 1.1 sec, 60 m depth: 1.9 sec 5 m depth: 1.5 sec, 20 m depth: 3.1 sec, 60 m depth: 5.5 sec 4 Hz con Ice thickness, speed and direction, echosounder data Thermistor in head (sampled at meas. rate) -4 to +40 °C 0.1 °C/0.01 °C 2 min Solid State magnetometer (max 1 Hz sample rate) 2° for tilt < 30°/0.01° Solid State accelerometer (max 1 Hz sample rate)
Maximum wave measurement depth Height range Accuracy/resolution (Hs) Accuracy/resolution (Dir) Period range Cut-off period (Hs) Cut-off period (dir) Sampling rate (velocity and AST) → Ice measurement opt: Parameters → Sensors Temperature: Temp. range Temp. accuracy/resolution Temp. time response Compass: Accuracy/resolution Tilt: Accuracy/resolution	60 m -15 to +15 m < 1% of measured value / 2 cm 2° / 0.1° 1-50 s 5 m depth: 0.6 sec, 20 m depth: 1.1 sec, 60 m depth: 1.9 sec 5 m depth: 1.5 sec, 20 m depth: 3.1 sec, 60 m depth: 5.5 sec 4 Hz con Ice thickness, speed and direction, echosounder data Thermistor in head (sampled at meas. rate) -4 to +40 °C 0.1 °C/0.01 °C 2 min Solid State magnetometer (max 1 Hz sample rate) 2° for tilt < 30°/0.01°
Maximum wave measurement depth Height range Accuracy/resolution (Hs) Accuracy/resolution (Dir) Period range Cut-off period (Hs) Cut-off period (dir) Sampling rate (velocity and AST) → Ice measurement opt: Parameters → Sensors Temperature: Temp. range Temp. accuracy/resolution Temp. time response Compass: Accuracy/resolution Tilt: Accuracy/resolution Maximum tilt	60 m -15 to +15 m < 1% of measured value / 2 cm 2° / 0.1° 1-50 s 5 m depth: 0.6 sec, 20 m depth: 1.1 sec, 60 m depth: 1.9 sec 5 m depth: 1.5 sec, 20 m depth: 3.1 sec, 60 m depth: 5.5 sec 4 Hz Con Ice thickness, speed and direction, echosounder data Thermistor in head (sampled at meas. rate) -4 to +40 °C 0.1 °C/0.01 °C 2 min Solid State magnetometer (max 1 Hz sample rate) 2° for tilt < 30°/0.01° Solid State accelerometer (max 1 Hz sample rate) 0.2° for tilt < 30°/0.01° Full 3D
Maximum wave measurement depth Height range Accuracy/resolution (Hs) Accuracy/resolution (Dir) Period range Cut-off period (Hs) Cut-off period (dir) Sampling rate (velocity and AST) → Ice measurement opti Parameters → Sensors Temperature: Temp. range Temp. accuracy/resolution Temp. time response Compass: Accuracy/resolution Tilt: Accuracy/resolution Maximum tilt	60 m -15 to +15 m < 1% of measured value / 2 cm 2° / 0.1° 1-50 s 5 m depth: 0.6 sec, 20 m depth: 1.1 sec, 60 m depth: 1.9 sec 5 m depth: 1.5 sec, 20 m depth: 3.1 sec, 60 m depth: 5.5 sec 4 Hz con Ice thickness, speed and direction, echosounder data Thermistor in head (sampled at meas. rate) -4 to +40 °C 0.1 °C/0.01 °C 2 min Solid State magnetometer (max 1 Hz sample rate) 2° for tilt < 30°/0.01°

¹) Maximum range depends on transmit power and acoustic scattering conditions.
 ²) US Patent 8223588.
 ³) Acoustic surface tracking.
 ⁴) Dynamic specifications depends on the type of motion.
 ⁵) 10 min. avg. profile, 1 cm/sec hor. Prec., Max cell size, max power, long range mode.
 Consult SW for other configurations.

Pressure:	Piezoresistive (sampled at meas. rate)
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	$\pm 2^{\circ}$ (dynamic) ⁴ , $\pm 0.5^{\circ}$ (static, $\pm 30^{\circ}$)
Heading range / resolution Heading accuracy	360°, all axis /0.01° ± 3° (dynamic)4), ± 2° (static, tilt < 20°)
Sampling rate	Same as measurement rate (up to 8 Hz)
→ Data recording	Same as measurement rate (up to 6 Hz)
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	1 year. Rechargeable backup battery.
of external power	- your. Neonai geable backup ballery.
→ Data communications	10/100 Mhite Auto MDL V
	10/100 Mbits Auto MDI-X TCP/IP, UDP/IP, HTTP protocols
Ethernet	Fixed IP / DHCP client /Auto IP address assignment
	UPnP and Nortek proprietary instrument
Serial	discovery over Ethernet 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	
	MCBH6F (Ethernet), MCBH8F (serial),
Depending on configuration	MCBH2F-G2 (pwr), optional Souriau
	M-series metal connector for online use (10M)
-> Software	
→ Software	Deployment planning, instrument configuration,
Functions	Deployment planning, instrument configuration, data retrieval and conversion (for Windows®)
Functions → Power	data retrieval and conversion (for Windows®)
Functions → Power DC input	data retrieval and conversion (for Windows®) 12-48 V DC
Functions → Power DC input Maximum peak current	data retrieval and conversion (for Windows®) 12-48 V DC 1.5 A
Functions → Power DC input Maximum peak current Max. average consumption at 1 Hz	data retrieval and conversion (for Windows®) 12-48 V DC 1.5 A 8 W at 1 Hz, Ethernet adds 0.75 W
Functions → Power DC input Maximum peak current Max. average consumption at 1 Hz Typical average consumption ⁵⁾	data retrieval and conversion (for Windows®) 12-48 V DC 1.5 A 8 W at 1 Hz, Ethernet adds 0.75 W 25 mW
Functions Power DC input Maximum peak current Max. average consumption at 1 Hz Typical average consumption ⁵⁾ Sleep consumption	data retrieval and conversion (for Windows®) 12-48 V DC 1.5 A 8 W at 1 Hz, Ethernet adds 0.75 W 25 mW 100 μA, power depending on supply voltage
Functions Power DC input Maximum peak current Max. average consumption at 1 Hz Typical average consumption ⁵⁾ Sleep consumption Transmit power per beam	data retrieval and conversion (for Windows®) 12-48 V DC 1.5 A 8 W at 1 Hz, Ethernet adds 0.75 W 25 mW 100 μA, power depending on supply voltage 0.3-30 W, adjustable levels
Functions Power DC input Maximum peak current Max. average consumption at 1 Hz Typical average consumption ⁵⁾ Sleep consumption Transmit power per beam Ping sequence	data retrieval and conversion (for Windows®) 12-48 V DC 1.5 A 8 W at 1 Hz, Ethernet adds 0.75 W 25 mW 100 μA, power depending on supply voltage
Functions Power DC input Maximum peak current Max. average consumption at 1 Hz Typical average consumption ⁵⁾ Sleep consumption Transmit power per beam Ping sequence Batteries	data retrieval and conversion (for Windows®) 12-48 V DC 1.5 A 8 W at 1 Hz, Ethernet adds 0.75 W 25 mW 100 μA, power depending on supply voltage 0.3-30 W, adjustable levels Parallel
Functions Power DC input Maximum peak current Max. average consumption at 1 Hz Typical average consumption ⁵⁾ Sleep consumption Transmit power per beam Ping sequence	data retrieval and conversion (for Windows®) 12-48 V DC 1.5 A 8 W at 1 Hz, Ethernet adds 0.75 W 25 mW 100 μA, power depending on supply voltage 0.3-30 W, adjustable levels
Functions Power DC input Maximum peak current Max. average consumption at 1 Hz Typical average consumption ⁵⁾ Sleep consumption Transmit power per beam Ping sequence Batteries Internal Duration	data retrieval and conversion (for Windows®) 12-48 V DC 1.5 A 8 W at 1 Hz, Ethernet adds 0.75 W 25 mW 100 µA, power depending on supply voltage 0.3-30 W, adjustable levels Parallel 180 Wh alkaline, 540 or 1800 Wh with
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Functions Power DC input Maximum peak current Max. average consumption at 1 Hz Typical average consumption ⁵⁾ Sleep consumption Transmit power per beam Ping sequence Patteries Internal Duration Piny inconmental Operating temperature	data retrieval and conversion (for Windows®) 12-48 V DC 1.5 A 8 W at 1 Hz, Ethernet adds 0.75 W 25 mW 100 µA, power depending on supply voltage 0.3-30 W, adjustable levels Parallel 180 Wh alkaline, 540 or 1800 Wh with long canister Depending on configuration, consult software 4 to +40 °C
Functions Power DC input Maximum peak current Max. average consumption at 1 Hz Typical average consumption ⁵⁾ Sleep consumption Transmit power per beam Ping sequence Batteries Internal Duration Piny ronmental Operating temperature Storage temperature	data retrieval and conversion (for Windows®) 12-48 V DC 1.5 A 8 W at 1 Hz, Ethernet adds 0.75 W 25 mW 100 µA, power depending on supply voltage 0.3-30 W, adjustable levels Parallel 180 Wh alkaline, 540 or 1800 Wh with long canister Depending on configuration, consult software -4 to +40 °C -20 to +60 °C
Functions Power DC input Maximum peak current Max. average consumption at 1 Hz Typical average consumption ⁵⁾ Sleep consumption Transmit power per beam Ping sequence Batteries Internal Duration Perating temperature Storage temperature Shock and vibration	data retrieval and conversion (for Windows®) 12-48 V DC 1.5 A 8 W at 1 Hz, Ethernet adds 0.75 W 25 mW 100 µA, power depending on supply voltage 0.3-30 W, adjustable levels Parallel 180 Wh alkaline, 540 or 1800 Wh with long canister Depending on configuration, consult software 4 to +40 °C -20 to +60 °C IEC 60068-1/IEC60068-2-64
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Functions Functions Power DC input Maximum peak current Max. average consumption at 1 Hz Typical average consumption 5 Sleep consumption Transmit power per beam Ping sequence Batteries Internal Duration Curation	data retrieval and conversion (for Windows®) 12-48 V DC 1.5 A 8 W at 1 Hz, Ethernet adds 0.75 W 25 mW 100 µA, power depending on supply voltage 0.3-30 W, adjustable levels Parallel 180 Wh alkaline, 540 or 1800 Wh with long canister Depending on configuration, consult software -4 to +40 °C -20 to +60 °C IEC 60068-1/IEC60068-2-64 IEC 61000 300 m
Functions Functions Power DC input Maximum peak current Max. average consumption at 1 Hz Typical average consumption 5) Sleep consumption Transmit power per beam Ping sequence Batteries Internal Duration Funvironmental Operating temperature Shock and vibration EMC approval Depth rating Materials Standard model	data retrieval and conversion (for Windows®) 12-48 V DC 1.5 A 8 W at 1 Hz, Ethernet adds 0.75 W 25 mW 100 µA, power depending on supply voltage 0.3-30 W, adjustable levels Parallel 180 Wh alkaline, 540 or 1800 Wh with long canister Depending on configuration, consult software 4 to +40 °C -20 to +60 °C IEC 60068-1/IEC60068-2-64 IEC 61000
Functions Functions Functions	data retrieval and conversion (for Windows®) 12-48 V DC 1.5 A 8 W at 1 Hz, Ethernet adds 0.75 W 25 mW 100 µA, power depending on supply voltage 0.3-30 W, adjustable levels Parallel 180 Wh alkaline, 540 or 1800 Wh with long canister Depending on configuration, consult software -4 to +40 °C -20 to +60 °C IEC 60068-1/IEC60068-2-64 IEC 61000 300 m POM with titanium fasteners
Functions Functions Power DC input Maximum peak current Max. average consumption at 1 Hz Typical average consumption on Transmit power per beam Ping sequence Batteries Internal Duration Funvinonmental Operating temperature Shock and vibration EMC approval Depth rating Materials Standard model Dimensions Maximum diameter	data retrieval and conversion (for Windows®) 12-48 V DC 1.5 A 8 W at 1 Hz, Ethernet adds 0.75 W 25 mW 100 µA, power depending on supply voltage 0.3-30 W, adjustable levels Parallel 180 Wh alkaline, 540 or 1800 Wh with long canister Depending on configuration, consult software 4 to +40 °C -20 to +60 °C IEC 60068-1/IEC60068-2-64 IEC 61000 300 m POM with titanium fasteners 228 mm
Functions Functions Functions	data retrieval and conversion (for Windows®) 12-48 V DC 1.5 A 8 W at 1 Hz, Ethernet adds 0.75 W 25 mW 100 µA, power depending on supply voltage 0.3-30 W, adjustable levels Parallel 180 Wh alkaline, 540 or 1800 Wh with long canister Depending on configuration, consult software -4 to +40 °C -20 to +60 °C IEC 60068-1/IEC60068-2-64 IEC 61000 300 m POM with titanium fasteners
Functions Functions Power DC input Maximum peak current Max. average consumption at 1 Hz Typical average consumption at 1 Hz Typical average consumption Transmit power per beam Ping sequence Batteries Internal Duration Environmental Operating temperature Storage temperature Stock and vibration EMC approval Depth rating Materials Standard model Dimensions Maximum length with room for internal batteries Maximum length without room for	data retrieval and conversion (for Windows®) 12-48 V DC 1.5 A 8 W at 1 Hz, Ethernet adds 0.75 W 25 mW 100 µA, power depending on supply voltage 0.3-30 W, adjustable levels Parallel 180 Wh alkaline, 540 or 1800 Wh with long canister Depending on configuration, consult software 4 to +40 °C -20 to +60 °C IEC 60068-1/IEC60068-2-64 IEC 61000 300 m POM with titanium fasteners 228 mm 274 mm (180 Wh), 464 mm
Functions Functions Power C input Maximum peak current Max. average consumption at 1 Hz Typical average consumption at 1 Hz Typical average consumption of Sleep consumption Transmit power per beam Ping sequence Batteries Internal Duration Environmental Operating temperature Storage temperature Stock and vibration EMC approval Depth rating Materials Standard model Dimensions Maximum length with room for internal batteries Maximum length without room for internal batteries Maximum length without room for internal batteries	data retrieval and conversion (for Windows®) 12-48 V DC 1.5 A 8 W at 1 Hz, Ethernet adds 0.75 W 25 mW 100 µA, power depending on supply voltage 0.3-30 W, adjustable levels Parallel 180 Wh alkaline, 540 or 1800 Wh with long canister Depending on configuration, consult software 4 to +40 °C -20 to +60 °C IEC 60068-1/IEC 60068-2-64 IEC 61000 300 m POM with titanium fasteners 228 mm 274 mm (180 Wh), 464 mm (540 Wh or 1800 Wh Li)
Functions Functions Functions Power DC input Maximum peak current Max. average consumption at 1 Hz Typical average consumption at 1 Hz Typical average consumption Transmit power per beam Ping sequence Batteries Internal Duration Environmental Operating temperature Storage temperature Stock and vibration EMC approval Depth rating Materials Standard model Dimensions Maximum length with room for internal batteries Maximum length without room for internal batteries Auingth Weight	data retrieval and conversion (for Windows®) 12-48 V DC 1.5 A 8 W at 1 Hz, Ethernet adds 0.75 W 25 mW 100 µA, power depending on supply voltage 0.3-30 W, adjustable levels Parallel 180 Wh alkaline, 540 or 1800 Wh with long canister Depending on configuration, consult software -4 to +40 °C -20 to +60 °C IEC 60068-1/IEC60068-2-64 IEC 61000 300 m POM with titanium fasteners 228 mm 274 mm (180 Wh), 464 mm (540 Wh or 1800 Wh Li) 184 mm
Functions Functions Power C input Maximum peak current Max. average consumption at 1 Hz Typical average consumption at 1 Hz Typical average consumption of Sleep consumption Transmit power per beam Ping sequence Batteries Internal Duration Environmental Operating temperature Storage temperature Stock and vibration EMC approval Depth rating Materials Standard model Dimensions Maximum length with room for internal batteries Maximum length without room for internal batteries Auing temperature Maximum length without room for internal batteries Weight In air, no battery	data retrieval and conversion (for Windows®) 12-48 V DC 1.5 A 8 W at 1 Hz, Ethernet adds 0.75 W 25 mW 100 µA, power depending on supply voltage 0.3-30 W, adjustable levels Parallel 180 Wh alkaline, 540 or 1800 Wh with long canister Depending on configuration, consult software -4 to +40 °C -20 to +60 °C IEC 60068-1/IEC60068-2-64 IEC 61000 300 m POM with titanium fasteners 228 mm 274 mm (180 Wh), 464 mm (540 Wh or 1800 Wh Li) 184 mm 6.4 kg (5.2 kg short)
Functions Functions Power DC input Maximum peak current Max. average consumption at 1 Hz Typical average consumption at 1 Hz Typical average consumption of Sleep consumption Transmit power per beam Ping sequence Batteries Internal Duration Funcinon Fu	data retrieval and conversion (for Windows®) 12-48 V DC 1.5 A 8 W at 1 Hz, Ethernet adds 0.75 W 25 mW 100 µA, power depending on supply voltage 0.3-30 W, adjustable levels Parallel 180 Wh alkaline, 540 or 1800 Wh with long canister Depending on configuration, consult software -4 to +40 °C -20 to +60 °C IEC 60068-1/IEC60068-2-64 IEC 61000 300 m POM with titanium fasteners 228 mm 274 mm (180 Wh), 464 mm (540 Wh or 1800 Wh Li) 184 mm

