

# **c4i** **communication**

**EXPERIENCE THE DIFFERENCE**  
**YOUR SECURITY & SAFETY PRODUCTS**

## **PORTABLE ACOUSTIC RANGE (PAR)**



## >> System Overview

Passive sonar systems are able to detect submarines and ships based on their radiated noise. C4I's Portable Acoustic Range (PAR) accurately measures this radiated noise, thereby enabling navies and shipyards to record the acoustic signatures of their own vessels and monitor and control their noise.

C4I's PAR system provides an end-to-end solution to acoustic ranging. The PAR continuously tracks the measured submarine/ship and records its noise. It then transmits the data wirelessly to a remote control unit located on board a Measurement Ship. This unit supports real time radiated noise processing, analysis and display.

The PAR system includes a comprehensive platform database for management of the measurement results. The PAR also provides playback and post analysis capabilities.

The PAR flexible design supports rapid deployment at any sea location and water depth and saves the maintenance costs involved in operating a fixed acoustic range. The PAR is available in both free drifting and moored configurations.

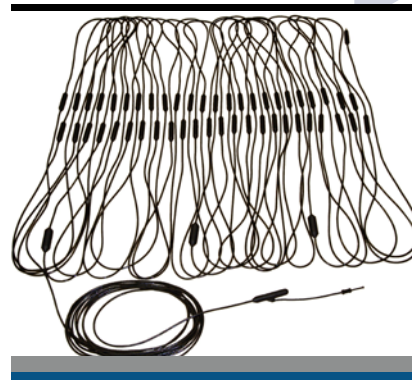
C4I's Portable Acoustic Range system is the cost-effective solution for measuring the radiated noise of all naval platforms. The system is already in operation by four navies and shipyards.

## >> Types of Arrays

The system may be supplied with the following array types:



