

## SONDEC

Acoustic anti-torpedo countermeasure, sonar decoy and seducer



The SONDEC is an advanced torpedo decoy designed to be launched from the NATO standard signal ejector, without the need for any dedicated launch tubes.

It operates as an echo repeater or noise maker and is a powerful tool to disrupt incoming torpedos and provide protection.

The SONDEC is a highly configurable unit with the possibility to add custom decoy target profiles.

While initially designed for use from submarines, the SONDEC can also be adapted for surface vessel protection.



### Features:

- Advanced echo repeater with flexible configuration of target characteristics
- Signal/noise generator and audio playback of any wav file
- Broad frequency range
- High signal output levels
- Separate hydrophone and projector
- State-of-the-art electronics
- User friendly configuration
- Launched from NATO standard signal ejector

### Applications:

- Anti-torpedo countermeasure
- Sonar decoy
- Sonar seducer



Figure 1 Easy access configuration port next to hydrophone and safety pressure valve in nose section

## Operation:

The SONDEC has two main types of operation, **Repeater** and **Noise Maker**:

In **Repeater Mode**, the SONDEC is an acoustic target for an active torpedo or sonar system. It functions as an *Echo Repeater* which receives and analyses a sonar pulse and transmits an echo response. The echo response is modified by advanced techniques to simulate realistic targets. Available techniques are amongst other Time Delay (simulates distance to target), Highlights (simulates realistic target size and target details), Doppler shift (simulates speed of target). These techniques are all configurable by the user in a flexible interface, or in collaboration with Volue, to enable the creation of very specific responses from e.g., one specific submarine. The SONDEC units are then pre-programmed with the desired response parameters for execution when a sonar pulse is received.

In **Noise Maker Mode**, the SONDEC emits powerful noise or pre-programmed audio signals. The playback source is made by a signal/noise generator software or can be from any audio wav file.

The SONDEC can be configured for various combined modes of operation and Volue will typically work with the customer to adapt the system for their intended use.

## Technical data:

### SONDEC (standard edition):

#### Target functionality

- Pulse length: 10 ms – 15 s
- Pulse delay: < 40 ms – 60 s
- Doppler:  $\pm$  90 kts
- Compatible waveforms: Any (CW, LFM, HFM, etc.)
- Target characteristics: Highly flexible, 10+ highlights
- Noise/signal generation: Playback of any wav file, flexible signal/noise generator

#### Signal processing

- Powerful DSP (real-time Digital Signal Processor)
- Digital filter settings
- Digital hydrophone
- High sampling speed and resolution
- Ethernet interface for configuration
- Highly customizable for adding new functionality and customer driven adaptations

#### Operation

- Launched by pressure air
- Automatic activation
- Negative buoyancy: Will sink slowly to bottom
- More than 1 hour operation time
- Self-deletion mode for data security

#### Size

- Fits within a NATO standard signal ejector
- Length 1 m, diameter 0.1 m
- Weight 7.5 kg

#### Export restrictions apply

- Typically, export to NATO navies only. Please consult Volue.



Figure 2 SONDEC after launch where back cover is left in launch tube and transducer is shown. There is a separate hydrophone in the nose

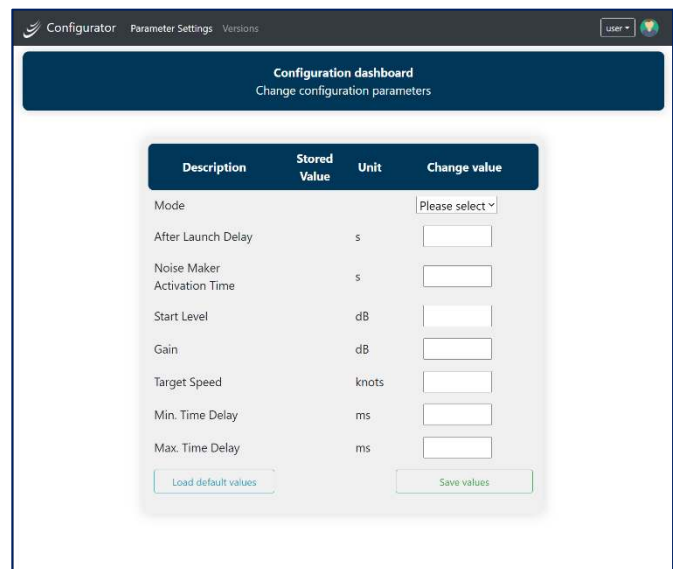


Figure 3 Example of web-based GUI for adaptive configuration testing