Signature250





The Signature250 ADCP is a medium-range current profiler with a suite of extra features. It has a current profiling range of 200 m, and can measure wave height, period and direction at depths as great as 150 m. The Signature250 ADCP can also measure ice thickness, as well as the speed and direction of drifting ice. Its compact design and low power consumption make it an ideal tool for long-term deployments in all waters.



Highlights

→ 200 m current profiling range

→ Wave height and direction from 150 m installation depth

ightarrow lce thickness and ice tracking



- → Ice drift and draft measurements
- → Directional wave measurements
- → Mid-depth current profiles
- → Studies of tidal currents
- → Plankton migration studies
- → Upwelling and downwelling studies
- → Large-scale mixing studies
- \rightarrow Suitable for wave buoys



Technical specifications

Signature250

→ Water velocity meas	urements
Maximum profiling range ¹⁾	200 m
Cell size	1-8 m
Minimum blanking	0.5 m
Maximum number of cells	200 (average)
Velocity range (along beam)	User-selectable 2.5 or 5.0 m/s
Minimum accuracy	1% of measured value ± 0.5 cm/s
	Broadband processing, consult instrument
Velocity precision	software
Velocity resolution	0.1 cm/s
Max sampling rate	3 Hz (1 Hz at max power)
\rightarrow HR option (on 5th b	eam only)
Velocity range	N/A
Cell size	N/A
Profiling range	N/A
Range velocity limitations	N/A
→ AD2CP Measurement m	nodes ²⁾
Single	Average
Concurrent	Average and waves/ice
Alternate	N/A
→ Echo Intensity (alo	ng slanted beams)
Sampling	Same as velocity
Resolution/dynamic range	0.5 dB / 70 dB
Transducer acoustic frequency	250 kHz
Number of beams	5; 4 slanted at 20°, 1 vertical at 500 kHz (optional)
Beam width	2.3° (slanted), 2.2° (vertical)
→ Echosounder option	
Resolution	N/A
Number of bins	N/A
Transmit pulse length	N/A
Transmit pulse	N/A
Resolution / dynamic range	N/A
\rightarrow Wave measurement op	tion
AST ³⁾ frequency	500 kHz
AST max distance	170 m ³⁾
Maximum wave	150 m
measurement depth Height range	-15 to +15 m
	< 1% of measured value / 2 cm
Accuracy/resolution (Hs)	2° / 0.1°
Accuracy/resolution (Dir)	2-50 s
Period range	2-50 s 25 m depth: 2 sec, 50 m depth: 2 sec,
Cut-off period (Hs)	100 m depth: 2.2 sec, 150 m depth: 2.7 sec
Cut-off period (dir)	Please inquire
Sampling rate	1 Hz
(velocity and AST)	
→ Ice measurement opt	
Parameters	Ice thickness, 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 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

Maximum range depends on transmit power and acoustic scattering conditions.
 US Patent 8223588.
 Acoustic surface tracking.
 Dynamic specifications depends on the type of motion.
 10 min. avg. profile, 1 cm/sec hor. Prec., Max cell size, max power, long range mode. Consult SW for other configurations.

