

**CAPITAL SHIP CAPABILITY
FOR SMALL WATER CRAFT**



SHARPTM Eye SCV

SMALL CRAFT VARIANT

SITUATIONAL INTELLIGENCE, THE WORLD OVER

SEE WHAT YOU ARE MISSING...

SharpEye™ SCV is an advanced surveillance radar sensor that fills the capability gap between leisure boat radars and naval tactical radar systems. SharpEye™ technology is specifically designed to detect targets earlier and at longer ranges than conventional small boat radars, particularly in adverse weather conditions. The SharpEye™ solid state transceiver uses pulse correlation and Doppler processing to filter out clutter whilst retaining desired radar contacts.

SharpEye™ SCV is the compact Small Craft Variant of the larger shipborne SharpEye™ surveillance and navigation open array system, which is already in use with over 25 navies and coastguard forces around the world.



Whether fitted to a 4 metre RHIB, a high speed interceptor or a 35 metre patrol boat, the radome housed navigation and surveillance sensor is designed for government operated craft with weight and space constraints but which still require enhanced radar detection and tactical features.

The system is IP67 rated and designed to withstand shock to military standards.

KEY FEATURES

- Long range surveillance up to an instrumented range of 24NM.
- Superior early detection of small targets even in the harshest weather conditions.
- Pulse compression technology with Doppler processing.
- Low radar signature on ESM equipment.
- Tactical features including a high speed MARPA with rapid acquisition and tracking.
- Networked system allowing multiple displays to independently operate from one SCV transceiver.
- MIL Spec design and IP67 rating for use on small fast craft.
- Available as a complete system with a SeaCross display or as an SCV sensor only (e.g. USV use).

TACTICAL FEATURES

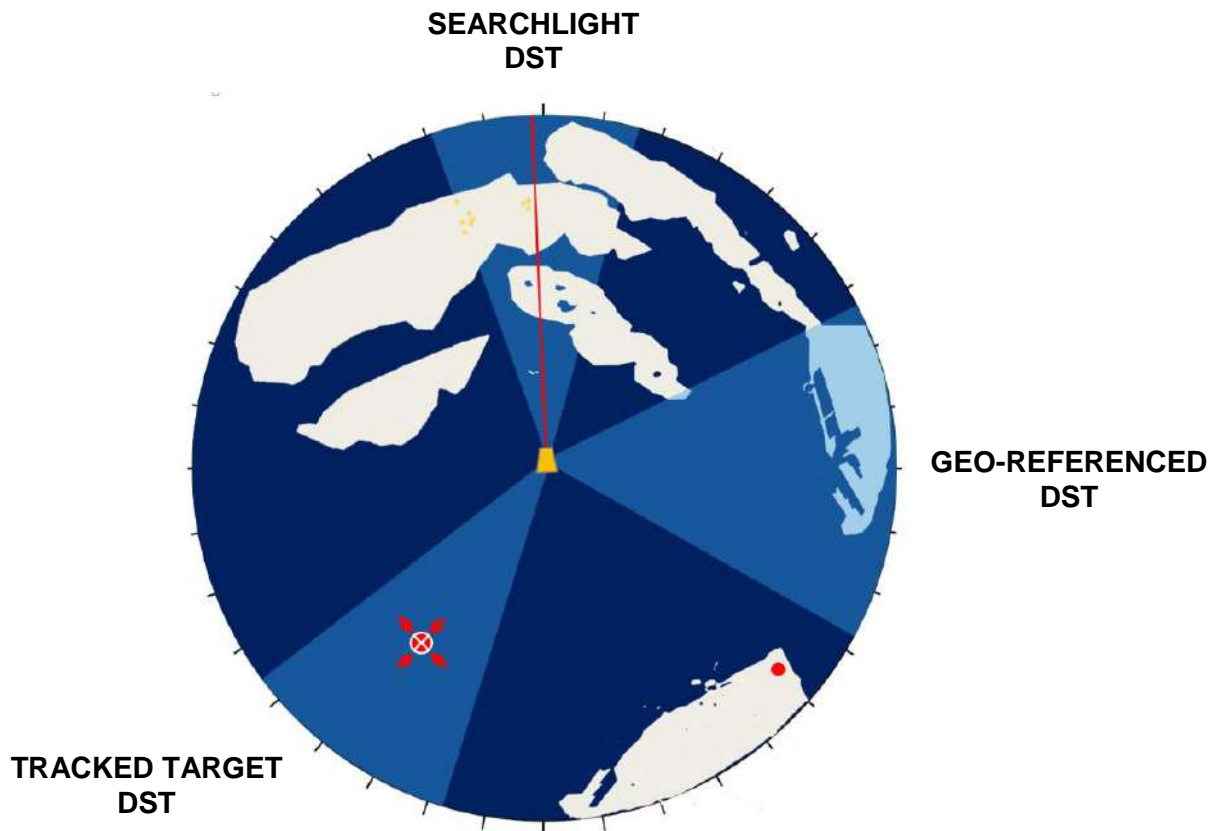
Kelvin Hughes are able to supply SCV with the SeaCross display and MARPA processor, which is a leading navigation system for small craft. This unique technology combination provides the user with a range of very useful tactical features.

