



# ITT

## SMART-S Mk2

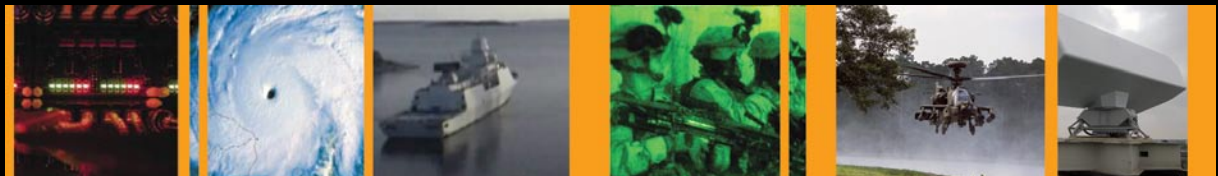
Long range 3D surface and air

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Excellent performance in the Littoral environment

Multibeam radar with Solid State Transmitter/Receiver (T/R) arrays

Integrated Identification Friend or Foe (IFF)



*Engineered for life*

# SMART-S Mk2

The SMART-S Mk2 is an Off-The-Shelf (OTS), 3D, long range, S-band radar with integrated Identification Friend or Foe (IFF). A multibeam radar with a modularized, solid state transmit/receive array, the SMART-S Mk2 is designed around standard interfaces, and its fully digital waveform generation and processing are hosted on scalable commodity OTS signal processing equipment.



The SMART-S Mk2 design is ideal for a small (single radar) ship operating in the littoral environment and is produced with advanced 21st century radar technology; capable of deriving and displaying quantitative, militarily actionable information to support littoral-zone warfare missions—from deep to shallow water—detection, fast accurate location, and characterization of even stealthy or intrinsically low-contrast targets.

The SMART-S Mk2 has a highly parallel architecture and is built with solid state components. This architecture allows for graceful degradation; the need to replace antenna LRUs at sea is greatly reduced, replacement can be postponed until the ship is in the harbor.

#### Low Life Cycle Support Costs

- MTTR < 30 minutes, MTBCF > 1940 hours
- No dedicated radar operator required
- U.S. based production and logistics support

#### Simple Installation & Integration

##### Installation:

- No waveguide required
- Flexibility of equipment location: 50 m/164 feet between antenna and radar processor

##### Integration:

- OMG—Object Management Group compliant middleware
- Adaptation of waveforms, scan patterns and beam positioning (without altering hardware)
- Previously integrated with multiple IFF systems



## ITT

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#### Functional Capabilities

##### Supports the following Naval missions:

- 3D Air Surveillance with Fast Target alerts
- Surface Surveillance
- Surface Gun Fire Support
- Jammer Surveillance
- IFF Interrogation Support

#### Performance Parameters

- Maximum Instrumented range: 250 km/155 miles
- Maximum elevation coverage: 70 degrees
- Minimum Range : 150 meters/492 feet
- Tracking 3D capacity (Air+Surface): 500 targets
- Surface Fire Control Windows: 3
- Elevation accuracy: < 10 mrad/< .56 degrees
- Bearing accuracy: < 5 mrad/< .28 degrees
- Range accuracy: < 20 meters/< 65 feet
- Detection performance: Small missile ~ 50 km/31 miles Maritime Patrol Aircraft (MPA) ~ 200 km/124 miles

#### Technical Data

##### System:

- Two operating modes: medium range up to 150 km/93 miles at 27 RPM and long range up to 250 km/155 miles at 13.5 RPM
- Fully automatic detection and tracking in both modes
- Dedicated ECCM techniques

##### Antenna:

- Antenna beam width (bearing): approx. 2 degrees
- Antenna rotation speed: 13.5/27 RPM
- Stabilization: electronic
- Very low sidelobes

##### Transmitter:

- Frequency band: S-band
- Type: Solid State transmit modules integrated in Antenna

##### Processing:

- Digital beamforming, resulting in 12 simultaneous receive beams
- Multipath suppression using a beam under the horizon
- Digital pulse compression
- Doppler filtering based on FIR techniques
- Advanced CFAR techniques
- Multiple hypothesis tracking based on multiple target models
- Classification support

##### Environmental:

- Built to sustain underwater explosions/shocks (tested to UK Std BR-8470, similar to Mil-Std 901D, Class A)
- Operating temperature (above deck equipment): -30°C to +49°C, cyclic

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