-	
Pressure:	Piezoresistive (sampled at meas. rate)
Standard range	0-300 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	$\pm 90^{\circ}$ (pitch) $\pm 180^{\circ}$ (roll) /0.01°
Pitch and roll accuracy	$\pm 2^{\circ} (dynamic)^{4}, \pm 0.5^{\circ} (static, \pm 30^{\circ})$
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 3 Hz)
→ Data recording	16 CD 6/ CD or 120 CD (inquire for larger conseit.)
Capacity	16 GB, 64 GB or 128 GB (inquire for larger capacity)
Data record Mode	Consult instrument software
	Stop when full
→ Real-time clock	+ 1 min/year
Accuracy Clock retention in absence of	± 1 min/year
external power	1 year. Rechargeable backup battery.
→ Data communications	
	10/100 Mbits Auto MDI-X
Ethernet	TCP/IP, UDP/IP, HTTP protocols Fixed IP / DHCP client /Auto IP address assignment
Linemet	UPnP and Nortek proprietary instrument disco-
	very 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	
	MCBH6F (Ethernet), MCBH8F (serial),
Depending on configuration	MCBH2F-G2 (pwr), optional Souriau M-series
	metal connector for online use (10M)
→ Software	Deployment planning instrument configuration
→ Software Functions	Deployment planning, instrument configuration, data retrieval and conversion (for Windows®)
Functions	
Functions → Power	data retrieval and conversion (for Windows®)
Functions → Power DC input	data retrieval and conversion (for Windows®) 15-48 V DC 1.5 A
Functions → Power DC input Maximum peak current	data retrieval and conversion (for Windows®) 15-48 V DC 1.5 A
Functions → Power DC input Maximum peak current Max. average consumption at 1 Hz	data retrieval and conversion (for Windows®) 15-48 V DC 1.5 A 15 W
Functions → Power DC input Maximum peak current Max. average consumption at 1 Hz Typical average consumption ⁵⁾	data retrieval and conversion (for Windows®) 15-48 V DC 1.5 A 15 W 400 mW
Functions → Power DC input Maximum peak current Max. average consumption at 1 Hz Typical average consumption ⁵⁾ Sleep consumption Transmit power per beam Ping sequence	data retrieval and conversion (for Windows®) 15-48 V DC 1.5 A 15 W 400 mW 100 μA, power depending on supply voltage
Functions Power DC input Maximum peak current Max. average consumption at 1 Hz Typical average consumption ⁵⁾ Sleep consumption Transmit power per beam	data retrieval and conversion (for Windows®) 15-48 V DC 1.5 A 15 W 400 mW 100 μA, power depending on supply voltage 4-200 W, adjustable levels
Functions → Power DC input Maximum peak current Max. average consumption at 1 Hz Typical average consumption ⁵⁾ Sleep consumption Transmit power per beam Ping sequence	data retrieval and conversion (for Windows®) 15-48 V DC 1.5 A 15 W 400 mW 100 μA, power depending on supply voltage 4-200 W, adjustable levels
Functions Power DC input Maximum peak current Max. average consumption at 1 Hz Typical average consumption ⁵⁾ Sleep consumption Transmit power per beam Ping sequence Batteries Internal Duration	data retrieval and conversion (for Windows®) 15-48 V DC 1.5 A 15 W 400 mW 100 μA, power depending on supply voltage 4-200 W, adjustable levels Multiplexing or parallel
Functions Power DC input Maximum peak current Max. average consumption at 1 Hz Typical average consumption ⁵⁾ Sleep consumption Transmit power per beam Ping sequence Batteries Internal	data retrieval and conversion (for Windows®) 15-48 V DC 1.5 A 15 W 400 mW 100 μA, power depending on supply voltage 4-200 W, adjustable levels Multiplexing or parallel 540 Wh alkaline or 1800 Wh lithium
Functions Power DC input Maximum peak current Max. average consumption at 1 Hz Typical average consumption ⁵⁾ Sleep consumption Transmit power per beam Ping sequence Batteries Internal Duration	data retrieval and conversion (for Windows®) 15-48 V DC 1.5 A 15 W 400 mW 100 μA, power depending on supply voltage 4-200 W, adjustable levels Multiplexing or parallel 540 Wh alkaline or 1800 Wh lithium
Functions Power DC input Maximum peak current Max.average consumption at 1 Hz Typical average consumption ⁵⁾ Sleep consumption Transmit power per beam Ping sequence Batteries Internal Duration Finyironmental	data retrieval and conversion (for Windows®) 15-48 V DC 1.5 A 15 W 400 mW 100 μA, power depending on supply voltage 4-200 W, adjustable levels Multiplexing or parallel 540 Wh alkaline or 1800 Wh lithium Depending on configuration, consult software
Functions Power DC input Maximum peak current Max. average consumption at 1 Hz Typical average consumption ⁵⁾ Sleep consumption Transmit power per beam Ping sequence Batteries Internal Duration Finy incommental Operating temperature	data retrieval and conversion (for Windows®) 15-48 V DC 1.5 A 15 W 400 mW 100 µA, power depending on supply voltage 4-200 W, adjustable levels Multiplexing or parallel 540 Wh alkaline or 1800 Wh lithium Depending on configuration, consult software -4 to +40 °C
Functions Power DC input Maximum peak current Max.average consumption at 1 Hz Typical average consumption ⁵⁾ Sleep consumption Transmit power per beam Ping sequence Batteries Internal Duration Finvironmental Operating temperature Storage temperature	data retrieval and conversion (for Windows®) 15-48 V DC 1.5 A 15 W 400 mW 100 µA, power depending on supply voltage 4-200 W, adjustable levels Multiplexing or parallel 540 Wh alkaline or 1800 Wh lithium Depending on configuration, consult software -4 to +40 °C -20 to +60 °C
Functions Power C input Maximum peak current Max.average consumption at 1 Hz Typical average consumption ⁵⁾ Sleep consumption Transmit power per beam Ping sequence Batteries Internal Duration C Environmental Operating temperature Shock and vibration	data retrieval and conversion (for Windows®) 15-48 V DC 1.5 A 15 W 400 mW 100 µA, power depending on supply voltage 4-200 W, adjustable levels Multiplexing or parallel 540 Wh alkaline or 1800 Wh lithium Depending on configuration, consult software -4 to +40 °C -20 to +60 °C IEC 60068-1/IEC60068-2-64
Functions Power C input Maximum peak current Max.average consumption at 1 Hz Typical average consumption ⁵⁾ Sleep consumption Transmit power per beam Ping sequence Batteries Internal Duration C Environmental Operating temperature Storage temperature Shock and vibration EMC approval	data retrieval and conversion (for Windows®) 15-48 V DC 1.5 A 15 W 400 mW 100 µA, power depending on supply voltage 4-200 W, adjustable levels Multiplexing or parallel 540 Wh alkaline or 1800 Wh lithium Depending on configuration, consult software 4 to +40 °C -20 to +60 °C IEC 60068-1/IEC60068-2-64 IEC 61000 300 m
Functions Power C input Maximum peak current Max.average consumption at 1 Hz Typical average consumption ⁵⁾ Sleep consumption Transmit power per beam Ping sequence Batteries Internal Duration C Environmental Operating temperature Storage temperature Shock and vibration EMC approval Depth rating	data retrieval and conversion (for Windows®) 15-48 V DC 1.5 A 15 W 400 mW 100 µA, power depending on supply voltage 4-200 W, adjustable levels Multiplexing or parallel 540 Wh alkaline or 1800 Wh lithium Depending on configuration, consult software 4 to +40 °C -20 to +60 °C IEC 60068-1/IEC60068-2-64 IEC 61000 300 m POM with titanium fasteners. Reinforced
Functions Power DC input Maximum peak current Max. average consumption at 1 Hz Typical average consumption ⁵⁾ Sleep consumption Transmit power per beam Ping sequence Batteries Internal Duration Environmental Operating temperature Storage temperature Shock and vibration EMC approval Depth rating Materials Standard model	data retrieval and conversion (for Windows®) 15-48 V DC 1.5 A 15 W 400 mW 100 µA, power depending on supply voltage 4-200 W, adjustable levels Multiplexing or parallel 540 Wh alkaline or 1800 Wh lithium Depending on configuration, consult software 4 to +40 °C -20 to +60 °C IEC 60068-1/IEC60068-2-64 IEC 61000 300 m
Functions → Power DC input Maximum peak current Max. average consumption at 1 Hz Typical average consumption ⁵⁾ Sleep consumption Transmit power per beam Ping sequence → Batteries Internal Duration → Environmental Operating temperature Storage temperature Shock and vibration EMC approval Depth rating → Materials Standard model → Dimensions	data retrieval and conversion (for Windows®) 15-48 V DC 1.5 A 15 W 400 mW 100 µA, power depending on supply voltage 4-200 W, adjustable levels Multiplexing or parallel 540 Wh alkaline or 1800 Wh lithium Depending on configuration, consult software -4 to +40 °C -20 to +60 °C IEC 60068-1/IEC60068-2-64 IEC 61000 300 m POM with titanium fasteners. Reinforced polyurethane transducer cups
Functions Power DC input Maximum peak current Max. average consumption at 1 Hz Typical average consumption ⁵⁾ Sleep consumption Transmit power per beam Ping sequence Batteries Internal Duration Pervironmental Operating temperature Storage temperature Shock and vibration EMC approval Depth rating Materials Standard model Dimensions Maximum diameter	data retrieval and conversion (for Windows®) 15-48 V DC 1.5 A 15 W 400 mW 100 µA, power depending on supply voltage 4-200 W, adjustable levels Multiplexing or parallel 540 Wh alkaline or 1800 Wh lithium Depending on configuration, consult software 4 to +40 °C -20 to +60 °C IEC 60068-1/IEC60068-2-64 IEC 61000 300 m POM with titanium fasteners. Reinforced polyurethane transducer cups
Functions → Power DC input Maximum peak current Max. average consumption at 1 Hz Typical average consumption ⁵⁾ Sleep consumption Transmit power per beam Ping sequence → Batteries Internal Duration → Environmental Operating temperature Storage temperature Shock and vibration EMC approval Depth rating → Materials Standard model → Dimensions	data retrieval and conversion (for Windows®) 15-48 V DC 1.5 A 15 W 400 mW 100 µA, power depending on supply voltage 4-200 W, adjustable levels Multiplexing or parallel 540 Wh alkaline or 1800 Wh lithium Depending on configuration, consult software -4 to +40 °C -20 to +60 °C IEC 60068-1/IEC60068-2-64 IEC 61000 300 m POM with titanium fasteners. Reinforced polyurethane transducer cups
Functions Power C input Maximum peak current Max.average consumption at 1 Hz Typical average consumption ⁵⁾ Sleep consumption Transmit power per beam Ping sequence Batteries Internal Duration Function C approval Depth rating Materials Standard model Dimensions Maximum diameter Maximum length with room for internal batteries Maximum length without	data retrieval and conversion (for Windows®) 15-48 V DC 1.5 A 15 W 400 mW 100 µA, power depending on supply voltage 4-200 W, adjustable levels Multiplexing or parallel 540 Wh alkaline or 1800 Wh lithium Depending on configuration, consult software 4 to +40 °C -20 to +60 °C IEC 60068-1/IEC60068-2-64 IEC 61000 300 m POM with titanium fasteners. Reinforced polyurethane transducer cups
Functions Power C input Maximum peak current Max. average consumption at 1 Hz Typical average consumption ⁵⁾ Sleep consumption Transmit power per beam Ping sequence Batteries Internal Duration C environmental Operating temperature Shock and vibration EMC approval Depth rating Materials Standard model Dimensions Maximum length with room for internal batteries Maximum length without room for internal batteries	data retrieval and conversion (for Windows®) 15-48 V DC 1.5 A 15 W 400 mW 100 µA, power depending on supply voltage 4-200 W, adjustable levels Multiplexing or parallel 540 Wh alkaline or 1800 Wh lithium Depending on configuration, consult software -4 to +40 °C -20 to +60 °C IEC 60068-1/IEC60068-2-64 IEC 61000 300 m POM with titanium fasteners. Reinforced polyurethane transducer cups 464 mm 523 mm
Functions Power C input Maximum peak current Max. average consumption at 1 Hz Typical average consumption ⁵⁾ Sleep consumption Transmit power per beam Ping sequence Batteries Internal Duration C environmental Operating temperature Shock and vibration EMC approval Depth rating Materials Standard model Dimensions Maximum length with room for internal batteries Maximum length without room for internal batteries Weight	data retrieval and conversion (for Windows®) 15-48 V DC 1.5 A 15 W 400 mW 100 µA, power depending on supply voltage 4-200 W, adjustable levels Multiplexing or parallel 540 Wh alkaline or 1800 Wh lithium Depending on configuration, consult software -4 to +40 °C -20 to +60 °C IEC 60068-1/IEC60068-2-64 IEC 61000 300 m POM with titanium fasteners. Reinforced polyurethane transducer cups 464 mm 523 mm 308 mm
Functions Power C input Maximum peak current Max. average consumption at 1 Hz Typical average consumption ⁵⁾ Sleep consumption Transmit power per beam Ping sequence Batteries Internal Duration Penvironmental Operating temperature Shock and vibration EMC approval Depth rating Materials Standard model Dimensions Maximum length with room for internal batteries Maximum length without room for internal batteries Maximum length without room for internal batteries Weight In air, no battery	data retrieval and conversion (for Windows®) 15-48 V DC 1.5 A 15 W 400 mW 100 µA, power depending on supply voltage 4-200 W, adjustable levels Multiplexing or parallel 540 Wh alkaline or 1800 Wh lithium Depending on configuration, consult software 4 to +40 °C -20 to +60 °C IEC 60068-1/IEC60068-2-64 IEC 61000 300 m POM with titanium fasteners. Reinforced polyurethane transducer cups 464 mm 523 mm 308 mm 18.5 kg (17.1 kg short)
Functions Power C input Maximum peak current Max. average consumption at 1 Hz Typical average consumption ⁵⁾ Sleep consumption Transmit power per beam Ping sequence Batteries Internal Duration Penvironmental Operating temperature Shock and vibration EMC approval Depth rating Materials Standard model Dimensions Maximum diameter Maximum length with room for internal batteries Maximum length without room for internal batteries Weight	data retrieval and conversion (for Windows®) 15-48 V DC 1.5 A 15 W 400 mW 100 µA, power depending on supply voltage 4-200 W, adjustable levels Multiplexing or parallel 540 Wh alkaline or 1800 Wh lithium Depending on configuration, consult software -4 to +40 °C -20 to +60 °C IEC 60068-1/IEC60068-2-64 IEC 61000 300 m POM with titanium fasteners. Reinforced polyurethane transducer cups 464 mm 523 mm 308 mm

Signature100





The Signature100 combines a four-beam current profiler operating at 100 kHz with an optional scientific echo sounder.

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.

