

SUSPENDED SEDIMENT PROFILER

AQUA_{scat}® 1000L

The AQUA_{scat}® 1000L is a premier laboratory instrument in Aquatec's high-frequency acoustic instrumentation range. It's a cornerstone in sediment transport studies, adept in measuring suspended sediment profiles, precision altimetry, dredge plumes, and turbulence analysis. It features advanced high-frequency sound pulses emitted from multiple transducers, each capable of operating at different frequencies. The device accurately detects sound scattered by sediment or other suspended matter, with a programmable spatial resolution spanning from 2.5 mm to 4 cm.



KEY FEATURES

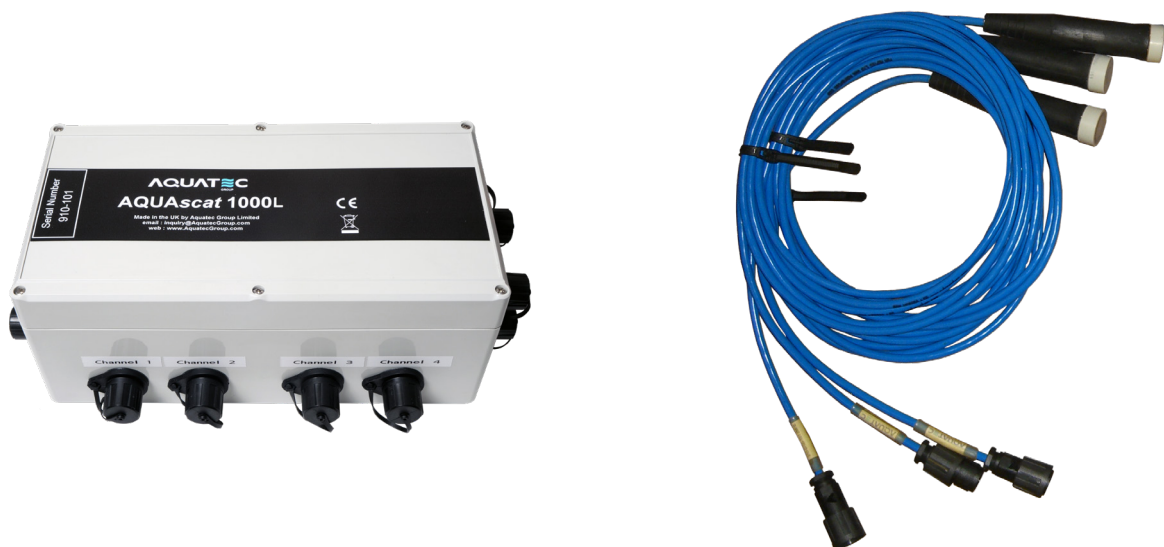
- Observe load and mean particle size
- Uses acoustic backscatter method
- 4 cabled transducers
- Profiles of 2.5 m (options to upgrade)
- Vertical resolution of 10 mm (options to upgrade)
- Optional cabled temperature, depth and turbidity sensors

APPLICATIONS

- Flume tanks
- Suspended sediment research
- Laboratory based transport studies
- Laboratory based frazil ice monitoring

SPECIFICATIONS

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 500 kHz to 4 MHz
Transducers	Typically Ø10-25mm ceramic discs (beam width according to frequency), with other optional configurations
Transducer arrangement	4 fixed individual 4-metre cabled transducers
Gain	Software controlled transmitter and receiver gain adjustment
Range	150 cm (typical), up to 10 m below 2 MHz 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
	10 mm standard (at 1500 m/s speed of sound)
	Options for 2.5 mm, 5 mm, 20 mm and 40 mm
	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	12 V power supply
Additional sensors	Cabled temperature, pressure, 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	Plastic IP68 weatherproof instrument case
Software	AQUAtalk™ for AQUAscat® for logger interaction
	AQUAscat® Toolkit for data processing



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