SharpEye™ is able to transmit in specific and variable horizontal sectors, making it difficult for others to detect its transmissions outside of these sectors. The DST (Dynamic Sector Transmission) facility allows three different sector transmission modes to be applied, with any 2 capable of being used simultaneously on the screen to help provide covert surveillance.

These three modes are:

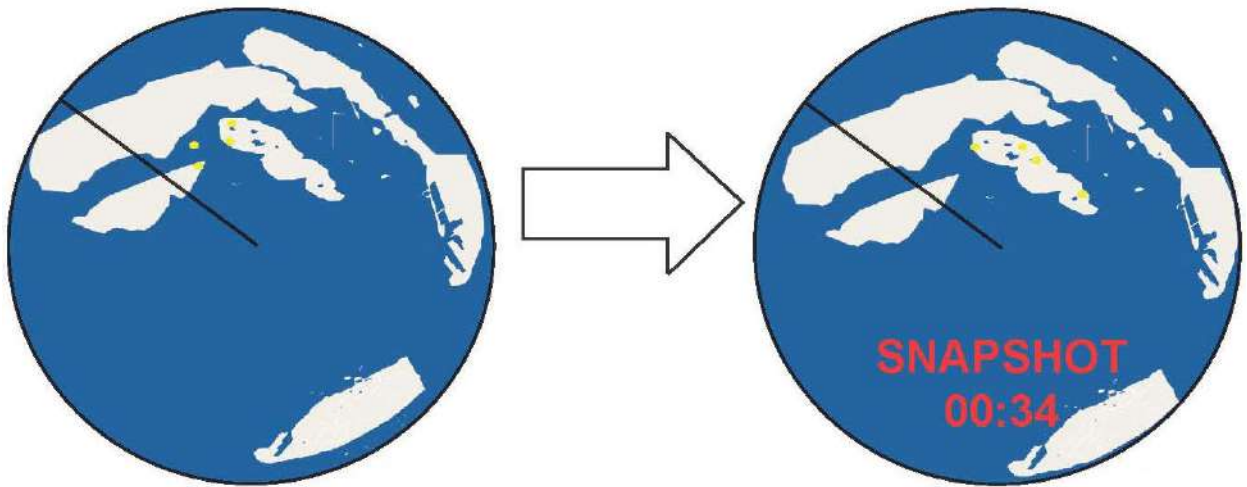
- Searchlight DST provides a probing beam from the radar focusing on the current heading of the boat.
- Geo-Referenced DST focusing on a specific geographical coastline area (harbour, island etc.) to give early warning of a threat.
- Tracked Target DST focusing on a tracked MARPA target, to update on the movements of a suspect vessel or other floating radar target of interest.

All three modes are dynamic in that they automatically take into account the movement of the SharpEye™ SCV equipped boat. The Searchlight DST stays relative to the boats head while the other two sectors will automatically move in azimuth as the boat manoeuvres, keeping a radar lock on the respective areas of interest. The width of any sector can be selected or altered by the operator at any time.



