

# Aquadopp® Profiler

A small and light current profiler for coastal measurements

Longer range with 400 kHz!



The Aquadopp® profiler measures the current profile in water using acoustic Doppler technology. It is designed for stationary applications and can be deployed on the bottom, on a mooring rig, on a buoy or on any other fixed structure. It is a complete instrument and includes all the parts required for a self contained deployment with data stored to an internal data logger. Typical applications include coastal studies, online monitoring and scientific studies in rivers, lakes, and channels.

The Aquadopp® profiler uses three acoustic beams slanted at 25° to accurately measure the current profile in a user selectable number of cells. The internal tilt and compass sensors tell the current direction and the high-resolution pressure sensor gives the depth—and the tidal elevation if the system is fixed mounted. The standard 9MB recorder and internal alkaline batteries are typically sufficient for a 2–4 month deployment.

Deployment times can be increased or sampling schemes intensified by expanding to 161MB memory and external batteries.

## Practical Use

One quick glance at the Aquadopp profiler tells you that it is a small and practical current profiler that is simple to deploy. It gives you the full current profile and it comes standard with all the trimmings such as a internal recorder, compass, tilt, pressure, temperature, software, cable, etc.

Go one step further into the system and you will find a host of new features:

- ✓ Small blanking distances give you data close to the instrument
- ✓ Small cell sizes even in high flows
- ✓ Compass and tilt that automatically senses up or down orientation (use the profiler either way)
- ✓ Adjustable power output reduces battery consumption in shallow water
- ✓ All plastic and titanium parts, from 2.4kg in air
- ✓ Flexible transducer design—order special heads at low additional cost
- ✓ Powerful AquaPro Win32® software for trouble free deployment planning, recording, data retrieval, and ASCII conversion
- ✓ Online data communication via radio modem
- ✓ Collect directional wave data at 1Hz or 2Hz in between current profiles
- ✓ Inquire for deep water versions

## Wave Directional Data

The Aquadopp can be configured to collect 1Hz or 2Hz wave data (p,U,V) interleaved with the mean current profile. The 1Hz or 2Hz data allow you to calculate the wave height, period, and direction, either using Nortek add-on wave software or your own algorithms. The instrument is best suited for wave measurements in areas with long waves ( $T_p > 4-5s$ ). For other areas or for long-term online measurements, we suggest looking at the AWAC as an alternative.

## Third Generation Current Profiler

Nortek is proud to be the first company that introduced a third generation current profiler. The first generation was the original ADCP, a bulky and expensive, but revolutionary instrument first introduced in 1982. The second

generation profilers were introduced in 1994, which reduced the size, weight, and price by about 50%. The Aquadopp profiler, introduced in 2002, repeats the feat—a 50% reduction in size, weight, and price while producing the best performance, versatility and functionality yet.



# Specifications

## Water velocity measurement

Acoustic frequency	0.4MHz	0.6MHz	1.0MHz	2.0MHz
Maximum profiling range*	60–90m	30–40m	12–20m	4–10m
Cell size	2–8m	1–4m	0.3–4m	0.1–2m
Minimum blanking	1m	0.50m	0.20m	0.05m
Maximum # cells	128			
Velocity Range	±10m/s (call for extended range)			
Accuracy	1% of measured value ±0.5cm/s			
Max. Sampling rate	1Hz			
Velocity uncertainty	Consult software program			

\*) The Aquadopp profiler measures the current profile in a user specified number of cells from the instrument out to a maximum range that depends on the acoustic scattering conditions. The lower range should be expected with clear water and small cells and the higher range with large cells and acoustically turbid water.

## Echo intensity

Sampling Resolution	Same as velocity
Dynamic range	0.45dB
	90dB

## Transducer

Frequency	0.4MHz	0.6MHz	1.0MHz	2.0MHz
Number of beams	3	3	3	3
Beam width	3.7°	3.0°	3.4°	1.7°

## Standard sensors

<b>Temperature</b>	Thermistor embedded
Range	–4°C to 30°C
Accuracy/resolution	0.1°C/0.01°C
Time response	10 min

<b>Compass</b>	Flux gate with liquid tilt
Maximum tilt	30°
Accuracy/resolution	2°/0.1°

<b>Tilt</b>	Liquid level
Accuracy/resolution	0.2°/0.1°
Up or down	Automatic detect
Pressure	Piezoresistive

<b>Range</b>	0–100m (standard)
Accuracy/resolution	0.25%/0.005% of full scale

## Analog inputs

Number of channels	2
Voltage supply	Battery voltage. Hardware can be modified to provide 5V or 12V
Voltage input	0–5V
Resolution	16 bit A/D

