I-MASTER™ GMTI/SAR Radar

The World’s leading Lightweight Tactical Surveillance GMTI/SAR Radar

Technical Specification

- **Frequency**: Ku Band
- **Weight**: 30kg
- **Range**: >27km [35km Resolution dependant]
- **Dimensions**: Diameter 370mm Height 470mm
- **Scan Coverage**: 360 Degree azimuth rotation
- **Elevation Tilt**: +10 degrees / -55 degrees
- **Power Consumption**: <600W with various low power modes
- **Electrical Interface**: 28V DC Power & Ethernet
- **GMTI Modes**: 360 degree Surveillance, Spotlight, Sector Scan and Tracker
- **GMTI Performance**: Detection and accurate location of fast and slow moving targets including foot traffic
- **SAR Modes**: Strip Map and Spotlight
- **SAR Resolution**: 3m to <30cm
- **Coherent Change Detection**: Available

Options

Different configurations of I-MASTER can be offered to accommodate speed, size, weight and power constraints of various platforms and operational applications. The advanced Maritime Modes provide detection of a wide range of maritime targets against complex/mixed clutter in coastal and estuarine regions.

I-MASTER can be provided with its own optimised workstation, which provides intuitive radar control and advanced exploitation features along with the ability to integrate other sensors such as EO/IR systems and to provide data link interfaces.
I-MASTER is a compact lightweight, high performance radar. It provides world-leading Ground Moving Target Indication (GMTI) and Synthetic Aperture Radar (SAR) performance for all-weather surveillance, detection, and recognition of targets over large areas at long stand-off ranges.

I-MASTER provides high fidelity imagery for classification and position of various targets, and can accurately detect and locate moving targets (from fast moving vehicles to individuals at walking pace) in all weather conditions during day and night.

**Multiplatform**
- Light aircraft
- Rotary wing
- UAV

Weighing only 30kg, I-MASTER has been designed for easy installation on light fixed wing aircraft and helicopters as well as unmanned air vehicles (UAV’s). I-MASTER’s plug & play integration capability has the same footprint as a standard 15” EO/IR sensor turret. It can easily replace, or on a dual payload carrying platform compliment, an EO/IR sensor.

Whether installed alone or to compliment an EO/IR sensor, I-MASTER greatly improves the effectiveness of any surveillance scenario.

**Operating modes**

- **GMTI**
  - **SPOTLIGHT MODE** Maintaining constant focus on a specific area of interest
  - **SECTOR SCANNING** High resolution ground mapping and target detection
  - **360 SCANNING** Enables wide area terrain mapping and target detection

- **SAR**
  - **SPOTLIGHT SAR MODE** Enables high resolution ground imaging
  - **STRIP-MAP SAR MODE** Enables wide area terrain mapping and target detection

**Lightweight and versatile**

I-MASTER offers the Mission Commander great versatility and utility. It can be deployed to perform the following roles:

- **Border Protection**
- **Battle Damage Assessment**
- **Prevention of Smuggling and Piracy**
- **Deforestation Patrolling**
- **Collection of Forensic Timestamped Evidence**
- **Oil and Gas Field Protection in the littoral**
- **All Weather Surveillance**

The ability to image at long stand-off ranges, compared to a standards EO/IR sensor, enables covert surveillance and improves platform survivability by distancing the air vehicle from a potential threat.

I-MASTER is a self-contained low mass, low power consumption UFL. The processed data output can be exploited in the air or on ground via a suitable datalink.

**GMTI Ground Moving Target Indicator**

I-MASTER incorporates a world leading Ground Moving Target Indicator (GMTI) to show the Mission Commander any moving objects in the radar’s field of view. I-MASTER is able to track tactically important targets, such as very low speed, low radar cross-section foot patrols through to fast moving targets such as speeding vehicles and under flying aircraft.

I-MASTER’s Scanning GMTI mode is used by the operator to search for signs of activity across a wide area or to build up a general picture of “pattern of life” in an area.

I-MASTER’s Spotlight GMTI mode would typically be used under the following conditions:

- Activity has been detected by the Scanning GMTI mode and the operator wishes to confirm the activity or maintain closer surveillance
- The operator wishes to maintain surveillance of a specific location – a check point or known area of activity

Multiple GMTI tracks are displayed instantly on the operator’s workstation and can be overlaid on a Digital Map, Satellite or SAR Imagery.

With its wide area coverage surveying for moving targets, the probability of detecting potential threats is significantly increased over a stand alone EO/IR sensor or human spotter. GMTI can be used to cue EO/IR sensors to observe targets in more detail, and ensure surveillance continuity. Should the target become obscured by cloud, fog or dust I-MASTER will continue to track accurately.

**SAR Synthetic Aperture Radar**

I-MASTER provides real-time, high resolution and accurate geo-located Ground Mapping

- **Wide area coverage** – the radar’s SAR mode is capable of surveying an area of 800km2 per-hour
- **All Weather** – I-MASTER enables target detection in conditions of cloud, rain, fog/mist, smoke and sand storms that reduce or disable an EO/IR sensor

I-MASTER’s Strip-map SAR mode would be used for wide area detection of stationary targets such as vehicles or encampments. Alternatively, the mode may be used for terrain mapping purposes.

I-MASTER’s Spotlight SAR mode would be used to obtain higher resolution imagery of specific targets for classification purposes.

**CCD Coherent Change Detection**

By comparing SAR images of the same area taken at different times (whether hours or days apart), it is possible to automatically highlight any changes that have taken place, such as new encampments.

I-MASTER detects extremely subtle changes. Unique THALESCCD algorithms enable Historic tracks or imprints to be displayed on the image that are not visible to the eye or alternative sensors such as an EO/IR.

**Multiple Viewing Options**

- **High Resolution SAR image compared with real photography**
- **Coherent Change Detection shows vehicle tracks**
- **Second pass shows activity change**
- **First pass SAR image of field**

**Movement Detection**

- **Multiple GMTI tracks are displayed instantly on the operator’s workstation**
- **Pattern of Life Monitoring**
- **Illegal Mineral Extraction Patrols**
- **De-Forestation Patrols**
- **Search and Rescue**
- **Battle Damage Assessment**
- **Counter Narcotics**
- **Prevention of Smuggling and Piracy**
- **Pollution Control And Monitoring**
- **Collection of Forensic Timestamped Evidence**
- **Oil And Gas Field Protection in the littoral**
- **All Weather Surveillance**