TACTICAL FEATURES

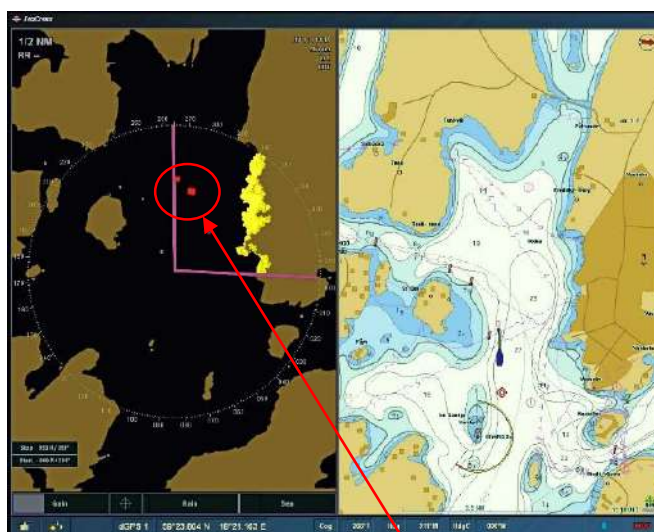
MTC – MOMENTARY TRANSMIT COMMAND



The MTC (Momentary Transmit Command) allows a few scans of the antenna, which is just enough to update the radar plot and provide a “snapshot” image for prolonged “off-air” surveillance, whilst reducing the probability of intercept. For safety, the user is warned that the image is effectively frozen and an elapsed timer shows the age of the snapshot. MTC can be re-activated when the operator feels it is safe to do so or if the threat diminishes the antenna can be set to run continuously.

CONTACT RED

Radar echoes are continuously cross referenced to embedded chart information within the system. Any object appearing on radar but not present on the chart as a buoy, coastline feature or island is immediately highlighted as a red paint. In this way, any suspicious contact, be it another boat coming into range or a surfacing object will immediately be shown as a red echo on the display.



RED ECHOES

Radar returns are always pre-processed by the Doppler processing in the SharpEye™ transceiver which ensures that a clear and clutter free image is passed down to the display for further processing. This double processing ensures that even the most difficult to see targets will be detected. The SCV comes into its own when detecting small stressing targets in conditions of high rain or sea clutter. This is when they might be missed or at best considered intermittent by leisure boat radars, which are typically designed to only see larger vessels or objects at very short ranges.

MISSION READINESS

SharpEye™ SCV provides small craft with the “big picture” by combining enhanced clutter-free radar video with intelligent charting and real time information from all relevant boat sensors.

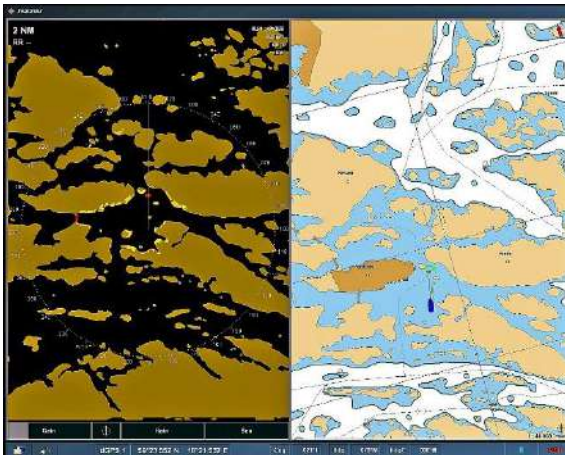
Designed for quick intuitive operation at high speed, one rotary joystick and one track ball controller allow the operator to interact with boat information screens, allowing the boats crew to maintain complete situational awareness. Screen layouts can be designed by the user in minutes and saved as templates for recall at any time. This allows commanding officers the ability to dictate standardised templates for different operational phases.

The user defined “window” style layout means the possibilities are virtually endless.



SURVEILLANCE

Using two Dynamic Sector Transmissions to monitor both a harbour entrance and a channel between two islands, the boat can sit motionless in the dark, watching and waiting. NVG can be worn with these screens in use and it's possible to overlay camera images from thermal cameras as an additional window on the screen.