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Highlights

→ 300-400 m current profiling range \rightarrow Optional center beam with 70–120 kHz echo sounder

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- → Detection of krill in the water column
- → Cost-effective current profile measurements at mid-range
- → Plankton migration studies
- → Upwelling and downwelling studies
- → Internal waves
- → Suitable for buoy mounting with internal AHRS



Technical specifications

Signature100

→ Water velocity meas	
Maximum profiling range	300-400 m ¹⁾
Cell size	3–15 m
Minimum blanking	TBA
Maximum number of cells	200
Velocity range (along beam)	User-selectable 2.5 or 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)
	eam only)
Velocity range	N/A
Cell size	N/A
Profiling range	N/A N/A
Range velocity limitations	odes ²⁾
Single	Average
Concurrent	Average and echosounder
Alternate	N/A
→ Echo Intensity (alo Sampling	
Sampling	Same as velocity
Resolution/dynamic range	0.5 dB/70 dB
Transducer acoustic frequency Number of beams	
Beam width	4 slanted at 20°, optional vertical beam for echosounder
	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 op	
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)	
→ Ice measurement opt	
	N/A
Parameters	N/A
Parameters → Sensors	
	Thermistor in head (sampled at meas. rate)
→ Sensors	
→ Sensors Temperature	Thermistor in head (sampled at meas. rate)
→ Sensors Temperature Temp. range	Thermistor in head (sampled at meas. rate) -4 to +40 °C
 → Sensors Temperature Temp. range Temp. accuracy/resolution 	Thermistor in head (sampled at meas. rate) -4 to +40 °C 0.1 °C/0.01°C
→ Sensors Temperature Temp. range Temp. accuracy/resolution Temp. time response Compass	Thermistor in head (sampled at meas. rate) -4 to +40 °C 0.1 °C/0.01°C 2 min
 → Sensors Temperature Temp. range Temp. accuracy/resolution Temp. time response 	Thermistor in head (sampled at meas. rate) -4 to +40 °C 0.1 °C/0.01°C 2 min Solid-state magnetometer (Max 1 Hz sample rate) 2° for tilt < 30°/0.01°
 → Sensors Temperature Temp. range Temp. accuracy/resolution Temp. time response Compass Accuracy/resolution 	Thermistor in head (sampled at meas. rate) -4 to +40 °C 0.1 °C/0.01°C 2 min Solid-state magnetometer (Max 1 Hz sample rate)
→ Sensors Temperature Temp. range Temp. accuracy/resolution Temp. time response Compass Accuracy/resolution Tilt	Thermistor in head (sampled at meas. rate) -4 to +40 °C 0.1 °C/0.01°C 2 min Solid-state magnetometer (Max 1 Hz sample rate) 2° for tilt < 30°/0.01° Solid-state accelerometer (Max 1 Hz sample rate)

¹) Depending on acoustic scattering condition. ²) US Patent 8223588. ³) Dynamic specifications depends on the type of motion. ⁴) 10 min. avg. profile, 1 cm/sec hor. prec., max cell size, max power, long range mode. Consult SW for other configurations.

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 \pm 90° (pitch) \pm 180° (roll) / 0.01°Pitch and roll accuracy \pm 2° (dynamic) ³ , \pm 0.5° (static, \pm 30°)	
Sampling rate Same as measurement rate (up to 1 Hz) → Data recording	
Capacity 16 GB, 64 GB or 128 GB (inquire for larger capac	rity)
Data record Consult instrument software	Sicy/
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	
10/100 Mbits Auto MDI-X	
Ethernet TCP/IP, UDP, HTTP protocols Fixed 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 minute	
Controller interface ASCII command interface over Telnet and se	
→ Connectors	
MCBH6F (Ethernet), MCBH8F (serial),	
Depending on configuration MCBH2F-G2 (pwr), optional Souriau M-series	s
metal connector for online use (1/M)	
metal connector for online use (14M)	
→ Software Deployment planning instrument configuration	tion
→ Software Functions Deployment planning, instrument configuration	
→ Software Functions Deployment planning, instrument configurat data retrieval and conversion (for Windows®)	
 → Software Functions → Power DC input DC input DC As V DC Maximum peak current DC As V DC 	
→ Software Functions Deployment planning, instrument configurat data retrieval and conversion (for Windows® → Power DC input DC input 15-48 V DC Maximum peak current 1.5 A Max. average consumption at 1 Hz 15 W	
 → Software Functions → Power DC input DC input DC As V DC Maximum peak current DC As V DC 	
 → Software Functions → Power DC input DC input DC average consumption at 1 Hz Typical average consumption⁴⁰ 2 W Sleep consumption Sleep consumption D0 µA, power depending on supply voltage 	
 → Software Functions → Power DC input D5-48 V DC Maximum peak current 1.5 A Max. average consumption at 1 Hz 15 W Typical average consumption⁴⁰ 2 W Sleep consumption 100 µA, power depending on supply voltage Transmit power per beam 4-200 W, adjustable levels 	
 → Software Functions → Power DC input D5-48 V DC Maximum peak current 1.5 A Max. average consumption at 1 Hz 15 W Typical average consumption⁴⁰ 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 	
 → Software Functions → Power DC input D5-48 V DC Maximum peak current 1.5 A Max. average consumption at 1 Hz 15 W Typical average consumption⁴⁰ 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 	D)
> Software Functions Deployment planning, instrument configurat data retrieval and conversion (for Windows@ > Power DC input DC input 15-48 V DC Maximum peak current 1.5 A Max. average consumption at 1 Hz 15 W Typical average consumption ⁴⁰ 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	J.M.
> Software Functions Deployment planning, instrument configurat data retrieval and conversion (for Windows@ > Power DC input DC input 15-48 V DC Maximum peak current 1.5 A Max. average consumption at 1 Hz 15 W Typical average consumption ⁴⁰ 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 lithit Duration Depending on configuration, consult software	J.M.
> Software Functions Deployment planning, instrument configurat data retrieval and conversion (for Windows@ > Power DC input DC input 15-48 V DC Maximum peak current 1.5 A Max. average consumption at 1 Hz 15 W Typical average consumption ⁴⁰ 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 lithit Duration Depending on configuration, consult software > Environmental Internal	J.M.
> Software Functions Deployment planning, instrument configurat data retrieval and conversion (for Windows@ > Power DC input DC input 15-48 V DC Maximum peak current 1.5 A Max.average consumption at 1 Hz 15 W Typical average consumption ⁴⁰ 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 Internal One or two 540 Wh alkaline or 1800 Wh lithin Duration Depending on configuration, consult software > Environmental -4 to +40 °C	J.M.
Software Functions Deployment planning, instrument configurat data retrieval and conversion (for Windows@ Power DC input 15-48 V DC DC input 15-48 V DC Maximum peak current 1.5 A Max average consumption at 1 Hz 15 W Typical average consumption ⁴⁰ 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 Internal One or two 540 Wh alkaline or 1800 Wh lithit Duration Depending on configuration, consult software > Environmental -4 to +40 °C Storage temperature -20 to +60 °C	J.M.
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Software Functions Deployment planning, instrument configurat data retrieval and conversion (for Windows@ Power DC input 15-48 V DC DC input 15-48 V DC Maximum peak current 1.5 A Max average consumption at 1 Hz 15 W Typical average consumption ⁴⁰ 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 Internal One or two 540 Wh alkaline or 1800 Wh lithit Duration Depending on configuration, consult software > Environmental -4 to +40 °C Operating temperature -20 to +60 °C Shock and vibration IEC 60068-1/IEC 60068-2-64 EMC approval IEC 61000	J.M.
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Software Functions Deployment planning, instrument configurat data retrieval and conversion (for Windows@) Power DC input DC input 15–48 V DC Maximum peak current 1.5 A Max. average consumption at 1 Hz 15 W Typical average consumption ⁴⁰ 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 lithit Duration Depending on configuration, consult software > Environmental -4 to +40 °C Operating temperature -20 to +60 °C Shock and vibration IEC 60068-1/IEC 60068-2-64 EMC approval IEC 61000 Depth rating 1500 m	um e
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Software Functions Deployment planning, instrument configurat 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 ⁴⁰ 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 lithin Duration Depending on configuration, consult software > Environmental One or two 540 Wh alkaline or 1800 Wh lithin Operating temperature -4 to +40 °C Storage temperature -20 to +60 °C Shock and vibration IEC 60068-1/IEC 60068-2-64 EMC approval IEC 61000 Depth rating 1500 m > Materials POM with titanium fasteners. Titanium/POM transducer cups > Dimensions Maximum diameter	um e
> Software Functions Deployment planning, instrument configuratidata retrieval and conversion (for Windows@ > Power DC DC input 15-48 V DC Maximum peak current 1.5 A Max.average consumption at 1 Hz 15 W Typical average consumption ⁴⁰ 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 Internal One or two 540 Wh alkaline or 1800 Wh lithiu Duration Depending on configuration, consult software > Environmental One or two 540 Wh alkaline or 1800 Wh lithiu Operating temperature -4 to +40 °C Storage temperature -20 to +60 °C Shock and vibration IEC 60068-1/IEC 60068-2-64 EMC approval IEC 61000 Depth rating 1500 m > Materials POM with titanium fasteners. Titanium/POM transducer cups > Dimensions Maximum length with room	um e
Software Functions Deployment planning, instrument configurat 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 ⁴⁰ 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 Internal One or two 540 Wh alkaline or 1800 Wh lithin Duration Depending on configuration, consult software > Environmental Operating temperature -20 to +60 °C Shock and vibration IEC 60068-1/IEC 60068-2-64 EMC approval EMC approval IEC 61000 Depth rating 1500 m > Materials POM with titanium fasteners. Titanium/POM transducer cups > Dimensions 460 mm Maximum length with room for internal batteries 765 mm (2 batteries)	um e
> Software Functions Deployment planning, instrument configuratidata retrieval and conversion (for Windows@ > Power DC DC input 15-48 V DC Maximum peak current 1.5 A Max.average consumption at 1 Hz 15 W Typical average consumption ⁴⁰ 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 Internal One or two 540 Wh alkaline or 1800 Wh lithiu Duration Depending on configuration, consult software > Environmental One or two 540 Wh alkaline or 1800 Wh lithiu Operating temperature -4 to +40 °C Storage temperature -20 to +60 °C Shock and vibration IEC 60068-1/IEC 60068-2-64 EMC approval IEC 61000 Depth rating 1500 m > Materials POM with titanium fasteners. Titanium/POM transducer cups > Dimensions Maximum length with room	um e
> Software Functions Deployment planning, instrument configurat data retrieval and conversion (for Windows@ > Power DC input 15-48 V DC DC input 15-48 V DC Max.average consumption at 1 Hz 15 W Typical average consumption ⁴⁰ 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 lithit Duration Depending on configuration, consult software > Environmental One or two 540 Wh alkaline or 1800 Wh lithit Operating temperature -4 to +40 °C Storage temperature -20 to +60 °C Shock and vibration IEC 60068-1/IEC 60068-2-64 EMC approval IEC 61000 Depth rating 1500 m > Materials POM with titanium fasteners. Titanium/POM transducer cups > Dimensions Maximum length with room for internal batteries Maximum length without N/A	um e
→ Software Functions Deployment planning, instrument configurat data retrieval and conversion (for Windows® → Power DC DC input 15-48 V DC Maximum peak current 1.5 A Max. average consumption at 1 Hz 15 W Typical average consumption 41 Hz 15 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 Internal One or two 540 Wh alkaline or 1800 Wh lithin Duration Depending on configuration, consult software → Environmental One or two 540 Wh alkaline or 1800 Wh lithin Operating temperature -4 to +40 °C Storage temperature -20 to +60 °C Shock and vibration IEC 60068-1/IEC 60068-2-64 EMC approval IEC 61000 Depth rating 1500 m → Materials POM with titanium fasteners. Titanium/POM transducer cups → Dimensions Maximum length with room for internal batteries Maximum length with room for internal batteries N/A	um e
→ Software Functions Deployment planning, instrument configurat data retrieval and conversion (for Windows@ → Power DC DC input 15-48 V DC Maximum peak current 1.5 A Max. average consumption at 1 Hz 15 W Typical average consumption 100 µA, power depending on supply voltage Transmit power per beam 4-200 W, adjustable levels Ping sequence Multiplexing or parallel → Batteries Internal Internal One or two 540 Wh alkaline or 1800 Wh lithin Duration Depending on configuration, consult software → Environmental One or two 540 Wh alkaline or 1800 Wh lithin Operating temperature -4 to +40 °C Storage temperature -20 to +60 °C Shock and vibration IEC 60068-1/IEC 60068-2-64 EMC approval IEC 61000 Depth rating 1500 m → Materials POM with titanium fasteners. Titanium/POM transducer cups → Dimensions 460 mm Maximum length with room for internal batteries N/A → Weight N/A	um e

Signature55





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, finerresolution 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

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



- → Protecting infrastructure from cross currents using real-time monitoring
- → Observing deep-ocean current profiles
- → Fine and coarse deep-water current profiles
- → Current measurements for deep-water meteorological buoys
- → Suitable for wave buoys

Technical specifications



Signature55

-> Water velocity measu	rements
→ Water velocity measu Maximum profiling range ¹⁾	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 ± 0.5 cm/s
	Broadband processing, consult instrument
Velocity precision	software
Velocity resolution	0.1 cm/s
Max sampling rate	1 Hz (1/3 Hz at max power)
→ HR option (on 5th be	
Velocity range	N/A
Cell size	N/A
Profiling range	N/A
Range velocity limitations	N/A
→ AD2CP measurement mo	-
Single	Average
Concurrent	N/A
Alternate	Single (coarse/fine)
Echo intensity (alon	
Sampling	Same as velocity
Resolution/ dynamic range	0.5 dB / 70 dB
Transducer acoustic frequency	
Number of beams	3, slanted at 20°
Beam width	4.5°-5.5°
→ Echosounder 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 opt	
AST frequency	N/A
AST max distance Maximum wave	N/A
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	N/A
(velocity and AST)	
→ Ice measurement opti	
Parameters	N/A
→ Sensors	The maintenance in the second data was a line of the second data w
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

¹) Maximum range depends on transmit power and acoustic scattering conditions. ²) US Patent 8223588. ³) Dynamic specifications depends on the type of motion. ⁴) 10 min. avg. profile, 1 cm/sec hor. Prec., Max cell size, max power, long range mode. Consult SW for other configurations.

