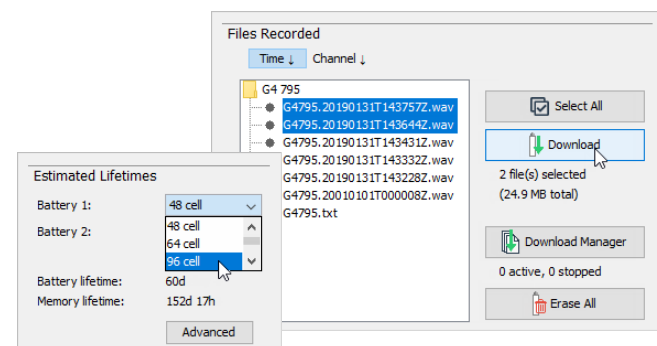## Intuitive User Interface

The AMARlink software is designed for usability: easy to learn and easy to use. Set up multiple sampling rates, duty cycles, and recording schedules with ease. See estimated endurance of batteries and storage memory for your chosen settings. Save your configurations for quick and easy reuse and sharing with others.

AMAR G4

Autonomous Multichannel Acoustic Recorder
Generation 4

Underwater acoustic and oceanographic data recorder purpose-built for efficient power use and superior data quality

- 10 TB memory on removable SD cards
- Up to 16 24-bit channels up to 512 ksps
- 7 oceanographic sensor channels
- Wi-Fi configuration
- Low power for long deployments

With removable memory and pre-packaged battery packs, it's quick and easy to refresh the AMAR and put it back in the water. WAV and CSV files are saved to SD cards, directly readable by your computer. Configure the AMAR, get status updates, and download test data over Wi-Fi. Multiple battery packs can be daisy chained together for year-long continuous recordings.

The innovative design provides a low noise floor of -150 dB re FS per root hertz at all sample rates. We work closely with hydrophone manufacturers to develop the right system for your needs. Three real-time clock options, including Chip Scale Atomic Clock (CSAC), for precise data timing.

AMAR G4 Technical Specifications

Environmental

Operating temperature:	−5 to 50 °C
Storage temperature:	−18 to 55 °C

Hydrophones and Arrays

Customizable options from various manufacturers
Sensitivities and frequencies tailored to your needs

Example sensitivities:	−164 dB re 1 V/µPa @ 1 kHz
	−210 dB re 1 V/µPa @ 1 kHz
Example frequencies:	1 Hz to 50 kHz
	5 Hz to 100 kHz
	20 Hz to 200 kHz
Acoustic sensors:	Omnidirectional hydrophones
	Directional hydrophones
	Vector sensors
	Small spatial arrays
	Small linear arrays

Memory, Recording and Timing

Removable flash memory:	Up to 10 TB on 512 GB SD cards
Data format:	WAV, CSV

Clock accuracy (manufacturer's specification):

Built-in clock:	5 ppm w/ 4.6 ppm aging over 20 yrs
Optional TCXO clock:	0.7 ppm w/ 1 ppm aging in first year
Optional CSAC:	10 ppb
Time sync options:	GPS PPS, NMEA (60 µs accuracy)
	AMARlink (1 s accuracy)

Power

Operating voltage:	7.8–24 V$_{DC}$
Batteries:	Alkaline, others upon request
AC power adapter:	110–240 V, 50–60 Hz, 0.5 A

4 to 16 Acoustic Channels

Resolution:	24 bits
Sample rates:	8, 16, 32, 64, 128, 256, 512 ksps sampled synchronously
Spectral noise floor:	Better than −150 dB re FS per root Hz at all sample rates

Seven Oceanographic Sensor Channels

Sensor options:	Oxygen, salinity, acidity/pH, depth, turbidity, orientation (roll-pitch-yaw), temperature, others upon request
Four analog channels:	Sample rate: 1 sps
	Resolution: 10 bits
	Voltage: 0 to +5 V
Three serial channels:	One RS-232 and Two configurable as RS-232, RS-422, RS-485, or 3.3 V logic level

Communications

ACE and UD:	Configure via Wi-Fi. Magnetic reed switches to start/stop recording.
PVC and AL:	Wired Comms Box to connect via Ethernet. Activation plug to turn on/off.

JASCO
APPLIED SCIENCES

Learn more at jasco.com/amar-g4

ISO 9001 Certified

JASCO Applied Sciences

www.jasco.com

MODELS

Acetal: G4-ACE
The new standard for data quality and usability. Electronics and 10 C-cell batteries in a light yet robust acetal housing. Connects to one or more external battery packs.

PVC: G4-PVC-2X-6.5
Electronics and 48 D-cell batteries in a stream-lined PVC housing. For long deployments with one self-contained housing.
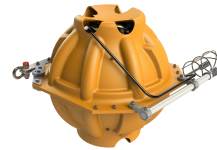
Deep: G4-AL
The rugged, deep water AMAR G4. Electronics and 48 D-cell batteries in an anodized aluminum housing for long deployments down to 3000 m.

Ultra Deep: UD-G4
The ultra-deep workhorse. Electronics and up to 128 D-cell batteries in a deep-sea glass sphere for long deployments down to 6700 m. Surrounded by a protective shell with a load-bearing assembly.