COMBAT

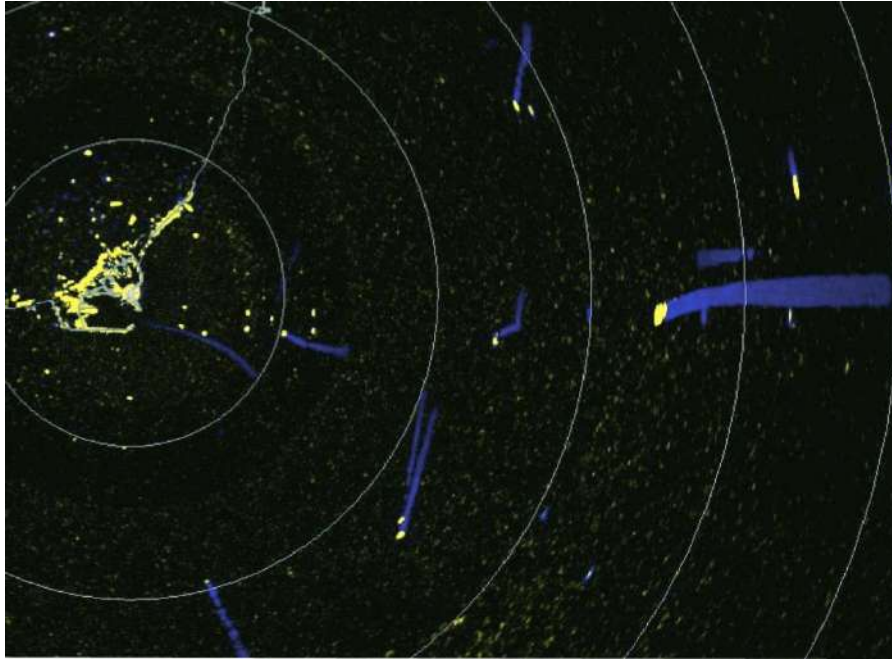
Speeding towards a suspicious contact highlighted by the “Contact Red” tactical feature, which show a detected unknown boat target to the North. The full electronic chart is shown alongside the simplified radar/chart overlay, providing both clear indication of radar contacts whilst maintaining safe navigation.



INTERCEPTION

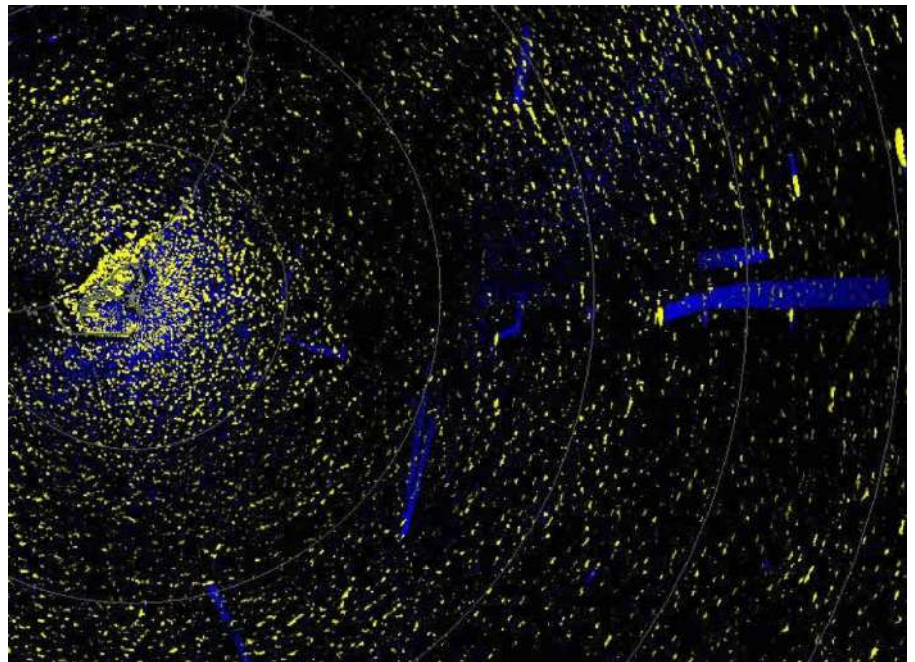
The intercept facility uses tracked MARPA target information to predict a point of intercept. Other relevant information is also provided on screen, to make this the ideal board and search tool.