→ 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) ³⁾ , ± 0.5° (static, ±30°)
Heading range / resolution	360°, all axis /0.01°
Heading accuracy	± 3° (dynamic) ³⁾ , ± 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
→ Real-time clock	
Accuracy	± 1 min/year
Clock retention in absence	
of external power	1 year. Rechargeable backup battery.
→ Data communications	
	10/100 Mbits Auto MDI-X
Ethernet	TCP/IP, UDP/IP, HTTP protocols Fixed IP / DHCP client /Auto IP address assignment
Engliet	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	
	MCBH6F (Ethernet), MCBH8F (serial), MCB-
Depending on configuration	H2F-G2 (pwr), optional Souriau M-series metal
	connector for online use (14M)
→ Software	Deployment planning, instrument configuration,
Functions	data retrieval and conversion (for Windows®)
→ Power	
	45 (0)(00
DC input	15-48 V DC
DC input Maximum peak current	15-48 V DC 1.5 A
	1.5 A
Maximum peak current	1.5 A
Maximum peak current Max. average consumption at 1 Hz	1.5 A 15 W
Maximum peak current Max. average consumption at 1 Hz Typical average consumption ⁴⁾ Sleep consumption	1.5 A 15 W 2 W 100 μA, power depending on supply voltage
Maximum peak current Max. average consumption at 1 Hz Typical average consumption Sleep consumption Transmit power per beam	1.5 A 15 W 2 W 100 μA, power depending on supply voltage 4-250 W, adjustable levels
Maximum peak current Max. average consumption at 1 Hz Typical average consumption ⁴⁾ Sleep consumption Transmit power per beam Ping sequence	1.5 A 15 W 2 W 100 μA, power depending on supply voltage
Maximum peak current Max. average consumption at 1 Hz Typical average consumption ⁴⁾ Sleep consumption Transmit power per beam Ping sequence → Batteries	1.5 A 15 W 2 W 100 μA, power depending on supply voltage 4-250 W, adjustable levels Multiplexing or parallel
Maximum peak current Max. average consumption at 1 Hz Typical average consumption ⁴⁾ Sleep consumption Transmit power per beam Ping sequence	1.5 A 15 W 2 W 100 μA, power depending on supply voltage 4-250 W, adjustable levels Multiplexing or parallel Une or two 540 Wh alkaline or 1800 Wh lithium
Maximum peak current Max. average consumption at 1 Hz Typical average consumption ⁴⁾ Sleep consumption Transmit power per beam Ping sequence Batteries Internal Duration 	1.5 A 15 W 2 W 100 μA, power depending on supply voltage 4-250 W, adjustable levels Multiplexing or parallel
Maximum peak current Max. average consumption at 1 Hz Typical average consumption ⁴⁾ Sleep consumption Transmit power per beam Ping sequence Batteries Internal Duration Environmental	1.5 A 15 W 2 W 100 μA, power depending on supply voltage 4-250 W, adjustable levels Multiplexing or parallel Une or two 540 Wh alkaline or 1800 Wh lithium
Maximum peak current Max. average consumption at 1 Hz Typical average consumption ⁴⁾ Sleep consumption Transmit power per beam Ping sequence Batteries Internal Duration Environmental Operating temperature	1.5 A 15 W 2 W 100 μA, power depending on supply voltage 4-250 W, adjustable levels Multiplexing or parallel One or two 540 Wh alkaline or 1800 Wh lithium Depending on configuration, consult software -4 to +40 °C
Maximum peak current Max. average consumption at 1 Hz Typical average consumption ⁴⁾ Sleep consumption Transmit power per beam Ping sequence Batteries Internal Duration Environmental Operating temperature Storage temperature	1.5 A 15 W 2 W 100 μA, power depending on supply voltage 4-250 W, adjustable levels Multiplexing or parallel One or two 540 Wh alkaline or 1800 Wh lithium Depending on configuration, consult software -4 to +40 °C -20 to +60 °C
Maximum peak current Max. average consumption at 1 Hz Typical average consumption ⁴⁾ Sleep consumption Transmit power per beam Ping sequence Batteries Internal Duration Environmental Operating temperature Storage temperature Shock and vibration	1.5 A 15 W 2 W 100 μA, power depending on supply voltage 4-250 W, adjustable levels Multiplexing or parallel C One or two 540 Wh alkaline or 1800 Wh lithium Depending on configuration, consult software -4 to +40 °C -20 to +60 °C IEC 60068-1/IEC 60068-2-64
Maximum peak current Max. average consumption at 1 Hz Typical average consumption ⁴⁾ Sleep consumption Transmit power per beam Ping sequence Batteries Internal Duration Environmental Operating temperature Storage temperature Shock and vibration EMC approval	1.5 A15 W2 W100 μA, power depending on supply voltage4-250 W, adjustable levelsMultiplexing or parallelOne or two 540 Wh alkaline or 1800 Wh lithiumDepending on configuration, consult software-4 to +40 °C-20 to +60 °CIEC 60068-1/IEC 60068-2-64IEC 61000
Maximum peak current Max. average consumption at 1 Hz Typical average consumption ⁴⁾ Sleep consumption Transmit power per beam Ping sequence Batteries Internal Duration Environmental Operating temperature Storage temperature Shock and vibration EMC approval Depth rating	1.5 A 15 W 2 W 100 μA, power depending on supply voltage 4-250 W, adjustable levels Multiplexing or parallel C One or two 540 Wh alkaline or 1800 Wh lithium Depending on configuration, consult software -4 to +40 °C -20 to +60 °C IEC 60068-1/IEC 60068-2-64
Maximum peak current Max. average consumption at 1 Hz Typical average consumption ⁴⁾ Sleep consumption Transmit power per beam Ping sequence > Batteries Internal Duration > Environmental Operating temperature Storage temperature Shock and vibration EMC approval Depth rating > Materials	1.5 A 15 W 2 W 100 μA, power depending on supply voltage 4-250 W, adjustable levels Multiplexing or parallel One or two 540 Wh alkaline or 1800 Wh lithium Depending on configuration, consult software -4 to +40 °C -20 to +60 °C IEC 60068-1/IEC 60068-2-64 IEC 61000 1500 m
Maximum peak current Max. average consumption at 1 Hz Typical average consumption ⁴⁾ Sleep consumption Transmit power per beam Ping sequence Batteries Internal Duration Environmental Operating temperature Storage temperature Shock and vibration EMC approval Depth rating	1.5 A15 W2 W100 μA, power depending on supply voltage4-250 W, adjustable levelsMultiplexing or parallelOne or two 540 Wh alkaline or 1800 Wh lithiumDepending on configuration, consult software-4 to +40 °C-20 to +60 °CIEC 60068-1/IEC 60068-2-64IEC 61000
Maximum peak current Max. average consumption at 1 Hz Typical average consumption ⁴⁾ Sleep consumption Transmit power per beam Ping sequence > Batteries Internal Duration > Environmental Operating temperature Storage temperature Shock and vibration EMC approval Depth rating > Materials	1.5 A 15 W 2 W 100 µA, power depending on supply voltage 4-250 W, adjustable levels Multiplexing or parallel 0 ne or two 540 Wh alkaline or 1800 Wh lithium Depending on configuration, consult software 4 to +40 °C -20 to +60 °C IEC 60068-1/IEC 60068-2-64 IEC 61000 1500 m POM with titanium fasteners. Reinforced
Maximum peak current Max. average consumption at 1 Hz Typical average consumption ⁴⁾ Sleep consumption Transmit power per beam Ping sequence > Batteries Internal Duration > Environmental Operating temperature Storage temperature Shock and vibration EMC approval Depth rating > Materials Standard model	1.5 A 15 W 2 W 100 µA, power depending on supply voltage 4-250 W, adjustable levels Multiplexing or parallel 0 ne or two 540 Wh alkaline or 1800 Wh lithium Depending on configuration, consult software 4 to +40 °C -20 to +60 °C IEC 60068-1/IEC 60068-2-64 IEC 61000 1500 m POM with titanium fasteners. Reinforced
Maximum peak current Max. average consumption at 1 Hz Typical average consumption ⁴⁾ Sleep consumption Transmit power per beam Ping sequence > Batteries Internal Duration > Environmental Operating temperature Storage temperature Storage temperature Shock and vibration EMC approval Depth rating > Materials Standard model > Dimensions Maximum diameter Maximum length with room for	1.5 A 15 W 2 W 100 µA, power depending on supply voltage 4-250 W, adjustable levels Multiplexing or parallel 0 ne or two 540 Wh alkaline or 1800 Wh lithium Depending on configuration, consult software 4 to +40 °C -20 to +60 °C IEC 60068-1/IEC 60068-2-64 IEC 61000 1500 m POM with titanium fasteners. Reinforced polyurethane transducer cups 648 mm
Maximum peak current Max. average consumption at 1 Hz Typical average consumption ⁴⁾ Sleep consumption Transmit power per beam Ping sequence Batteries Internal Duration Environmental Operating temperature Storage temperature Shock and vibration EMC approval Depth rating Materials Standard model Dimensions Maximum diameter Maximum length with room for internal batteries	1.5 A 15 W 2 W 100 µA, power depending on supply voltage 4-250 W, adjustable levels Multiplexing or parallel Cone or two 540 Wh alkaline or 1800 Wh lithium Depending on configuration, consult software -4 to +40 °C -20 to +60 °C IEC 60068-1/IEC 60068-2-64 IEC 61000 1500 m POM with titanium fasteners. Reinforced polyurethane transducer cups
Maximum peak current Max. average consumption at 1 Hz Typical average consumption ⁴⁾ Sleep consumption Transmit power per beam Ping sequence Batteries Internal Duration Environmental Operating temperature Storage temperature Shock and vibration EMC approval Depth rating Materials Standard model Dimensions Maximum diameter Maximum length with room for internal batteries Maximum length without room	1.5 A 15 W 2 W 100 µA, power depending on supply voltage 4-250 W, adjustable levels Multiplexing or parallel 0 ne or two 540 Wh alkaline or 1800 Wh lithium Depending on configuration, consult software 4 to +40 °C -20 to +60 °C IEC 60068-1/IEC 60068-2-64 IEC 61000 1500 m POM with titanium fasteners. Reinforced polyurethane transducer cups 648 mm
Maximum peak current Max. average consumption at 1 Hz Typical average consumption ⁴⁾ Sleep consumption Transmit power per beam Ping sequence > Batteries Internal Duration > Environmental Operating temperature Storage temperature Shock and vibration EMC approval Depth rating > Materials Standard model > Dimensions Maximum diameter Maximum length without room for internal batteries	1.5 A 15 W 2 W 100 µA, power depending on supply voltage 4-250 W, adjustable levels Multiplexing or parallel Cone or two 540 Wh alkaline or 1800 Wh lithium Depending on configuration, consult software -4 to +40 °C -20 to +60 °C IEC 60068-1/IEC 60068-2-64 IEC 61000 1500 m POM with titanium fasteners. Reinforced polyurethane transducer cups 648 mm 547 mm (1 battery), 747 mm (2 batteries)
Maximum peak current Max. average consumption at 1 Hz Typical average consumption ⁴⁾ Sleep consumption Transmit power per beam Ping sequence Batteries Internal Duration Penvironmental Operating temperature Storage temperature Shock and vibration EMC approval Depth rating Materials Standard model Dimensions Maximum diameter Maximum length with room for internal batteries Maximum length without room for internal batteries	1.5 A 15 W 2 W 100 µA, power depending on supply voltage 4-250 W, adjustable levels Multiplexing or parallel 0 ne or two 540 Wh alkaline or 1800 Wh lithium Depending on configuration, consult software -4 to +40 °C -20 to +60 °C IEC 60068-1/IEC 60068-2-64 IEC 61000 1500 m POM with titanium fasteners. Reinforced polyurethane transducer cups 648 mm 547 mm (1 battery), 747 mm (2 batteries) 314 mm
Maximum peak current Max. average consumption at 1 Hz Typical average consumption ⁴⁾ Sleep consumption Transmit power per beam Ping sequence > Batteries Internal Duration > Environmental Operating temperature Storage temperature Shock and vibration EMC approval Depth rating > Materials Standard model > Dimensions Maximum diameter Maximum length with room for internal batteries Maximum length without room for internal batteries > Weight In air, no battery	1.5 A 15 W 2 W 100 µA, power depending on supply voltage 4-250 W, adjustable levels Multiplexing or parallel 0 ne or two 540 Wh alkaline or 1800 Wh lithium Depending on configuration, consult software 4 to +40 °C -20 to +60 °C IEC 60068-1/IEC 60068-2-64 IEC 61000 1500 m POM with titanium fasteners. Reinforced polyurethane transducer cups 648 mm 547 mm (1 battery), 747 mm (2 batteries) 314 mm
Maximum peak current Max. average consumption at 1 Hz Typical average consumption ⁴⁾ Sleep consumption Transmit power per beam Ping sequence > Batteries Internal Duration > Environmental Operating temperature Storage temperature Shock and vibration EMC approval Depth rating > Materials Standard model > Dimensions Maximum diameter Maximum length with room for internal batteries Maximum length without room for internal batteries	1.5 A 15 W 2 W 100 µA, power depending on supply voltage 4-250 W, adjustable levels Multiplexing or parallel 0 ne or two 540 Wh alkaline or 1800 Wh lithium Depending on configuration, consult software -4 to +40 °C -20 to +60 °C IEC 60068-1/IEC 60068-2-64 IEC 61000 1500 m POM with titanium fasteners. Reinforced polyurethane transducer cups 648 mm 547 mm (1 battery), 747 mm (2 batteries) 314 mm

