



AQS-18A

Mid-frequency Dipping Sonar System



The AQS-18A is a mid-frequency helicopter dipping sonar system designed for active,

long-range search, localization and attack of submarines in both shallow and deep water environments. The sonar detects and maintains contact with underwater targets through a transducer lowered into the water from a hovering helicopter. Active echolocation determines the bearing, range and opening or closing rate of the target relative to the position of the helicopter.

The lightweight AQS-18A dipping sonar features long pulses, high source levels, FM capability, 16-beam signal processing, and a 20 nautical mile coverage range. The AQS-18A system is fully compatible with MIL-STD-1553B databus architectures to facilitate integration with aircraft subsystems and components. Interfaces are also provided to accept input data and provide graphic and data outputs to a sonics data recorder, as well as video for sensor data display.

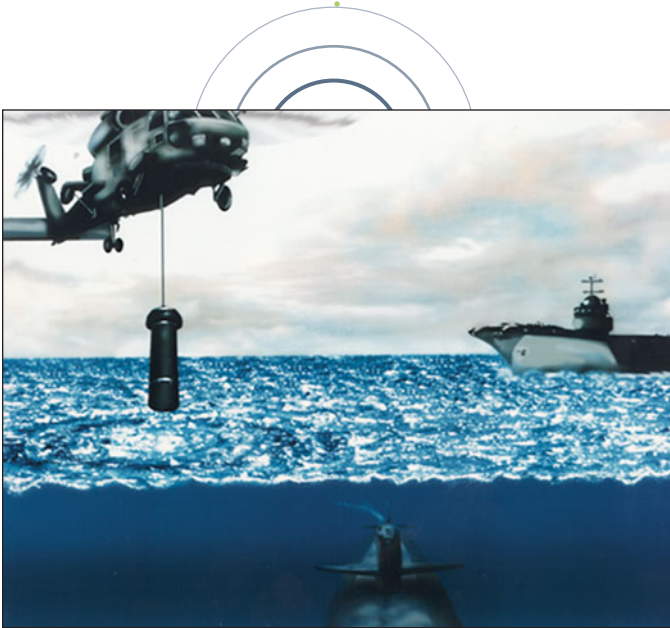
The AQS-18A wet end consists of a small high-density transducer assembly, a 440 m cable and compatible reeling machine and dome control. The dry end consists of the sonar interface unit, cable interface power supply and sonar control unit. The sonar interface unit has powerful signal processing algorithms specifically designed for increased pulse lengths and spare processing space for additional processing features such as computer-aided detection and classification, multi-sensor target fusion, embedded training and performance prediction (based on environmental data collected during past or current missions). The sonar control unit provides simple interface menus for operator command and control of the sonar system.

Optional dry-end subsystems include cable payout indicator, bearing-range indicator and multifunction display.

Features

- Long pulses provide high Doppler resolution for high performance in high-reverberation shallow waters
- FM mode for extremely low Doppler target detection and maximum range resolution
- High source levels for long-range detections
- Standalone or mission system integrated
- Ray trace for optimal depth selection





Specifications

Operating depth	440 m (1444 ft)
Operating frequencies	CW 9.23, 10.003, 10.774 kHz; FMlo 9.485 kHz, FMhi 10.520 kHz
Sound pressure level	217 dB/μPa/yd
Range scales	1, 1.5, 2.5, 5, 7.5, 10, 12.5, 15, 20 nm
Operational modes	Active 3.5, 35 ms rectangular; 0.2, 0.8, 1.6, 3.2, 4 s shaped; 0.625 s FM; passive; UQC
Weight	88.9 kg (transducer assembly); 122.7 kg (dome control, reeling machine, cable and reel); 51.8 kg (sonar interface unit, cable interface power supply and sonar control unit); 264 kg (total)
Optional components	Range, range rate, bearing, operator verification

Multistatic Capabilities

The AQS-18A and HELRAS DS-100 have significant commonality (some 80 percent, excepting the transducers). This enables a navy operating both large and small helicopters to easily combine the operation of both types in a bistatic or multistatic operation.

