



# Acoustic Systems Trainer–SONAR (Underwater R&D System)



**AST Console and Acoustic Tank Mk IX**

## Partial list of Installations -

- : HafenCity University - Germany
- : Royal Norwegian Navy - Norway
- : Singapore Navy - Singapore
- : Royal Saudi Naval Force - Saudi Arabia
- : CFNES Halifax NS - Canada
- : Military University Maritime - Brazil
- : HMS Collingwood - Portsmouth UK
- : Britannia Royal Naval College - Dartmouth UK
- : University of Plymouth - Plymouth UK
- : Texas A&M University - Galveston USA
- : US Naval Academy - USA



**Active Targets and Accessories**



**Passive Targets**

## SYSTEM FEATURES

- Real-time operation
- Console with integral Sonar Signal Analyzer
- All signals can be monitored
- Menu driven software - (Win OS7-10)
- Print out of captured signals
- High frequency transducers
- Active and Passive targets
- Bench top, acrylic Acoustic Tank
- Variable speed Target Transport System
- Low power, low voltage operation
- MultiChannel software
- Underwater R&D Platform

## TOPIC COVERAGE

- Temperature effect and Speed of Sound
- Active SONAR
- Passive SONAR
- CTFM SONAR
- Transducer frequency response
- Sub-Bottom Profiling (Dissertation)
- Beam Width Measurement
- Beam Formation / Beam Steering
- Doppler
- Target Resolution & stealth demo
- Volume Scattering
- ASW Noise Jamming ~ UW Sound Analysis

## SPECIFICATIONS

### AST Console

- Rack mounting enclosure 48cm with handles
- 110 / 220 / 240 Volts 50/60~ @ 2 amps
- USB2 connector to PC
- 0-12 volts/+5 v/-5/+15v/-15v D.C.
- TX CW @ 200 kHz - CAL/VAR
- PRF @ 714Hz - CAL/VAR
- PW @ 100µsecs - CAL/VAR
- TX PULSE Gated 100µsecs ~ 20 CW cycles
- TX2, TX3 Fixed and Variable Phase O/Ps
- SYNC pulse 5v - positive polarity
- Echo Threshold control

### Sonar Signal Analyzer

- 8,12,14,16 bits Resolution ~ 100Ms/sec
- 2 Channel operation + Math functions
- Storage Oscilloscope 100nsec - 600sec/div
- Averaging 1 - 256
- Phase Measurement
- Spectrum Analyzer .001Hz - 50MHz
- AM/FM/ Modulation ~ Sweep & Burst
- Transient Recorder >30,000 points ~ 750 days
- Voltmeters - 6 programmable
- Arbitrary Waveform Generator 1µHz - 30MHz
- USB 2 port connection

### Acoustic Tank

- Acrylic - 12 and 15mm thickness
- Length 1,200mm Width 600mm Depth 600mm
- Weight 57kg empty >> 1,000kg with water
- External Heaters  
or built in 3kW heater.
- Int/Ext Digital Thermometer
- Stainless steel frame
- Transport System and transducer guide rails
- Magnetic sensors

### Transducers

- 200 kHz resonant frequency
- 10°~20° beam width @ -3dBs
- Conical beam shape
- Epoxy resin encapsulation
- Variable depth
- BNC connector coaxial cable
- Reversible operation
- Orientation - vertical or horizontal
- 3 Transducers supplied
- Delrin mounts

### Target Transport System

- 0-12 Volts speed controlled
- Auto/Manual reversing
- Direct traction drive
- Sliding Target Rails
- Reversing sensors

### Targets

#### Active-

- SS Flat plate 15cm sq
- SS Flat plate 10cm sq
- SS Grill plate 10cm sq
- Acrylic Flat Plate 15cm sq
- Sphere

#### Passive-

- Variable speed passive-
- Three bladed prop
- Four bladed prop
- Five bladed prop
- Vari-speed Motor ~Gearbox

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