Vector, 300 m





The Vector is a high-accuracy single-point current meter that is capable of acquiring 3D velocity in a very small volume at rates up to 64 Hz. It is widely used for sediment transport applications, small-scale turbulence measurements and coastal engineering studies. It has an excellent track record of delivering outstanding data quality in a variety of applications. This version is suitable for use down to a depth of 300 m. The Vector's titanium version is suitable for investigating deepwater currents.



Highlights

- \rightarrow Small-scale turbulence
- \rightarrow Sampling up to 64 Hz
- → Small sampling volume for measurements close to boundaries



- > Wave orbital studies
- → Studies of bottom boundary layers
- → Ocean engineering projects
- → Coastal studies
- → River turbulence
- → Low flow measurements
- → Flux measurements



NRTEK

Technical specifications

Vector, 300 m

→ Water velocity mea	surements
Maximum profiling range	N/A
Distance from probe	0.15 m
Sampling volume diameter	15 mm
Sampling volume height (user-selectable)	5-20 mm
Cell size	N/A
Velocity range	±0.01, 0.1, 0.3, 1, 2, 4, 7 m/s (software-selectable)
Adaptive ping interval	N/A
Accuracy	±0.5% of measured value ±1 mm/s
Velocity precision	typ. 1% of velocity range (at 16 Hz)
Sampling rate (output)	1-64 Hz
Internal sampling rate	100-250 Hz
→ Distance measureme	nts
Minimum range	N/A
Maximum range	N/A
Cell size	N/A
Accuracy	N/A
Sampling rate	N/A
→ Echo intensity	
Acoustic frequency	6 MHz
Resolution	0.45 dB
Dynamic range	90 dB
→ Sensors	
Temperature:	Thermistor embedded in end bell
Temp. range	-4 to +40 °C
Temp. accuracy/resolution	
Temp. time response	10 min
Compass:	Magnetometer
Accuracy/resolution	2°/0.1° for tilt < 20°
Tilt:	Liquid level
Accuracy/resolution	0.2°/0.1°
Maximum tilt	30°
Up or Down	Automatic detect
Pressure:	Piezoresistive
Standard range	0-20 m (inquire for options)
Ŭ	0.5% FS / Better than 0.005% of full scale
Accuracy/precision	0.5% PS / Better than 0.005% of full scale
→ Analog inputs No. of channels	2
No. of channels	Z Three options selectable through firmware
Supply voltage to analog output devices	 Battery voltage/500 mA +12 V/100 mA
→ Data recording	
Capacity (standard):	9 MB, can add 4/16 GB
Data record (Standard)	24 bytes at sampling rate + 28 bytes/second
Data record (IMU)	72 bytes at sampling rate
→ Real-time clock	
Accuracy	±1 min/year
Backup in absence of	-
power	4 weeks

→ Data communications	
1/0	RS-232 or RS-422
Communication baud rate	300-115 200 Bd
	600/1200 kBd for both RS-232 and RS-422
User control	Handled via "Vector" software, ActiveX® functi- on calls, or direct commands.
Analog outputs	3 channels standard, one for each velocity component or two velocities and pressure.
Output range	0–5 V, scaling is user-selectable.
Synchronization	TTL (5 V tolerant) sync in/sync out, start on sync, sample on sync
→ Connectors	
Bulkhead (Impulse)	MCBH-8-FS
Cable	PMCIL-8-MP on 10 m polyurethane cable
→ Software	
Functions	Deployment planning, instrument configuration, data retrieval and conversion (for Windows®).
→ Multi unit operation	1
Software	N/A
I/O	N/A
→ Power	
DC input	9-15 V DC
Maximum peak current	3 A
Max. consumption	1.5 W at 64 Hz
Typical consumption, 4 Hz	0.6 - 1 W
Sleep consumption	< 100 μA
Transmit power	2 adjustable levels
→ Batteries	
Battery capacity	50 Wh (alkaline or Li-ion), 165 Wh (lithium), single or dual
New battery voltage	13.5 V DC (alkaline)
Data collection capacity	Refer to planning section in software
→ Environmental	
Operating temperature	-4 to +40 °C
Storage temperature	-20 to +60 °C
Shock and vibration	IEC 721-3-2
Depth rating	300m
→ Materials	
Standard model	POM housing, titanium probe and fasteners
→ Dimensions	
Maximum diameter	75 mm
Maximum length	468 mm (housing only), 246 mm (fixed stem) add 110 mm for double battery
→ Weight	
No batteries	Weight in air: 2.32 kg, in water: buoyant
2 batteries	Weight in air: 3.20 kg, in water: 0.54 kg
→ Options	
	Probe mounted on fixed stem or on 2 m cable
	Vertical or horizontal probes
	Alkaline, lithium or Li-ion external batteries
	IMU – Inertial Measurement Unit



Vector, 4000 m





The Vector is a high-accuracy single-point current meter that is capable of acquiring 3D velocity in a very small volume at rates up to 64 Hz. It is widely used for sediment transport applications, small-scale turbulence measurements and coastal engineering studies. It has an excellent track record of delivering outstanding data quality in a variety of applications. This titanium version of the Vector is suitable for investigating deepwater currents down to a depth of 4000 m.



Highlights

- → Small-scale turbulence
- \rightarrow Sampling up to 64 Hz
- → Small sampling volume for measurements close to boundaries



- → Studies of bottom boundary layers
- → Studies of deep-water currents
- → Ocean engineering projects
- → Low flow measurements
- → Flux measurements
- → Deep ocean mining support





Technical specifications Vector, 4000 m

\rightarrow Water velocity measure	rements
Maximum profiling range	N/A
Distance from probe	0.15 m
Sampling volume diameter	15 mm
Sampling volume height (user-selectable)	5-20 mm
Cell size	N/A
Velocity range	±0.01, 0.1, 0.3, 1, 2, 4, 7 m/s (software-selectable)
Adaptive ping interval	N/A
Accuracy	±0.5% of measured value ±1 mm/s
Velocity precision	typ. 1% of velocity range (at 16 Hz)
Sampling rate (output)	1-64 Hz
Internal sampling rate	100-250 Hz
→ Distance measurements	3
Minimum range	N/A
Maximum range	N/A
Cell size	N/A
Accuracy	N/A
Sampling rate	N/A
→ Echo intensity	
Acoustic frequency	6 MHz
Resolution	0.45 dB
Dynamic range	90 dB
→ Sensors	
Temperature:	Thermistor embedded in end bell
Temp. range	-4 to +40 °C
Temp. accuracy/resolution	0.1 °C/0.01 °C
Temp. time response	10 min
Compass:	Magnetometer
Accuracy/resolution	2°/0.1° for tilt < 20°
Tilt:	Liquid level
Accuracy/resolution	0.2°/0.1°
Maximum tilt	30°
Up or Down	Automatic detect
Pressure:	Piezoresistive
Range	0-4000 m
Accuracy/precision	0.5% FS / Better than 0.005% of full scale
→ Analog inputs	
No. of channels	2
Supply voltage to analog output devices	Three options selectable through firmware commands: • Battery voltage/500 mA • +5 V/250 mA • +12 V/100 mA
→ Data recording	
Capacity (standard):	9 MB, can add 4/16 GB
Data record (Standard)	24 bytes at sampling rate + 28 bytes/second
Data record (IMU)	72 bytes at sampling rate
→ Real-time clock	
Accuracy	±1 min/year
Backup in absence of power	4 weeks

→ Data communications	s
1/0	RS-232 or RS-422
Communication baud rate	300-115 200 Bd
	600/1200 kBd for both RS-232 and RS-422
	Handled via "Vector" software, ActiveX® function
User control	calls, or direct commands.
Analog outputs	3 channels standard, one for each velocity component or two velocities and pressure.
Output range	0–5 V, scaling is user-selectable.
Synchronization	TTL (5 V tolerant) sync in/sync out, start on sync,
→ Connectors	sample on sync
Bulkhead (Impulse)	MCBH-8-FS
Cable	PMCIL-8-MP on 10 m polyurethane cable
→ Software	
	Deployment planning, instrument configuration,
Functions	data retrieval and conversion (for Windows®).
→ Multi unit operatio	on
Software	N/A
1/0	N/A
→ Power	
DC input	9-15 V DC
Maximum peak current	3 A
Max. consumption	1.5 W at 64 Hz
Typical consumption, 4 Hz	0.6 - 1 W
Sleep consumption	< 100 µA
Transmit power	2 adjustable levels
→ Batteries	
Battery capacity	50 Wh (alkaline or Li-ion), 165 Wh (lithium), single or dual
New battery voltage	13.5 V DC (alkaline)
Data collection capacity	Refer to planning section in software
→ Environmental	
Operating temperature	-4 to +40 °C
Storage temperature	-20 to +60 °C
Shock and vibration	IEC 721-3-2
Depth rating	4000 m
→ Materials	
Standard model	Titanium housing, titanium probe and fasteners
→ Dimensions	
Maximum diameter	84 mm
Maximum length	485 mm (housing only), 246 mm (fixed stem) add 110 mm for double battery
→ Weight	
Weight in air	8.3 kg
Weight in water	5.1 kg
→ Options	
	Probe mounted on fixed stem or on 2 m cable
	Vertical or horizontal probes
	Alkaline, lithium or Li-ion external batteries
	IMU - Inertial Measurement Unit

Vectrino





The Vectrino is a high-resolution acoustic velocimeter used to measure 3D water velocity fluctuations within a very small sampling volume and at sample rates of up to 200 Hz. It can be applied in a variety of environments, from hydraulic labs – where it is regarded as standard equipment – to the ocean. It is ideal for nearboundary flow measurements or to capture any highly dynamic phenomena in a hydraulic tank.

