

I-MASTER™ GMTI/SAR Radar

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



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 positioning 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.

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.

Multiplatform



Light aircraft



Rotary wing



UAV

Operating modes

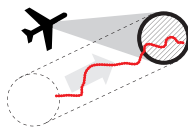
GMTI



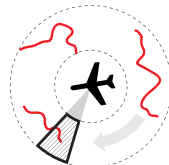
SPOTLIGHT MODE
Maintaining continued focus of movements over a specific area of interest



SECTOR SCANNING
Long range movement detection over a chosen sector

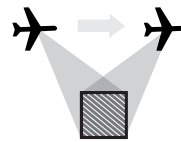


TRACKING
Focusing on a specified ground path, independent to the flight path of the aircraft

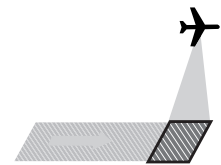


360 SCANNING
I-Master provides GMTI 360 degrees for optimal wide area coverage

SAR



SPOTLIGHT SAR MODE
High resolution ground imaging enables target classification



STRIPMAP 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
- Wide Area Surveillance
- Land Asset Protection
- Disaster Assessment
- Counter Narcotics
- Battle Damage Assessment
- Search and Rescue
- De-Forrestation Patrols
- Illegal Mineral Extraction Patrols
- Pattern of Life Monitoring
- 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

The ability to image at long stand-off ranges, compared to a stand-alone 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 LRU, 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 radars 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 choke 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 in excess 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.

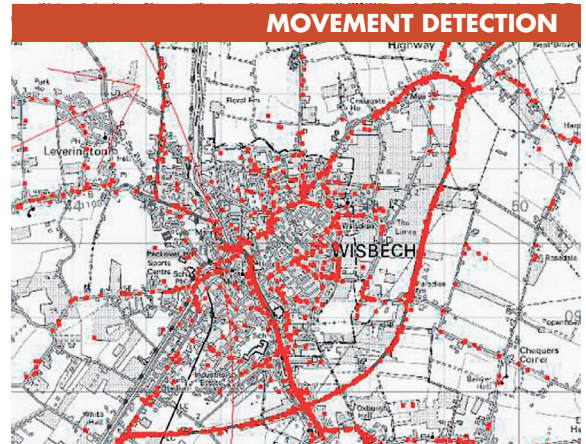
CCD Coherent Change Detection

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 THALES CCD 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.



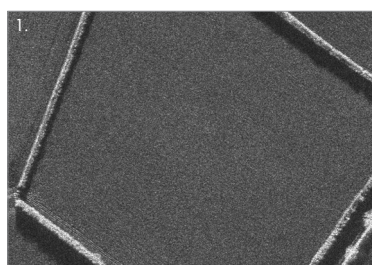
GMTI tracks can be overlaid on Digital Maps, Satellite or SAR Imagery



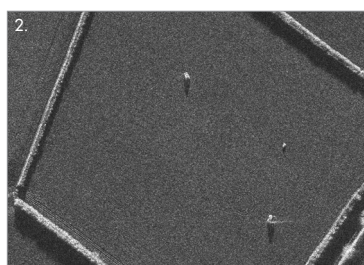
Multiple GMTI tracks are displayed instantly on the operator's workstation



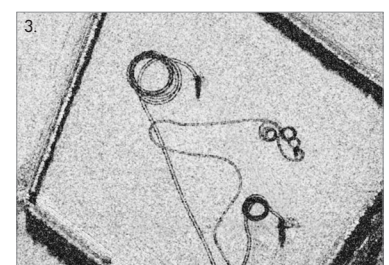
High Resolution SAR image compared with real photography



First pass SAR image of field



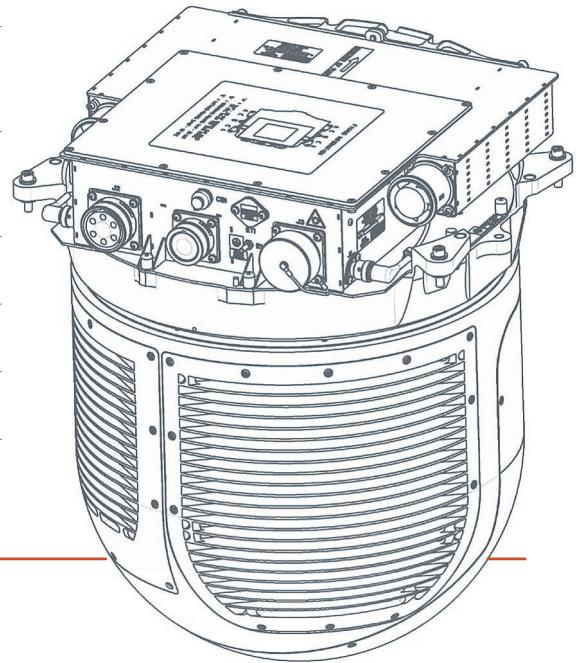
Second pass shows activity change



Coherent Change Detection shows vehicle tracks

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.

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