

DATASHEET

AQUAscat[®] 1000R

Acoustic suspended sediment profiler - research model



KEY FEATURES

- Observe load and mean particle size
- Uses acoustic backscatter method
- 4 cabled transducers
- Profiles of <1 m to 10 m
- Vertical resolution of 2.5 mm to 4 cm

- Deploy in fresh and seawater to 1000 m depth
- Internal batteries and memory for autonomous deployment
- Integral temperature and pressure sensors

APPLICATIONS

- Suspended sediment research
- Sediment transport studies
- Oceanographic and environmental monitoring
- Dredge plume monitoring

MODELS

- Research model has 4 cabled transducers selected from a range of 7 different frequencies
- Also available: survey, lite and lab models

Specification

Sediment range	Sensitive to a wide range of grain sizes Size inversion typically feasible for 20 µm to 500 µm radius Typically 0.01 g/l to 20 g/l over 1 m, or more over shorter range
Frequencies	Up to 4 frequencies, from 300 kHz to 5 MHz
Transducers	Typically Ø10-25mm ceramic discs (beam width according to frequency), with other optional configurations.
Transducer arrangement	Individual cabled transducers
Gain	Software controlled transmitter and receiver gain adjustment
Range	150 cm (typical), up to 10 m at frequencies below 2MHz depending on options.
Transmitted signal	1 W rms typical transmit CW pulse, pulse length to match cell size.
Transmission rate	128 Hz max pulse rate for each frequency (i.e. 512 pulses per second for four), subject to acoustic range limits. Minimum rate 1 Hz for calibration.
Data averaging	Cell ensembles averaged over time by powers of 2 up to 64 before storage
Range cells	256 cells. 2.5 mm, 5 mm, 10 mm, 20 mm and 40 mm at 1500 m/s speed of sound. Start/end range set by software
Burst duration	Defined by number of profiles requested
Burst trigger	Either external hardware trigger when required or internal software trigger at regular intervals
Burst interval	Internally generated from once every minute to once every 255 minutes, user definable start time of first burst.
Trigger output	A digital output allows triggering of external instruments
Power requirement	8 V to 24 V dc. Typically 1 W when logging, and with standby of typically 1 mW when not logging.
Battery packs	Internal alkaline battery pack gives up to 10 days typical deployment. External battery packs available according to deployment needs.
Additional sensors	Built-in temperature and pressure, optional turbidity
Disk storage	Compact Flash (proprietary format). 8 GB standard.
Data comms	RS232 up to 115 kbaud; USB 1.1 typically 2-3 Mbaud
Housing options	1000m rated aluminium alloy housing. Greater depths available as custom instruments.
Software	AQUAtalk for AQUAscat for logger interaction AQUAscat toolkit for data processing

Models

AQUAscat 1000R	Research model - 4 cabled transducers, multiple range and resolution, maximum 1000 m depth
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Also available

AQUAscat 1000S	Survey model - 4 fixed transducers, multiple range and resolution, maximum 1000 m depth
AQUAscat 1000LT	Lite model - 2 fixed transducers, 1 cm resolution, maximum 200 m depth
AQUAscat 1000L	Lab model - 3 cabled transducers, laboratory use

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