CLUTTER FREE



**SharpEye™
Doppler Radar**

**Non-Doppler
Radar**



These two images were captured simultaneously in a rain storm showing a harbour approach.

The clearer picture labelled SharpEye™ Doppler Radar is generated from within the transceiver. It is the combination of clever waveform design and signal processing that makes this possible.

The Non-Doppler radar is struggling to display the buoys on the harbour approach and many of the radar contacts, due to the rain clutter from the passing storm. SharpEye™ however is providing a clear picture showing all the radar targets as though it were a clear and calm day.

The operator of the non-Doppler radar has to set the rain and sea clutter controls to optimum in an effort to get the best picture. The SharpEye™ operator has set both to zero, effectively switching off the clutter gain assistance.

TACTICAL INTERFACES



SEACROSS DISPLAY SIZES

15" standard 1024 x 768 (XGA)

19" option 1024 x 768 (XGA)

Fully waterproof and shock resistant and designed to mil standards.

The tactical display can be fitted in an enclosed or open cockpit.



NVIS OPTION

This radar display option is designed specifically for use with Night Vision and Information Systems (NVIS) and meets MIL-STD-3009

A dual backlight is used which also allows perfect daylight viewing, even in bright sunshine

Photograph is reproduced courtesy of SAVOX Communications.



DUAL 'CLICK AND GO' TRACK BALL AND JOYSTICK PADDLE SYSTEM

- Intuitive control.
- Tracking Force Adjustable in 4 steps.
- Built-in Dimmer.

REMOVABLE MISSION DATA STORAGE POD

Contains defined mission data for the radar and display including screen templates, routes and waypoints.

- No permanent data storage left on-board for improved OPSEC (Operations Security).
- Pod disposable if mission compromised (does not float).
- Allows (off-line) mission preparation to facilitate rapid pre-deployment planning.
- Clone or transfer data between assets facilitating post mission reviews and data backup.

FLEXIBLE, COVERT AND DISCREET

FULLY INTEGRATED RADOME

The SCV Radome contains the SharpEye™ transceiver and an integral GPS. The standard dome is black in colour and contains no manufacturer trade names to preserve anonymity.



Specialist Mission Options:

- Colour / camouflage stretch cover options.
- Removable Ballistic Protection (resistant to small arms fire).

LOW POWER MODE & USER SELECTABLE FREQUENCIES

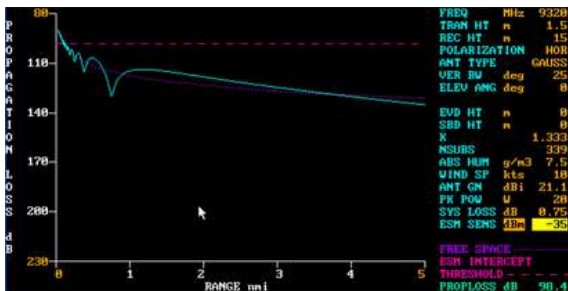
In addition to the tactical features already described, the SCV can also operate on different frequencies and at a reduced power to further conceal its presence and avoid unwanted attention. The power amplifier utilises transistors configured to provide graceful degradation and continued reduced power operation in the event of power amplifier failure. As the solid state transceiver needs no warm up period, the transmit mode can be switched off to satisfy EMCON conditions and will be ready for use again within 5 seconds of being switched back on.

- Low power mode.
- Sector transmission mode (DST).
- Intermittent transmission (MTC).
- User selectable frequencies within the X-Band frequency range.

LOW ESM SIGNATURE

Sharpeye™ SCV has a Reduced Probability of Intercept (RPI) due to its low ESM signature.

Combined with a 50W output transmission power and a unique patented three pulse waveform, radiated energy is kept to a minimum.



