



Chelonia Limited

Wildlife Acoustic Monitoring

C-Sound Specification

April 2025

The C-Sound is an underwater sound recorder that is partly based on the widely-used open-source AudioMoth sound recorder. In the C-Sound it is in a better housing with a larger battery and a higher quality of hydrophone.

Frequency range	20Hz – 220kHz Precise determination of the frequency response is currently waiting for the National Physical Laboratory to resume this service which is temporarily suspended.
Sampling rate	Selectable. Range 8k to 500k samples per second
Duty cycle / filtering	A range of duty cycles and Goertzel filters is provided as in the AudioMoth
Resolution	16bit
Data compression	A custom lossless data compression routine reduces data volumes by approx. 70%. After download data files can be expanded to standard WAVE file format.
Memory	Up to 3 micro SD cards of any size.
Software	Data decompression routine only. WAVE files are handled by many software utilities including Audacity, Raven, Ishmael etc.
Working depth	At least 100 metres
Battery	<p>The battery pack holds 25 lithium rechargeable 21700 cells in 5 stacks of 5 cells in series. These cells are not shipped with the unit and must be obtained locally. They are charged outside the C-Sound by the user – this allows individual charging and monitoring of cell condition.</p> <p>The battery pack has diode protection against insertion of cells the wrong way round and resettable fuses on each stack plus an overall 5amp fuse. It can safely tolerate short circuiting.</p> <p>With Samsung 58E cells the capacity is 500+Wh.</p>
Runniong time	Operation time is determined by sampling rate and duty cycle. At 16k sampling rate it can record continuously for 1 year.
Housing:	<p>710 mm long and 90 mm in diameter Polypropylene.</p> <p>Weight 2.5kg in air without batteries.</p> <p>Lid: 2 'O'ring seal, one circumferential. 3 transverse securing holes in lid each 10mm ID.</p>
Weight:	2.1 kg without batteries, 3.5 kg with batteries
Buoyancy:	Approximately 0.7 kg. This makes the C-Sound self-orientating if suitably moored
Hydrophone:	Frequency range is 20 kHz to 220 kHz. The housing has a large-diameter to reduce surface noise pick-up. The transducer mounting and housing design gives very high resistance to impact damage. Full calibration by the UK National Physical Laboratory is awaited.
Memory:	Up to 3 micro SD cards of any size.
Detection range:	Maximum detection range for porpoises is approximately 400 metres. Dolphins may be detected at >1 km.
Standardisation:	Each unit is tested in an acoustic test tank.

Settings	Settings are applied via a text file on one of the SD cards and are retained until changed.
Maintenance:	The external surfaces of the C-Sound are simple and tough allowing robust methods of removing biofouling. The lids use a dual O-ring design with grease-free lubricants and these have proved highly reliable.