Oil filled array



Solid Array

## Main System Components

Off Line Analysis Computer



Array Cable

Ship Remote Control Unit

Pinger



Surface Tracking Unit



Hydrophones Array



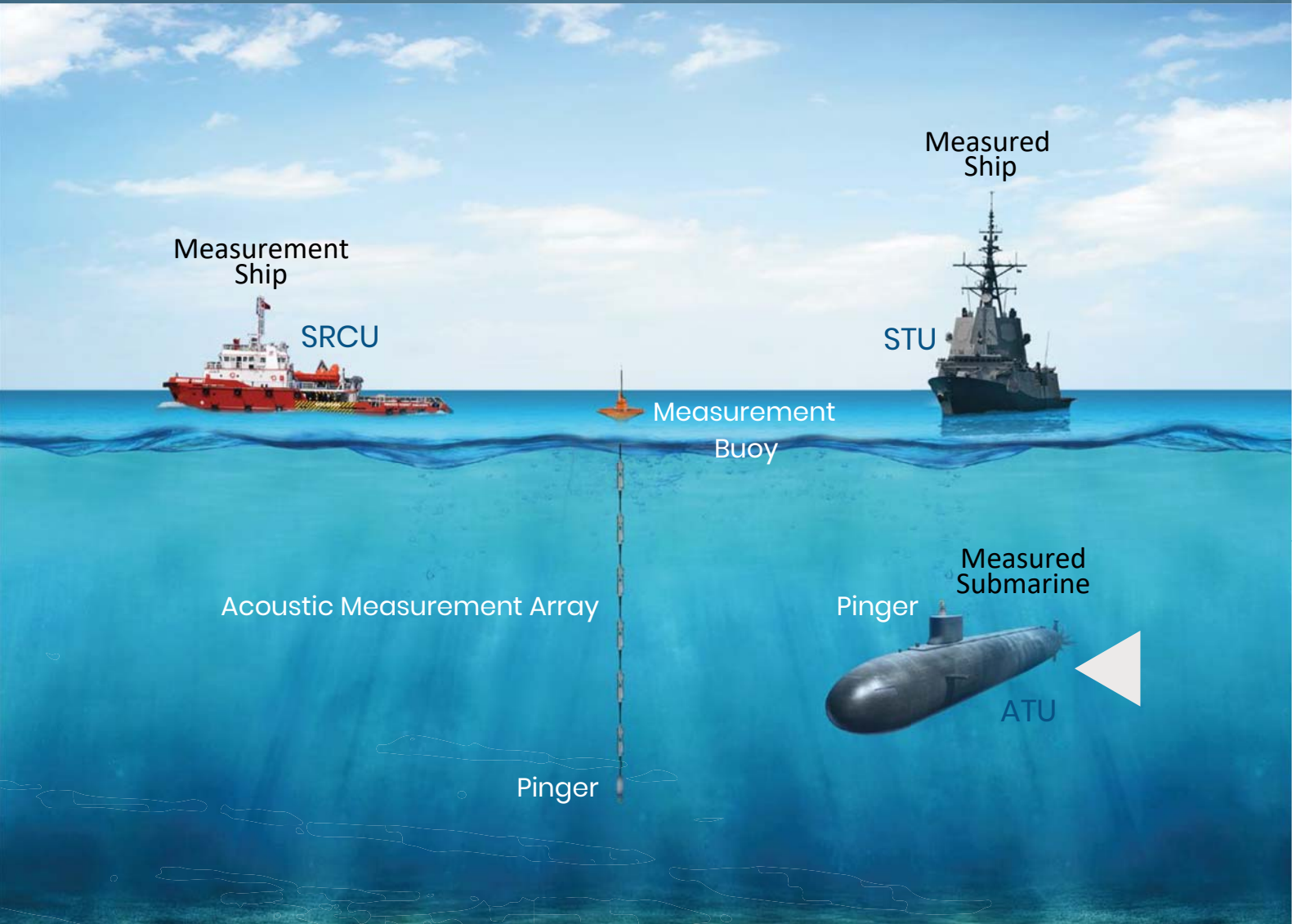
Array Tracking Unit



Measurement Buoy



## >> System Deployment



**C4I'sPAR**

**THE COST EFFECTIVE WAY TO MEASURE  
THE RADIATED NOISE OF YOUR FLEET!**

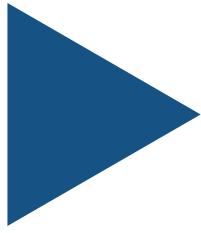


## >> Technical Specifications



<p><b>Measurement Buoy Tasks</b></p> <ul style="list-style-type: none"> <li>• Receives the array's acoustic signals</li> <li>• Stores acoustic signals in mass storage device</li> <li>• Processes acoustic signals</li> <li>• Sends processed data and status data to SRCU via data link</li> <li>• Receives control data from SRCU via data link</li> <li>• Receives submarine pinger pulses and calculates distance from array to submarine</li> <li>• Self test</li> </ul>	<p><b>Ship Remote Control Unit (SRCU)</b></p> <ul style="list-style-type: none"> <li>• Remote control of the buoy during measurement</li> <li>• Remote monitoring of measured signals and buoy status</li> <li>• Performs navigation calculation of the measured platform</li> <li>• Raw data retrieval from buoy and transfer to the Off-Line Analysis Computer (OLAC)</li> <li>• Post Processing of raw data</li> </ul>
<p><b>Measurement Array</b></p> <ul style="list-style-type: none"> <li>• Line array with multiple measurement hydrophones</li> </ul> <p>Additional Elements:</p> <ul style="list-style-type: none"> <li>• Tracking hydrophone (for receiving submarine pinger signal)</li> <li>• Test transducer</li> <li>• Pressure sensor (measures array depth and estimates array tilt angle)</li> <li>• Temperature Sensor</li> </ul>	<p><b>Array Tracking Unit (ATU)</b></p> <ul style="list-style-type: none"> <li>• Installed on board the measured submarine</li> <li>• Comprised of submarine unit and array pinger</li> <li>• Measures distance to the array pinger and calculates submarine location relative to the array to aid navigation along the planned track and avoid collision with the array</li> </ul>
<p><b>Acoustic Signal Processing</b></p> <ul style="list-style-type: none"> <li>• Provides all relevant methods of acoustic signal processing, analysis and display:</li> <li>• BB, NB, DEMON (Spectrum and Waterfall)</li> <li>• Time Domain</li> <li>• Audio.</li> <li>• Up to 8 simultaneous processing channels, each with different parameters</li> </ul>	<p><b>Surface Tracking Unit (STU)</b></p> <ul style="list-style-type: none"> <li>• Used when surface ship radiated noise is measured</li> <li>• Mounted in the surface ship - transmits to the ship's accurate location (GPS) to the SRCU</li> </ul>
<p><b>Acoustic Signature Analysis Cursors</b></p> <ul style="list-style-type: none"> <li>• Different types of Harmonic Cursors</li> <li>• Doppler Cursor</li> <li>• Ratio Cursor</li> </ul>	<p><b>Communication</b></p> <ul style="list-style-type: none"> <li>• Wireless LAN Data Link between measurement buoy and measurement ship</li> </ul> <p><b>MAR Frequency range</b></p> <ul style="list-style-type: none"> <li>• 10 Hz - 50,000 Hz.</li> </ul>





LEARN MORE: [c4icommunication.com](http://c4icommunication.com)

FOR MORE INFORMATION: [contact@c4icommunication.com](mailto:contact@c4icommunication.com) or +1 (302).981.1340