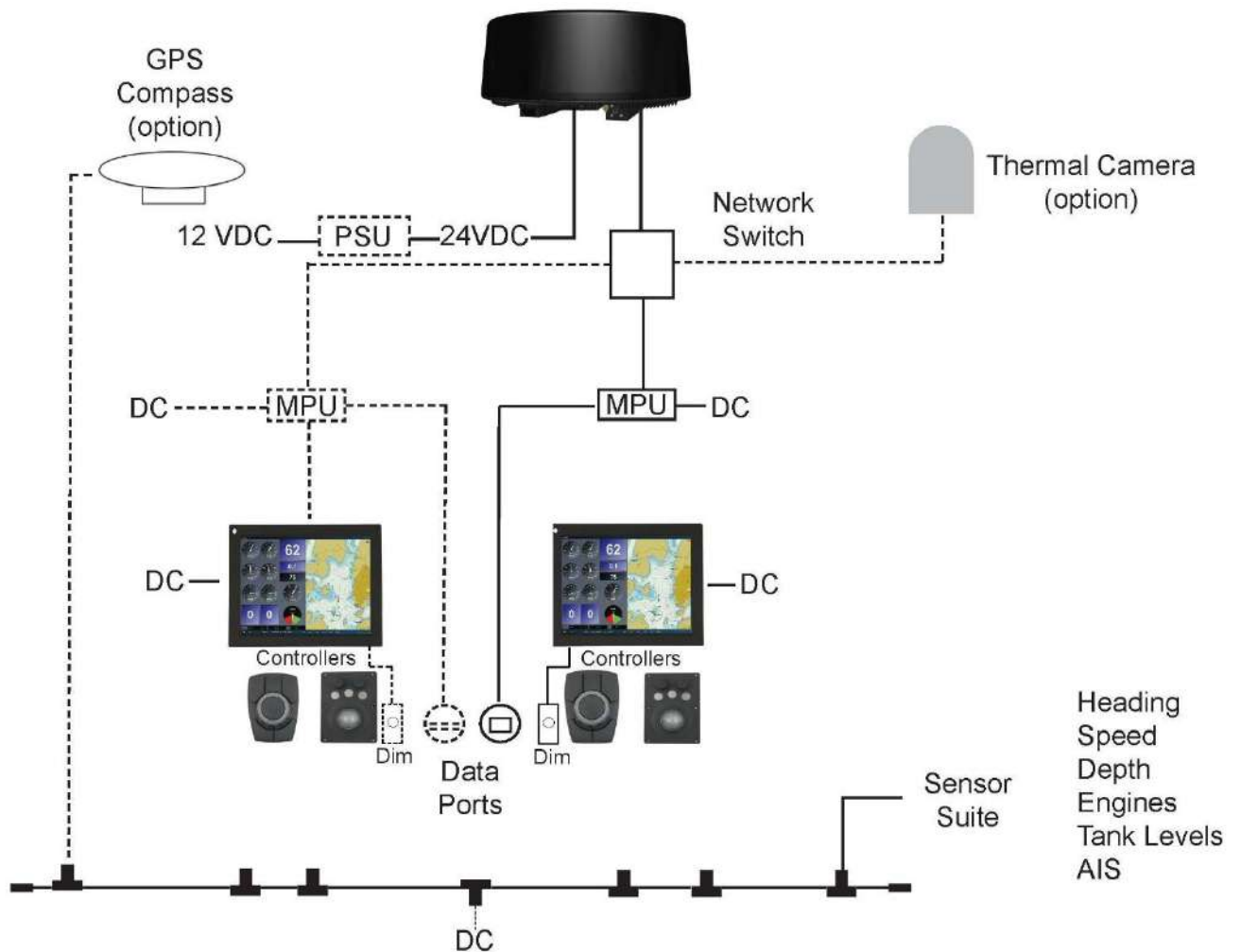
Detection performance is enhanced through pulse compression and Doppler processing.

This approach to radar design ensures the probability of intercept of the radar transmission is minimised without compromising the radar sensor detection performance.

ONE SENSOR - MULTIPLE USERS

SHARPEYE™ SCV SURVEILLANCE SENSOR

- 585 mm (24") Radome enclosed SharpEye™ solid state transceiver and antenna.
- Integrated GPS.
- Immediate Availability within 5 seconds - No lengthy Warm Up.
- Power Amplifier Dual Redundancy.
- 50W peak power.
- Doppler processing (differentiates between clutter, fixed targets & moving targets).
- Patented pulse sequence.
- Fully coherent.



TYPICAL KELVIN HUGHES – SEACROSS SYSTEM LAYOUT

A second optional display for an additional command position is defined with dotted lines.