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Highlights

- → Hydraulic models and flumes
- → Inexpensive alternative to laser Doppler velocimeter
- ightarrow 200 Hz maximum sampling rate

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- → 3D flow measurements in laboratory flumes
- → Flow measurements near boundaries and in areas that are difficult to access
- → Flow measurements in physical models in hydraulic laboratories
- → Measurements of laboratory flume bottom changes as a function of time

NRTEK

Technical specifications

Vectrino

\rightarrow Water velocity mea	surements
Maximum profiling range	N/A
Distance from probe	0.05 m, 0.1 m (field probe)
Sampling volume diameter	6 mm
Sampling volume height	3-15 mm
(user-selectable) Cell size	N/A
Velocity range ¹⁾	±0.03, 0.1, 0.3, 1, 2.5, 4 m/s (software-selectable)
Adaptive ping interval	N/A
Accuracy	±0.5% of measured value ±1 mm/s
Velocity precision	N/A
Sampling rate (output)	1-25 Hz (Std firmware),1-200 Hz (Plus firmware)
Internal sampling rate	N/A
→ Distance measureme	
Minimum range	N/A
Maximum range	N/A
Cell size	N/A
Accuracy	N/A
Sampling rate	N/A
→ Echo intensity	
Acoustic frequency	10 MHz
Resolution	Linear scale
Dynamic range	25 dB
→ Sensors	
Temperature:	Thermistor embedded in probe
Temperature: Temp. range	Thermistor embedded in probe -4 to +32 °C
Temp. range	-4 to +32 °C
Temp. range Temp. accuracy/resolution	-4 to +32 °C 1 °C/0.1 °C
Temp. range Temp. accuracy/resolution Temp. time response	-4 to +32 °C 1 °C/0.1 °C 5 min
Temp. range Temp. accuracy/resolution Temp. time response Compass:	-4 to +32 °C 1 °C/0.1 °C 5 min N/A
Temp. range Temp. accuracy/resolution Temp. time response Compass: Accuracy/resolution	-4 to +32 °C 1 °C/0.1 °C 5 min N/A N/A
Temp. range Temp. accuracy/resolution Temp. time response Compass: Accuracy/resolution Tilt:	-4 to +32 °C 1 °C/0.1 °C 5 min N/A N/A N/A
Temp. range Temp. accuracy/resolution Temp. time response Compass: Accuracy/resolution Tilt: Accuracy/resolution	-4 to +32 °C 1 °C/0.1 °C 5 min N/A N/A N/A N/A N/A N/A N/A
Temp. range Temp. accuracy/resolution Temp. time response Compass: Accuracy/resolution Tilt: Accuracy/resolution Maximum tilt Up or Down Pressure:	-4 to +32 °C 1 °C/0.1 °C 5 min N/A N/A N/A N/A N/A N/A N/A N/A
Temp. range Temp. accuracy/resolution Temp. time response Compass: Accuracy/resolution Tilt: Accuracy/resolution Maximum tilt Up or Down	-4 to +32 °C 1 °C/0.1 °C 5 min N/A N/A N/A N/A N/A N/A N/A N/A
Temp. range Temp. accuracy/resolution Temp. time response Compass: Accuracy/resolution Tilt: Accuracy/resolution Maximum tilt Up or Down Pressure: Standard range Accuracy/precision	-4 to +32 °C 1 °C/0.1 °C 5 min N/A N/A N/A N/A N/A N/A N/A N/A
Temp.range Temp.accuracy/resolution Temp.time response Compass: Accuracy/resolution Tilt: Accuracy/resolution Maximum tilt Up or Down Pressure: Standard range Accuracy/precision → Analog inputs	-4 to +32 °C 1 °C/0.1 °C 5 min N/A N/A N/A N/A N/A N/A N/A N/A
Temp. range Temp. accuracy/resolution Temp. time response Compass: Accuracy/resolution Tilt: Accuracy/resolution Maximum tilt Up or Down Pressure: Standard range Accuracy/precision Accuracy/precision Analog inputs	-4 to +32 °C 1 °C/0.1 °C 5 min N/A N/A N/A N/A N/A N/A N/A N/A
Temp.range Temp.accuracy/resolution Temp.time response Compass: Accuracy/resolution Tilt: Accuracy/resolution Maximum tilt Up or Down Pressure: Standard range Accuracy/precision → Analog inputs	-4 to +32 °C 1 °C/0.1 °C 5 min N/A N/A N/A N/A N/A N/A N/A N/A
Temp. range Temp. accuracy/resolution Temp. time response Compass: Accuracy/resolution Tilt: Accuracy/resolution Maximum tilt Up or Down Pressure: Standard range Accuracy/precision Analog inputs No. of channels Supply voltage to analog	-4 to +32 °C 1 °C/0.1 °C 5 min N/A N/A N/A N/A N/A N/A N/A N/A
Temp. range Temp. accuracy/resolution Temp. time response Compass: Accuracy/resolution Tilt: Accuracy/resolution Maximum tilt Up or Down Pressure: Standard range Accuracy/precision • Analog inputs No. of channels Supply voltage to analog output devices	-4 to +32 °C 1 °C/0.1 °C 5 min N/A N/A N/A N/A N/A N/A N/A N/A
Temp.range Temp.accuracy/resolution Temp.time response Compass: Accuracy/resolution Tilt: Accuracy/resolution Maximum tilt Up or Down Pressure: Standard range Accuracy/precision > Analog inputs No. of channels Supply voltage to analog output devices	-4 to +32 °C 1 °C/0.1 °C 5 min N/A N/A N/A N/A N/A N/A N/A N/A
Temp. range Temp. accuracy/resolution Temp. time response Compass: Accuracy/resolution Tilt: Accuracy/resolution Maximum tilt Up or Down Pressure: Standard range Accuracy/precision Accuracy/precision Accuracy/precision Analog inputs No. of channels Supply voltage to analog output devices Data recording Capacity (standard):	-4 to +32 °C 1 °C/0.1 °C 5 min N/A N/A N/A N/A N/A N/A N/A N/A
Temp. range Temp. accuracy/resolution Temp. time response Compass: Accuracy/resolution Tilt: Accuracy/resolution Maximum tilt Up or Down Pressure: Standard range Accuracy/precision Accuracy/precision Accuracy/precision Analog inputs No. of channels Supply voltage to analog output devices Data recording Capacity (standard): Data record	-4 to +32 °C 1 °C/0.1 °C 5 min N/A N/A N/A N/A N/A N/A N/A N/A

¹) The velocity range is not the same in the horizontal and vertical direction. Please refer to the configuration software.

→ Data communication	S
1/0	RS-232
Communication baud rate	300-115 200 Bd
Recorder download baud rate	
User control	Handled via "Vectrino" software, ActiveX® function calls, or direct commands
Analog outputs	3 channels standard, one for each velocity component
Output range	0–5 V, scaling is user-selectable
Synchronization	RS-485, start on sync, sample on sync,
→ Connectors	transmit on sync (Plus Firmware)
Bulkhead (Impulse)	MCBH-12-FS, bronze (Impulse)
Cable	PMCIL-12-MP – see also options below
→ Software	
Functions	Deployment planning, instrument configuration, data retrieval and conversion (for Windows®)
→ Multi unit operati	
Software	Polysync
1/0	RS 232–USB support for devices with 1, 2, 4, and
→ Power	8 serial ports
	12-48 V DC
DC input	2.5 A at 12 V DC (user-selectable)
Maximum peak current	1.5 W at 200 Hz
Max. consumption Typical consumption, 4 Hz	N/A
Sleep consumption	N/A
Transmit power	N/A
→ Batteries	
	N/A
Battery capacity	N/A N/A
Battery capacity New battery voltage	N/A
Battery capacity New battery voltage Data collection capacity	N/A
Battery capacity New battery voltage Data collection capacity → Environmental	N/A N/A
Battery capacity New battery voltage Data collection capacity > Environmental Operating temperature	N/A N/A -4 to +40 °C
Battery capacity New battery voltage Data collection capacity > Environmental Operating temperature Storage temperature	N/A N/A -4 to +40 °C -15 to +60 °C
Battery capacity New battery voltage Data collection capacity Environmental Operating temperature Storage temperature Shock and vibration	N/A N/A -4 to +40 °C -15 to +60 °C IEC 721-3-3
Battery capacity New battery voltage Data collection capacity Environmental Operating temperature Storage temperature Shock and vibration Depth rating Materials Standard model	N/A N/A -4 to +40 °C -15 to +60 °C IEC 721-3-3
Battery capacity New battery voltage Data collection capacity Pervironmental Operating temperature Storage temperature Shock and vibration Depth rating Materials	N/A N/A -4 to +40 °C -15 to +60 °C IEC 721-3-3 20 m POM housing. Stainless steel (316) probe and
Battery capacity New battery voltage Data collection capacity Environmental Operating temperature Storage temperature Shock and vibration Depth rating Materials Standard model	N/A N/A -4 to +40 °C -15 to +60 °C IEC 721-3-3 20 m POM housing. Stainless steel (316) probe and fasteners 66 mm
Battery capacity New battery voltage Data collection capacity > Environmental Operating temperature Storage temperature Shock and vibration Depth rating > Materials Standard model > Dimensions	N/A N/A -4 to +40 °C -15 to +60 °C IEC 721-3-3 20 m POM housing. Stainless steel (316) probe and fasteners
Battery capacity New battery voltage Data collection capacity > Environmental Operating temperature Storage temperature Shock and vibration Depth rating > Materials Standard model > Dimensions Maximum diameter	N/A N/A -4 to +40 °C -15 to +60 °C IEC 721-3-3 20 m POM housing. Stainless steel (316) probe and fasteners 66 mm 350 mm (housing only)
Battery capacity New battery voltage Data collection capacity Fnvironmental Operating temperature Storage temperature Shock and vibration Depth rating Materials Standard model Dimensions Maximum diameter Maximum length	N/A N/A -4 to +40 °C -15 to +60 °C IEC 721-3-3 20 m POM housing. Stainless steel (316) probe and fasteners 66 mm 350 mm (housing only) 365 mm (fixed stem) 1.2 kg (1.3 kg with field probe)
Battery capacity New battery voltage Data collection capacity Environmental Operating temperature Storage temperature Shock and vibration Depth rating Materials Standard model Dimensions Maximum diameter Maximum length Weight Weight in air Weight in water	N/A N/A -4 to +40 °C -15 to +60 °C IEC 721-3-3 20 m POM housing. Stainless steel (316) probe and fasteners 66 mm 350 mm (housing only) 365 mm (fixed stem)
Battery capacity New battery voltage Data collection capacity > Environmental Operating temperature Storage temperature Shock and vibration Depth rating > Materials Standard model > Dimensions Maximum diameter Maximum length > Weight Weight in air	N/A N/A -4 to +40 °C -15 to +60 °C IEC 721-3-3 20 m POM housing. Stainless steel (316) probe and fasteners POM housing only) 365 mm (housing only) 365 mm (fixed stem) 1.2 kg (1.3 kg with field probe) Neutral (0.1 kg with field probe) Section (20, 30 or 50 m cable with Impulse underwater connector RS 232–USB converter (one-to-one, four-to-one or eight-to-one)
Battery capacity New battery voltage Data collection capacity > Environmental Operating temperature Storage temperature Shock and vibration Depth rating > Materials Standard model > Dimensions Maximum diameter Maximum length > Weight Weight in air Weight in water	N/A N/A -4 to +40 °C -15 to +60 °C IEC 721-3-3 20 m POM housing. Stainless steel (316) probe and fasteners POM housing only) 365 mm (housing only) 365 mm (fixed stem) 1.2 kg (1.3 kg with field probe) Neutral (0.1 kg with field probe) Section (1.1 kg with field probe) Neutral (0.1 kg with field probe) Competer (0.1 kg with field probe) Section (1.1 kg with field probe) Section (

Vectrino Profiler





As the name suggests, this velocimeter is the profiling version of the Vectrino system. The Vectrino Profiler's strength lies in collecting a small profile of up to 30 cells that are only 1 mm in height. It is globally used as the standard flowmeasuring tool for hydraulic laboratory applications.

