



# Acoustic Startle Response Devices

## A-ASR: US3

Our award-winning Acoustic Startle Response (A-ASR) devices are:

- Low/Mid frequency, compliant with NOAA's MMPA certification process
- Highly targeted with a trigger system, with ramp-down that minimises noise pollution
- Simple, reliable and easy to set-up with remote monitoring and management

Your first choice for animal welfare

### What it is

The US3 is a mid frequency acoustic device, which targets and guides away marine predators (seals and sea lions) with randomised computer-generated sounds that avoid habituation.

### Why we developed it

Originally, we developed the US3 in response to traditional acoustic devices which only operate at a narrow frequency single tone output. These traditional devices have been shown to cause habituation and even deafness in seals.

### How it works

- Is deployed on fish farms, outside the netting, and often attached via a rope to the pen
- Has a triggered mechanism that produces a low - mid frequency sound to startle marine predators
- Specifically targets seal and sea lion hearing thresholds
- Delivers a range of randomised frequencies and tonal patterns to avoid habituation issues

### Key features

- Compliant with draft MMPA certification
- Remote monitoring and control portal
- Ramp down, soft start
- Triggering options available
- Modulated frequency and randomised tonal patterns avoid habituation
- Modular, easy to deploy and install
- Battery back-up allows operation of up to 24 hours of use
- Uses a universal AC mains power supply (90-260V)

### Welfare benefits

- Avoids habituation – modulated frequency range, randomised tonal patterns
- Will not affect farmed fish species – outside of their hearing range
- Helps protect fish from predation – which can cause serious injury, mortality, fish escape, increased stress

### Sustainability factors

- Rechargeable batteries
- Trigger ensures the devices are only being used when required

### Ideal set up

- Simple, reliable and easy to set-up with remote monitoring and management
- Often 1 US3 per pen



*"We have worked with Ace Aquatec for a number of years to reduce the impact seals have on our Orkney farms. Their system survived some severe winter storms, and the fact that we can monitor remotely is an added bonus."*

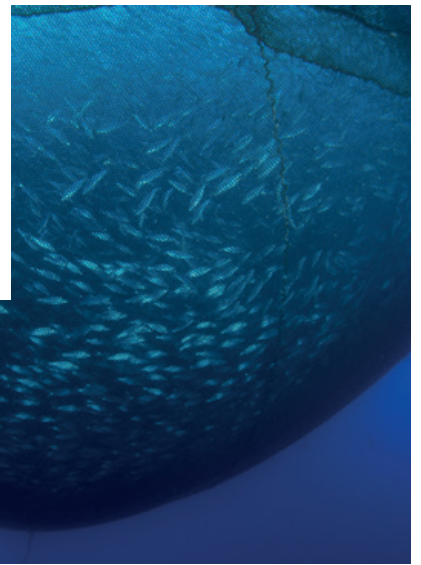
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REGIONAL PRODUCTION MANAGER  
– SHETLAND ISLANDS  
SCOTTISH SEA FARMS



Contact us to find out how we can help you achieve your goals [aceaquatec.com](http://aceaquatec.com)





## US3 Technical Specifications

<b>Power draw</b>	12V deep-cycle non-spillable gel battery Each pod and control box system will draw a maximum of 250W
<b>Input voltage</b>	AC mains input is a universal supply from 90–260 volts (single phase)
<b>Connections</b>	16A 230V Mains Amphenol Ecomate C016
<b>Average current draw</b>	Average power draw = 100-150W Average daily consumption = 2.4kW hours
<b>Effective Range</b>	50m radius (8000 sq m)
<b>UW Extension cable</b>	Polyurethane Jacket, fully submersible
<b>UW Ext. cable length</b>	20m/40m + Made to measure for specific sites
<b>Battery coverage</b>	12/24 hours – varies on scam rate Real Time Clock for data logging
<b>Materials used</b>	Surface Control Box = 316 Stainless Steel Peli = HDPE; QuadBox = POM Pod = Nylon
<b>Depth rating</b>	fully submersible to 100m
<b>User rate</b>	12-144 scrams per hour Avg. tone length = 2.6 seconds
<b>Weight Air/Water</b>	14kg/5kg

<b>Dimensions</b>	Surface Control Box = 150 x 260 x 50mm Peli = 361mm x 289mm x 165mm Pod = 190mm diameter, 520mm height
<b>Frequency range</b>	8-11kHz
<b>Sound level</b>	Average within a transmission: 181dB re 1uPa rms @ 1m
<b>Duty cycle (min/max)</b>	0.9% to 10%
<b>Tone profile</b>	9x short duration, randomised pulses of sound that avoids habituation and hearing loss
<b>Ramp-up/soft-start time</b>	0-60 minutes
<b>Manufacture license certifications</b>	ISO 9001:2005 Low Voltage Directive (LVD) 2006/95/EC – EN61010-1:2001  Electromagnetic Compatibility Directive (EMC) 2004/108/EC EN61000-3-2:2000 EN61000-6-2:2001 EN61000-6-4:2001
<b>Waterproof rating</b>	IP68 (fully submersible) Pelicase = IP67; TopBox = IP68
<b>Fault reporting</b>	Warning light, email, online alerts

For more information, please contact [info@aceaquatec.com](mailto:info@aceaquatec.com)

