Aquadopp Profiler 2 MHz

500 m, Generation 2

Small and compact, short-range current profiling; option for PUV wave measurements

The Aquadopp Profiler is a highly versatile Acoustic Doppler Current Profiler (ADCP) available in three profiling range options, from < 1 m to > 85 m. The 2 MHz version has a current profiling range of up to 10 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.

The upgraded Aquadopp Profiler design offers improved noise immunity as well as 6% broadband measurements and “hibernation mode” between measurements, enabling precise data collection with lower power consumption. Increased internal battery storage extends potential deployment time.

See the details of the Generation 2 Aquadopp updates in the release notes here.

Highlights

- Up to 10 m current profiling range
- Optional right-angle head for measurements close to boundaries or in shallow water
- Pressure-based (PUV) directional wave measurements
- LED blinks when pinging for peace of mind during deployment

Applications

- Near-bed current profiles with fine vertical resolution
- Mean flow measurements with a focus on ease of use and simplicity
- Measurements in areas with strong variations in flow speeds
- Projects with needs for both high-resolution and normal-range current measurements with optional HR
- Measurements of waves and currents from a single instrument
- Studies of tidal currents

Technical specifications

Water velocity measurements	
Nominal profiling range*	10 m
Cell size	0.1-2 m
Maximum number of cells	200

Water velocity measurements

Minimum blanking	0.2 m
Velocity range (along beam)	User-selectable 1.0 to 5.0 m/s
Accuracy	±1% of measured value ±0.5 cm/s
Horizontal velocity precision (consult instrument SW)	Typ. 1 cm/s
Maximum sampling rate (output)	1 Hz
Wave measurements	PUV (optional)

*Dependent on measurement conditions

Echo intensity

Sampling	Same as velocity
Resolution	0.5 dB
Dynamic range	70 dB
Transducer acoustic frequency	2 MHz
Number of beams	3 (see GA drawings for angles)
Beam width	0.85° (1.7° total)

HR option

Maximum profiling range	4.0 m
Cell size	0.01-0.13 m
Minimum blanking	0.1 m
Maximum number of cells	256
Velocity range	3 cm/s - 0.65 m/s
Range velocity limitations	Product of profiling range and velocity should not exceed 0.12 m2/s
Accuracy	±1% of measured value ±0.5 cm/s
Max. sampling rate	8 Hz
Notes	Extended Velocity Range (EVR) option not available.

Sensors

Temperature:	
Temp. range	-4 to +40 °C
Temp. accuracy/resolution	0.1 °C/0.01 °C
Temp. time response	<1 min
Compass:	Solid state magnetometer
Accuracy/resolution	<2° for tilt < 30° /0.01°
Tilt:	Solid state accelerometer
Accuracy/resolution	0.2° for tilt <30° / 0.01°
Maximum tilt	Full 3D
Up or Down	Automatic detect
Pressure:	Piezoresistive
Range	30 m / 100 m / 500 m
Accuracy/precision	0.5% FS / 0.005% of full scale

Data recording

Capacity	16 GB

Real-time clock	
Accuracy	±1 min/year
Backup in absence of power	4 weeks

Data communications	
I/O	RS-422 (inquire for RS-232)
Communication baud rate	9600 Baud - 1.2 Mbaud (default 115200 Baud)
User control	Nortek Deployment Software or direct ASCII commands, with binary or ASCII data output

Software	
Operating system	Cross platform
Functions	Deployment planning, instrument configuration, data retrieval and conversion. Online data display

Power	
DC input	9-24 VDC
Absolute maximum DC input	26 VDC
Maximum peak current	4.5 A
Power consumption	Consult Nortek Deployment Software
Sleep current	< 40 uA
Transmit power	Adjustable

Batteries	
Internal battery capacity	1-3 x 50 Wh (Alkaline); 2-3 x 165 Wh (Lithium), 1-3 x 76 Wh (Li-Ion)
Battery weight	430g per 50 Wh (Alkaline); 380g per 165 Wh (Lithium); 300g per 76 Wh (Li-ion)

Environmental	
Operating temperature	-5 to +40 °C
Storage temperature	-20 to +60 °C
Shock and vibration	Shock: IEC 60068-2-27, Vibration: IEC 60068-2-64
EMC	EN IEC 61000-6-2:2019, EN IEC 61000-6-4:2019
Depth rating	500 m

Connectors	
Bulkhead (Impulse)	MCBH-8-FS Brass
Cable	PMCIL-8-MP on 5 m (default) polyurethane cable

Materials	
Standard model	POM, Naval Brass, Titanium Gr. 5, Epoxy

Dimensions (see drawings for details)	
Maximum housing diameter	75 mm
Maximum length	S2VP: 589 mm; S2SP: 634 mm

Weight	
Weight in air (without batteries)	S2VP: 2500 g; S2SP: 2710 g

Weight	
Weight in water (without batteries)	S2VP: -120 g; S2SP: -50 g
Weight in air, short housing (without batteries)	S2VP: 1900 g, S2SP: 2100 g
Weight in water, short housing (without batteries)	S2VP: 330 g, S2SP: 400 g

Head configurations	
S2VP	Shallow water, 2MHz, Vertical orientation, Profiler
S2SP	Shallow water, 2MHz, Side-looking orientation, Profiler

Online cable information	
Cable length	A) 0-10m, B) 10-50m, C) 50-500m
Power wire gauge	A) 20AWG, B) 20AWG, C) 18AWG
Hardware	A) Standard, B) Standard, C) Long cable kit *
Input voltage	A) 9-24VDC, B) 24VDC +/-0,5, C) 48VDC +2/-5
Absolut maximum DC input	A) 26 VDC, B) 26 VDC, C) 51 VDC
Communication	A) RS232/RS422/115200, B) RS232/RS422/115200, C) RS422/115200

*Start-up voltage: greater than or equal to 26V. Recommended operating range: 43-50 V.