

MASS

Mobile Acoustic Scoring System

Automatic Scoring and Assessment

Reduced Mission Costs

Portable

The Mobile Acoustic Scoring System is a waterborne, portable, ship-deployable/recoverable range and training tool. MASS scores and analyzes live-fire surface gunnery exercises, air-to-ground weapons exercises, and other test and evaluation events.

The MASS concept is based on the recognition that a projectile will generate a detectable acoustic event when it impacts water. The characteristics of this type of acoustic event can be detected and accurately located with an in-water array of acoustic sensors and digital signal processing technology.

The MASS system consists of acoustic sensors, which are incorporated into five sensor buoys. When an acoustic event occurs the buoys triangulate the location of the impact. Global-Positioning Satellite (GPS) receivers provide precise positioning data of the buoys and firing platforms. Upon impact detection, the buoys transmit the data to the system controller unit located on the supporting platform. The system controller calculates and displays the projectile's impact location in real-time allowing immediate feedback to the firing platform.



www.aal.net.nz | Tel: +64 9 477 2143

PO Box 305201, Triton Plaza, Albany,
North Shore City 0757
New Zealand

Fax: +64 9 478 4380 | sales@aal.net.nz

System Components

- Vessel base station comprising of standard laptop computer and radio transceiver
- Vessel based radio repeater
- Buoy operating array, typically 5 units
- Each buoy equipped with GPS, radio, hydrophone, radar reflector and flashing warning beacon

Vessel Based Component Specifications

BASE STATION

Personal Computer

Size 30 cm X 23 cm X 7 cm

Features Provides acoustic event location data in numerical and graphical form. Map overlays are optional.

Radio

Size 23 cm X 10 cm X 5 cm plus 10 cm omni-directional antenna.

Features 900 MHz spread spectrum radio, 1 watt RF power. Powered from vessel, 110/220 V

Repeater

Size Approximately 38 cm X 38 cm X 15 cm plus 50 cm omni-directional antenna

Operating Time 48 Hours on internal battery

Weight Approximately 9 kg

Features Mast mounted at a minimum of 15 meters height above water for range. Self contained in environmentally sealed enclosure, +12 V rechargeable battery, 900 MHz spread spectrum radio, 1 watt RF power

Buoy System Specifications

RF range At least 20000 m line of sight, maximum depending on conditions and repeater height, 900 MHz spread spectrum radio, 1 watt RF power

Buoy GPS self location accuracy Less than 10 m 99% of locations
Less than 2 m for 1 standard deviation

Buoy accuracy for reported time of arrival of acoustic event 150 microsec (equivalent to spatial resolution of 23 cm)

Acoustic event detection range At least 5000m in open ocean (low sea state conditions)

Buoy acoustic projector range Maximum 2000 m

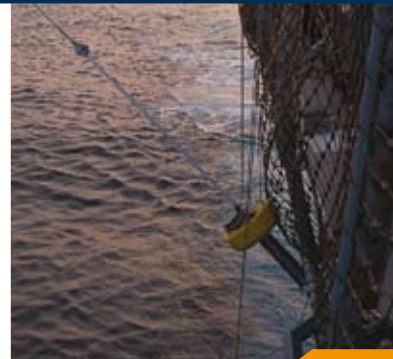
Active operating time 48 hours with fully charged battery pack

Flotation collar Diameter: 61 cm, depth 20 cm
Materials: ionomer foam; colour: yellow

Hull Diameter: 15 cm, length 120 cm
Materials: stainless steel. Weight: 36 kg

Antenna mast Diameter: maximum 5 cm. Length: 390 cm
Materials: marine grade aluminum and stainless steel. Colour: white
Weight: 3.1 kg

Hydrophone Diameter: 14 cm and suspension cable Length: 6.6 m
Materials: piezoelectric ceramic. Colour: black
Weight: 10.5 kg in protective cage



BUOY DEPLOYMENT



TEST FIRE



SYSTEM CONTROLLER DISPLAY



BUOY RECOVERY