## Serial data communication

I/O	RS232, RS422.
	Software supports most commercially available USB–RS232 converters
Baud rate	300–115200 (user setting)

## Internal recording

Capacity	9MB, expandable to 33, 89, or 161MB
Data record	32 bytes + 9×Ncells
Mode	Stop when full (default) or wrap mode

## Software “AquaPro”

Operating system	Windows®2000, Windows®XP
Functions	Deployment planning, data retrieval, ASCII conversion, online data collection, and graphical display

## Power

DC Input	9–16VDC
Max average consumption at 1Hz	0.2–1.5W
Sleep consumption	0.0013W
Transmit power	0.3–20W, 4 adjustable levels

## Internal batteries

Type/capacity	18 AA Alkaline cells/50Wh
New battery voltage	13.5VDC
Duration (10-minute avg.)	80 days for 2MHz, 0.5m cells
Duration (10-minute avg.)	50 days for 1MHz, 1.0m cells

Exact battery consumption and velocity uncertainty are complex functions of the deployment configuration. Please consult the AquaPro software for more exact predictions.

## Materials

Standard	Delrin and polyurethane plastics with titanium screws
Intermediate and deep-water models	Titanium and Delrin plastics

## Connectors

Bulkhead (Impulse) Cable	MCBH-8-FS PMCIL-8-MP on 10-m polyurethane cable
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## Environmental

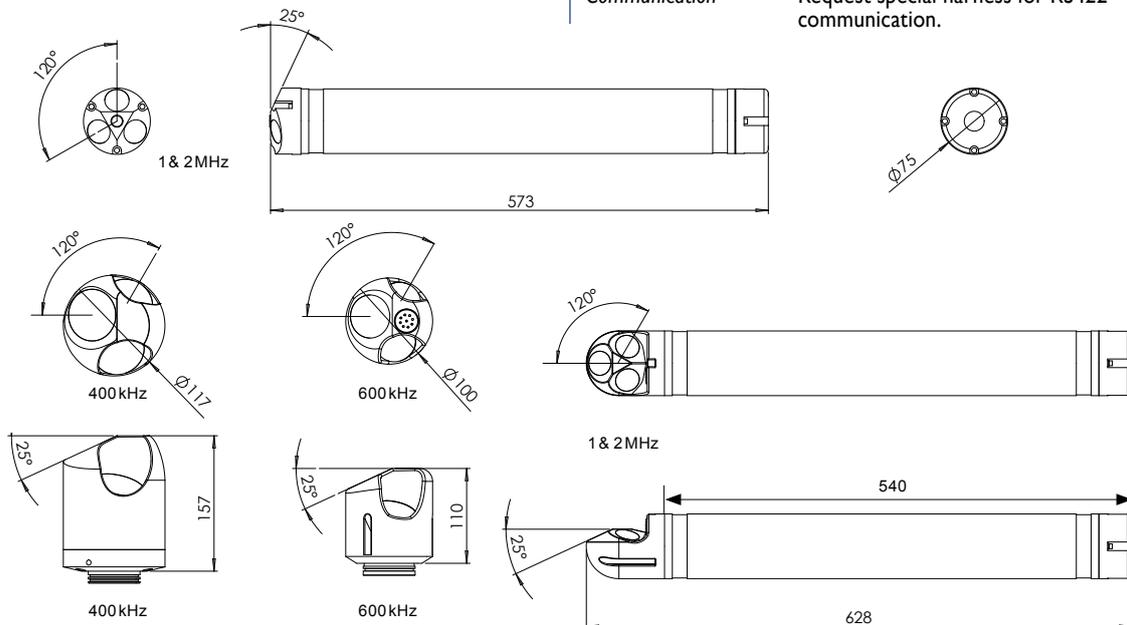
Operating temperature	–5°C to 35°C
Storage temperature	–20°C to 45°C
Shock and vibration	IEC 721–3–2
Shallow water rating	300m

## Dimensions

Weight in air	2.4kg/2.6kg (0.6MHz)/3.7kg (0.4MHz) with alkaline batteries
Length	550mm
Diameter	75mm

## Options

Batteries	Lithium, Li-Io rechargeable
External batteries	540Wh or 1200Wh
Bulkhead connectors	Titanium instead of bronze
Transducer head	Right angle head for 1 or 2MHz. Inquire for special configurations
Deep water systems	Inquire for 2000- & 6000-m versions
Communication	Request special harness for RS422 communication.



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