SONTAS – Sonar Tester At Site

The standard Sonar Tester At Site (SONTAS™) is an easily transportable sonar tester used for testing a ship's sonar suite in the frequency range 3 kHz – 50 kHz, while the ship is dockside. Volue also delivers High and Low Frequency versions of SONTAS (SONTAS HF and SONTAS LF). The SONTAS LF can be a dockside tester or a winch operated ship based system with static or towed capability.

The SONTAS™ is a well established system which has been in used by various Navies and Calibration sites for more than 20 years. Amongst the most prominent users are the NATO FORACS sites who are responsible for ensuring that the member nations' vessels have calibrated sonar systems.

The system consists of three parts:

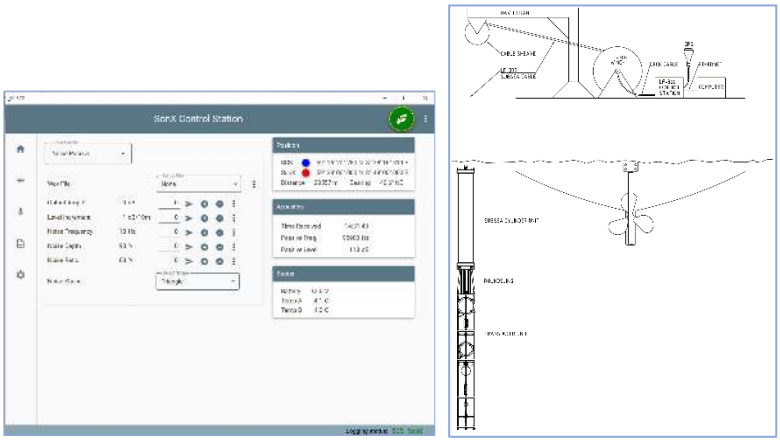
1. SONTAS Control Station (SCS) Pelicase, containing electronics to simulate underwater sonar target.
2. Hydrophones and Transducers
3. PC-based SONTAS Control Station Graphical User Interface (SCS GUI)

Features:

- Modes for both Active and Passive sonar training
- Advanced echo repeater with flexible configuration of target characteristics
- Signal/noise generator and audio playback of any wave-file
- State-of-the-art electronics
- Cost effective
- Proven system by NATO navies

Typical applications

- Sonar Performance tests
  - Transmitter level and frequency
  - Receiver sensitivity
  - Target classification
  - Torpedo noise detection
- Calibration of sonars
  - Distance, speed and size of target
- Realistic sonar operator training



SONTAS Control Station GUI and a version of the SONTAS LF called LF 300.

Operation

SONTAS™ has two main types of operation, ***Active Mode*** and ***Passive Mode***:

In ***Active Mode***, the SONTAS™ is used as a target for an active 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 details) Doppler (simulates speed of target). These techniques are all configurable by the user in a flexible interface to enable the creation of very specific responses from e.g. one specific submarine or torpedo.

The transmitted signal can be sent nearly simultaneously while receiving. The programmable delay is accurate to within 1 m for calibration of sonar range scale (0.3 m for SONTAS HF).

The buoy can also operate as a *Store Repeater*, where a pre-programmed response is executed when a sonar pulse is received (e.g. playback of pre-recorded audio file or change of behavior). Sonar pulse receiving time, frequency and level is logged and reported to the SCS.

In ***Passive Mode***, the SONTAS™ emits noise or signals pre-programmed by use of the signal/noise generator or from any audio wave-file. This can either be transmitted continuously (*Noise Passive*) or at predefined intervals (*Pulse Passive*). Examples of relevant signal/noise signatures are submarine propeller noise, torpedo attacks and surface vessel noise.

All parameters in the General Sonar Processor, GSP, are controlled from a Windows–based application program called SCS GUI. Mode of operation, input filter limits, gain values, signal delay, doppler, target strength and expected pulse length are all settings done from the SCS.

Acoustic measurements are displayed in the SCS GUI and logged to file. This includes time of receiving a sonar pulse, received and transmitted source levels and frequencies and simulated distance to target.

Technical data

SONTAS (Standard edition)

Frequency range

- Main frequency range: 3 kHz – 50 kHz
- Other versions of SONTAS:
  - SONTAS HF: 60 kHz – 550 kHz
  - SONTAS LF: 300 Hz – 50 kHz
  - Different options on request

Source levels (dB rel. 1 µPa @ 1m)

- For Echo/Stored repeat and pulse passive with low duty cycle:
  ≥175 dB, 3 kHz to 50 kHz, with peaks above 180 dB
- For Continuous noise/signal (100% duty signal):
  > 160 dB, 3 kHz to 50 kHz
- Manual adjustable target strength: -60dB - +20dB

Signal processing

- Powerful DSP (real-time Digital Signal Processor)
- Digital filter settings
- Digital hydrophone
- High sampling speed and resolution
- Linux OS

Target functionality

- Pulse length: 5 ms – 15 s
  (SONTAS HF: 0.01 ms – 300 ms)
- Pulse delay: 40 ms – 60 s
  (SONTAS HF: 10 ms – 3 s)
- Doppler: ± 90 kts
- Compatible waveforms: Any (CW, LFM, HFM, etc.)
- Target characteristics: Highly flexible, 10+ highlights
- Manually aspect angle dependent highlights (setting angle of incoming sonar pulse on target to adjust target highlight response)
- Noise/signal generation: Playback of any wave file, flexible signal/noise generator

Operational depth

- Standard: 5 m + 25 m extension
  (Other options available on request)

Power

- 5 hour battery capacity
- 95 – 264 VAC input for powered use

Volue Industrial IoT AS, Bedriftsveien 17, 4841
Arendal, Norway.
Tel.: +47 37 05 95 00.
E-mail: company@scanmatic.no
www.scanmatic.no