	Acetal: G4-ACE	PVC: G4-PVC-2X-6.5	Deep: G4-AL	Ultra Deep: UD-G4
Depth (m)	500	250	3000	6700
Acoustic Channels	4	4–16	4–16	4–16
Housing Material	Acetal thermoplastic	PVC	Anodized aluminum	Borosilicate glass sphere Polyethylene shell
Internal Batteries	10 C cells	48 D cells	48 D cells	48 / 64 / 96 / 128 D
Capacity[1] (Wh)	93	972	972	972 / 1296 / 1944 / 2592
Lifetime @ 256 ksps (days)	5	60	60	60 / 80 / 120 / 160[2]
Dimensions (D × L, mm)	101 × 692	165 × 907	165 × 907	432 mm diameter
Weight in Air (kg)	5.2	25.4	31.4	35.2 / 37.7 / 42.8 / 47.9
Weight in Seawater (kg)	0.3	10.0	16.0	−12.0 / −9.5 / −5.0 / +0.7
Wireless Configuration	✔	✖	✖	✔

EXTERNAL BATTERY PACKS

	Acetal EXBP50C-ACE	PVC EXBP48D-PVC, 96D-PVC	Deep EXBP96D-AL	Ultra Deep EXBP128D-UD, 208D-UD
Batteries[3]	50 C cells	48 / 96 D cells	96 D cells	128 / 208 D cells
Capacity[1] (Wh)	465	972 / 1944	1944	2592 / 4210
Additional Lifetime @ 256 ksps (days)	28	60 / 120	120	160[2] / 260[2]
Dimensions (D × L, mm)	101 × 692	165 × 526 / 165 × 861	165 × 861	432 mm diameter
Weight in Air (kg)	7.6	16.3 / 32.2	38.2	52.9 / 64.6
Weight in Seawater (kg)	2.5	7.0 / 16.8	22.8	4.3 / 16.0
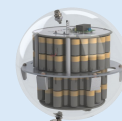
[1] Derated for temperature, to −5° C.   [2] 10 TB of memory would be filled after 152 days.   [3] Multiple battery packs can be daisy-chained together for longer lifetimes.

Custom-engineered and off-the-shelf solutions for surface, sub-surface, and bottom instrument moorings
Whether you're leasing or buying, let us design your ideal mooring

### High Strength Strongbacks
Strong and versatile

A modular inline mooring system that mounts pressure housings around a central stainless steel backbone of high tensile strength. Noise-free universal joints connect multiple assemblies together for any combination of instruments and battery packs. Modules pass through or support various types of flotation.

Bottom Landers
Complete ecosystem observation platforms

Self-contained ocean observatories with your choice of passive and active acoustic sensors, particle velocity sensors, fish tag loggers, oceanographic sensors, transponders, and tandem releases. Designed to minimize flow and movement noise for high quality measurements.
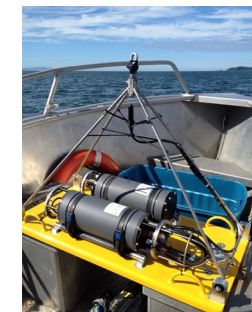
Bottom Plates
**Quiet, compact, easy to deploy**

Combining an anchor weight with a quiet sensor mounting platform, this compact mooring can be deployed from any vessel by crane or by hand. Built-in hydrophone mounts can include protective cages and flow shields. Grated plate option for soft or silty bottoms.

High-Flow Low-Noise Moorings
Reduce flow noise from tides and rivers

Hydrodynamically shaped bottom mooring that reduces flow-induced noise around hydrophones. Additional weight plates for increased stability. Low-noise performance field-proven in the Bay of Fundy, home of the world's highest tides.
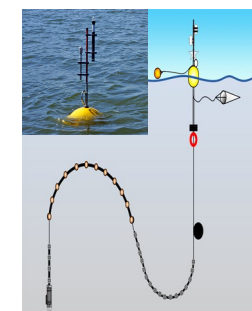
Drifters, Catenary Suspensions, and Profiling Buoys
Field-tested, low-cost drifters

Free drifting surface floats, catenary suspension mountings, and vertical profiling buoys with acoustic payloads for short or long term measurements. Our designs have been field tested and refined for problem free deployments.

Acoustic Releases and Beacons
Successfully retrieve your data

Our designs incorporate acoustic releases and recovery beacons from industry leading manufacturers (such as EdgeTech, Benthos, XEOS Technologies, MetOcean, IOS). Tandem releases offer redundancy for retrieval success. Associated deck sets to locate and control acoustic releases.

Gliders and Other Vehicles
Low-cost long-range solutions

Low-logistic acoustic and oceanographic data collection with surface and underwater robotic vehicles. Successfully integrated into Teledyne Slocum and Kongsberg Seaglider. Other gliders, AUVs, profiling floats, remote surface and underwater vehicles, and towed surface vehicles upon request.

End Bales, Hydrophone Cages, and Flow Shields
Accessories for inline moorings and hydrophone mounts

End bale cylindrical frames attach PVC and Deep AMARs directly to mooring lines and flotation. Extended end bales also act as protective hydrophone cages. Flow shields reduce flow-induced noise around the hydrophone for high quality acoustic data.