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Highlights

- → Boundary profile measurements
- \rightarrow 1 mm vertical resolution
- → 100 Hz maximum sampling rate



Applications

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- → Projects highlighting the effect of vegetation on near-bed flows
- → Simulated bed changes in flumes
 → Measurements of high-resolution
- flow profiles in laboratory flumes

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→ Turbulence measurements in laboratory flumes

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Technical specifications Vectrino Profiler

→ Water velocity measu	rements
Maximum profiling range	Up to 30 mm
Distance from probe	40-70 mm from probe
Sampling volume diameter	7 mm
Sampling volume height	N/A
(user-selectable)	
Cell size	1-4 mm (user-selectable)
Velocity range	Increments of 0.1 m/s, maximum 3.0 m/s
Adaptive ping interval	Once, or at 1 second to 1 hour interval
Accuracy	±1% of measured value ±1 mm/s
Velocity precision	N/A
Sampling rate (output)	1-100 Hz
Internal sampling rate	N/A
→ Distance measurement	s
Minimum range	20 mm
Maximum range	Up to 2 meters depending on signal strength
Cell size	1-4 mm (user-selectable)
Accuracy	0.5 mm at 1 mm cell size
Sampling rate	1-10 Hz
→ Echo intensity	
Acoustic frequency	10 MHz
Resolution	Linear & Log scale
Dynamic range	60 dB
→ Sensors	
Temperature:	Thermistor embedded in probe
Temp. range	-4 to +32 C
Temp. accuracy/resolution	1 °C/0.1 °C
Temp. time response	5 min
Compass:	N/A
Accuracy/resolution	N/A
Tilt:	N/A
Accuracy/resolution	N/A
Maximum tilt	N/A
Up or Down	N/A
Pressure:	N/A
Standard range	N/A
Accuracy/precision	N/A
→ Analog inputs	
No. of channels	N/A
Supply voltage to analog out- put devices	N/A
→ Data recording	
Capacity (standard)	N/A
Data record	N/A
→ Real-time clock	
Accuracy	N/A
Backup in absence of power	N/A

→ Data communications	
	RS-422
Communication baud rate	Up to 1.25 Mbps
Recorder download baud rate	
	Handled via "Vectrino Profiler" configuration
User control	and collection software.
Analog outputs	N/A
Output range	N/A
Synchronization	RS-485 sync in or sync out
→ Connectors	
Bulkhead (Impulse)	MCBH-12-FS, bronze (Impulse)
Cable	PMCIL-12-MP – see also options below
→ Software	
Functions	Deployment planning, instrument configuration, data retrieval and conversion (for Windows®)
→ Multi unit operatio	
Software	Vectrino Profiler software allows multiple Vectrino Profiler to be run within a single instance of the program
1/0	RS 485–USB support for devices with 1, 2, 4, and 8 serial ports.
→ Power	
DC input	12-48 V DC
Maximum peak current	2.5 A at 12 V DC
Max. consumption	4 W at 100 Hz
Typical consumption, 4 Hz	N/A
Sleep consumption	N/A
Transmit power	N/A
→ Batteries	
Battery capacity	N/A
New battery voltage	N/A
Data collection capacity	N/A
→ Environmental	
Operating temperature	-4 to +32 °C
Storage temperature	-15 to +60 °C
Shock and vibration	IEC 721-3-4
Depth rating	20 m
→ Materials	
Standard model	POM housing. Stainless steel (316) probe and fasteners
→ Dimensions	
Maximum diameter	66 mm
Maximum length	350 mm (housing only) 365 mm (fixed stem)
→ Weight	
Weight in air	1.2 kg
Weight in water	Neutral
→ Options	
	4-beam down-looking probe. Fixed stem or 1 m flexible cable. 10, 20, 30 or 50 m cable with Impulse underwater connector RS 232–USB converter (one-to-one, four-to-one
	or eight-to-one)

Signature VM





Nortek's vessel-mounted ADCP current survey package – called Signature VM – opens up new and unprecedented opportunities to the community, while offering operational convenience and reduced complexity. Data quality can be safeguarded, and both errors and initial installation time can be substantially reduced by using an integrated system where each module is pre-qualified.



Highlights

- \rightarrow Five beams for current and depth
- Outstanding bottom-track performance
- → A coherent system that is quick and convenient to operate

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- → Coastal surveys
- → Port and harbor mapping
- → Studies of tidal currents
- → Sediment transport studies

Technical specifications



Signature VM

→ Signature VM ¹⁾	→ VM1000	→ VM500		
Water velocity measurements				
Profiling range ²⁾	30 m	70 m		
Cell size	0.2–2 m 0.5–4 m			
Max no. cells	128	128		
Min. blanking	0.1 m	0.5 m		
Minimum accuracy	0.3% of the measured value \pm 0.3 cm/s	0.3% of the measured value \pm 0.3 cm/s		
Velocity resolution	0.1 cm/s	0.1 cm/s		
Maximum sampling rate	14 Hz	6 Hz		
No. of beams	4 slanted at 25 degrees	3		
ightarrow Bottom velocity measu	irements			
Single ping std @ 3 m/s	0.5 cm/s	0.5 cm/s		
Long-term accuracy	± 0.1% / ± 0.1 cm/s	± 0.1% / ± 0.1 cm/s		
Minimum altitude	0.2 m	0.3 m		
Maximum altitude	30 m	70 m		
Velocity resolution	0.01 mm/s	0.01 mm/s		
Maximum sampling rate	4 Hz	2 Hz		
→ Depth measurements				
No. of beams	1 vertical			
Maximum sampling rate	2 Hz	2 Hz		
Max. range	30 m	70 m		
-	0.001 m / 1% of the measured value ³⁾			
→Echo intensity				
Sampling	Same as velocity for sla	anted beams		
Resolution	0.5 dB			
Dynamic range	70 dB slanted beams			
No. of beams	4 slanted at 25 degrees			
Beam width	2.9°			
⇒Other				
Temperature sensor range/ accuracy	-4 °C to 40 °C / 0.1 °C			
Pressure	Piezoresistive			
Standard range	0-100 m (inquire for op	otions)		
Accuracy/precision	0.1% FS / better than 0.002% of full scale			
Compass and tilt	Solid-state magnetom	eter		
Data recording	16 GB (inquire for optic	ons)		
Data cable	20 m Ethernet cable (ir	nquire for options)		
10	Ethernet			
DC Input	12-48 V DC			
→Environmental				
Operating temperature	-4 °C to 40 °C			
Storage temperature	-20 °C to 60 °C			
Shock and vibration	IEC 60068-1 / IEC 6006	8-2-64		
EMC approval	IEC 61000			
Depth rating	300 m – Bottom track is limited to surface vessels			
Connectors	Straight fitted MCBH6F (Ethernet)			
Housing	Small instrument housing			
Material	POM with titanium fast	teners		

→ Rack-mount processi	ng unit
Processor/memory	Intel i7, 8 GB
Hard disk	SSD 240 GB
Operating system	Windows® 10
Housing	19" rack-mountable 1 HE
Dimensions (PC)	480x45x220 mm (19" rack-mountable 1 HE)
PC input	100–240 V AC, max. 25 W
Interface box input	100–240 V AC as standard or 12–34 V DC. Max. 15 W $$
Dimensions (interface box)	240x45x300 mm (0.5x19" rack-mountable 1 HE)
Total weight	4 kg PC, 3 kg interface box
Connections	Power, Signature VM, GNSS, Ethernet, USB, HDMI, VGA
Operator control	Optional 19" rack mount
LCD panel	Optional 19" rack mount
→Nortek Signature V	M acquisition software
Acquisition	Signature VM - binary GNSS compass - binary
Timing	< 0.6 s, IEEE1588/PTP for absolute time stamping (GNSS compass/Signature VM)
Configuration	Signature VM (partly) Advanced navigation GNSS compass
Display	Vessel track in map Bottom-track velocity Velocity magnitude and direction Echo amplitude Echo correlation Vertical depth
Status	Signature VM + GNSS compass
Output	NMEA data string online (velocity and depth) CSV, ASCII VMT, MATLAB VMT, KML
→GNSS compass	
Brand and model	Advanced navigation GNSS compass
Position accuracy (with dGNSS)/ post-processed	Horizontal: 0.6 m / 0.01 m Vertical: 1.0 m / 0.02 m
Heading accuracy/ post-processed	0.2°/ 0.09°
Supported navigation systems	GPS L1, GLONASS G1, GALILEO E1, BeiDou B1
Optional high-accuracy RTK variant	GPS L1_L2, GLONASS G1_G2, GALILEO E1_E5b, BeiDou B1_B2
Motion	9-axis IMU
Communication	Ethernet 10/100
Timing	PTP, NTP timeserver functionality
Protocol	NMEA0183, AN Packet protocol, TSS1, Simrad

See technical specifications for Signature1000/500 for detailed specifications.
 Maximum range depends on acoustic scattering conditions and transmit power.
 Assuming a constant speed of sound.

Nortek products

Selectio	n 🦲				0-0	
guide						
	SIGNATURE55	SIGNATURE100	SIGNATURE250	SIGNATURE 1000/500	AWAC	AQUADOPP
Product family	Long-range current profiler	Combined current profiler and biomass sensor	Profiler for medium-range current, waves and ice measurements	Advanced current profiling and turbulence system	Wave and current profiler with AST	Single-point current meter
Application						
Oil and gas surveys	•	•	•		•	•
Vessel surveys				•		
Renewable energy				•	•	•
Oceanographic research	•	•	•	•	•	•
Natural resource mgmt.				•	•	•
Aquaculture					•	•
Ports and harbors					•	
MetOcean engineering	•	•	•		•	•
Online monitoring	•	•	•		•	•
Laboratory						
Navigation						
Product speci	ifications					
Transducer frequency (kHz)	75/55 Dual frequency	100 (70-120 kHz opt. 5th transducer)	250 (500 kHz opt. 5th transducer)	500/1000	1000/600/400	2000
Measurement range (m)	10-1000+	350	200	70/30	0.5-100	0.35-5
Sampling rate - typical (maximum)	1-60 min (1 Hz)	1-60 min (1 Hz)	1-60 min (1 Hz)	4/8 (8/16) Hz	1-60 min (4 Hz)	1-60 min (4 Hz)
Cell size - typical (minimum) (m)	15 (5)	15 (3)	8 (1)	1/0.5 (0.5/0.2)	1 (0.25)	N/A (single cell)
Typical / maximum deployment life	3 months > 5 years	3 months > 5 years	3 months > 5 years	3 months > 5 years	3 months > 2 years	6-12 months / > 5 years
Maximum installation depth (m)	1500	1500	300	300	300	300/3000/6000
Standard sensors, no. of beams	Temp/press/ HPR, 3	Temp/press/ HPR, 4	Temp/press/ HPR, 4	Temp/press/ HPR, 5	Temp/press/ HPR, 4	Temp/press/ HPR, 3
Available upgrades	64 GB recorder. AHRS option	5th beam, echosounder, 64 GB recorder. AHRS option	5th beam, waves, ice, 64 GB recorder. AHRS option	Vertical profilers. Waves, ice (Sig500 only). 64 GB recorder. Echosounder. AHRS option	Analog inputs, platform head, on-board wave calculations. Metal connector	AOS, analog inputs, Li-ion batteries, custom transducer head geometry, IMM
ightarrow Method and de	eployment					
Bottom-mounted	•	•	•	٠	•	•
Moving vessel				٠		
Mooring line	•	•	•	•	•	•
Fixed structure	•	•	•	•	•	•
Laboratory flume						

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AQUADOPP PROFILER	AQUADOPP HR PROFILER	2D PROFILER	DVL 1000/500	VECTOR 4000/300 m	VECTRINO	VECTRINO PROFILER
Multi-purpose current profiler and PUV wave measurements	High-resolution short-range current profiler	Horizontal current profiler for cross-channel measurements	Doppler Velocity Logs for underwater navigation	Stand-alone high-resolution single-point velocimeter	Online high-resolution single-point velocimeter	Online high-resolution profiling velocimeter
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2000/1000/ 600/400	2000/1000	400	1000/500	6000	10000	10000
0.2-90	0.05-6	130	75/200	0.15	0.05	0.03-0.07
1-60 min (1 Hz)	1 min (8 Hz)	1 Hz	1-2 Hz (8 Hz)	1 s (64 Hz) (fixed)	25 Hz/200 Hz ("plus" firmware)	100 Hz
1 (0.2)	0.05 (0.007)	5 (1)	1/0.5 (0.5/0.2)	N/A (single point)	N/A (single point)	2 (1) mm
30-60 days / > 1 year	5-10 days / > 6 months	Real time	Real time	Real time / > 2 years	Real time	Real time
300/3000/6000	300	300	300/4000/6000	300/4000	50	50
Temp/press/ HPR, 3	Temp/press/ HPR, 3	Temp/press/ HPR, 2	Temp/press, 4	Temp/press/HPR	Temp	Temp
AOS, analog inputs, Li-ion batteries, side- looking head, Z-Cell, 6000 m housing	Analog inputs, Li-ion batteries, 4 GB recorder	AOS, metal connector, 4 GB recorder	Current profile	IMU, analog inputs, Li-ion batteries, cable probe, 4000 m housing, 16 GB recorder	Vectrino ⁺ firmware, side-looking probe, flexible cable probe	Flexible cable probe
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