ReDrone™

Modular, Multi-mission, Multi-sensor Counter-UAS solution

Elbit Systems™
ISTAR & EW - Elisra

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Overview

ReDrone™ – a Modular, Multi-Mission, Multi-Sensor Counter-UAS (CUAS) Solution for the detection, identification (classification), tracking and defeat of drones.

Main Features

- Multi-layered protection against UAS threats
- Soft-Kill measures such as Jamming/Take-over and by Hard-Kill measures such as projectiles and missiles
- Open architecture design, supporting standard protocols such as ASTRIX and SAPIENT
- Wide spectrum coverage: 400 MHz – 6000 MHz
- Unified C^2 view of all sensors and effectors on single operator screen
- Detection of unknown drone communication
- Updatable threat database
- Full In-house development capabilities

Versatile Installation and Configurations

ReDrone™ can be provided in a mobile (stationary deployment), portable, transportable, vehicular or fixed configuration.
The system can be tailored to customer requirements for deployment and installation at different sites, including Airports, Ports, Prisons, Government & Public Facilities, Borders and Military Bases.

Open Architecture

The system enables seamless integration with external sensor or higher-echelon C^2 system supporting standard protocols.

SIGINT Passive RF Detection and Direction Finding (DF)

The SIGINT Passive RF Detection and DF is based on fast wideband SDR receivers and DF antenna arrays. The SIGINT subsystem enables detection of commercial drones and Remote Controls (RCs) by RF – handling high and low RF spectrum variations within the drone's frequency bands, up to 8 km range with 360° coverage.

Detected drones and RCs are classified according to the ReDrone™ database, which provides the drone type and transmission protocol. (i.e., DJI Lightbridge, DJI OcuSync, etc.). A Smart Machine algorithm, unique to Elbit Systems, identifies unknown drone RF transmissions.

RF Jammer
The mobile, portable and ruggedized RF Jamming subsystem, consists of a main jamming unit including wideband SDR units (exciters), high-power amplifiers and RF components. An omnidirectional and directional antenna array, with no moving parts, jams communication between the operator and the drone, as well as the drone's navigation system (GNSS).

RF communication signals between the RC and the drone at the detected frequency band are neutralized and additional potential GPS and communication frequency bands can be simultaneously jammed.

Multi-Mission Tactical Radar
Operating in the X-Band (9-10 GHz), the Software Defined AESA 3D Radar system incorporates hundreds of digital receivers, sophisticated algorithms and computing cores with Artificial Intelligence capabilities. The Radar simultaneously detects, identifies and tracks thousands of objects of various sizes and velocities – including agile, compact targets – with a latency suitable for real-time performance, without target prioritization.

C² (Command and Control) Application
The ReDrone™ C² is used for autonomous detection, tracking, cThe ReDrone™'s smart C² sub-system is used for autonomous detection, tracking, classification, identification and countering of drones. It enables the seamless integration of organic and external sensors and effectors, provides a unified view on a digital map, supports standard control protocols, such as Asterix and Sapient standard protocols; the C² allows updates of the internal drone threat database during operations.

EO/IR (Electro-Optical, Infrared) Camera
The EO/IR subsystem provides visual identification and classification of commercial drones. The dual-axis, gyro-stabilized panoramic sight allows the operator to perform day and night surveillance, target acquisition and engagement under harsh environmental conditions.

Hard-Kill
Enabling the detection, location and accurate engagement of targets such as machine guns and light canons, this capability can be integrated with an RCWS (Remote Controlled Weapon Station) of various types (e.g., 12mm or 30mm), mounted on a wide range of platforms. Additional integration options include a missile launching platform and an Intercepting Drone.

Take-Over
The sub system passively and continuously scans for unique communication signals used by commercial drones. Upon detection, identifiers are extracted to distinguish between authorized and rogue drones (IFF). Responding to an unauthorized drone, the sensor transmits a unique control signal which takes control of the drone, directs and lands it in a pre-defined safe location.

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Top Level Performance

SIGINT Passive RF Detection & Direction Finding (DF)

Feature	Specification
Subsystem type	Passive
Operating Environment	Urban and Rural
Receiver Types	Wideband SDR Receivers
Operating Bands – Detection & DF	400 MHz – 6000 MHz
Coverage Range	Up to 10 km
Azimuth Coverage	360°
Type of Antennas	Monitoring and DF Antennas
Drone Operator DF	Included
EPL Updates	By User or ELBIT ISTAR & EW
Unknown Drone/RC Capability	Included
GPS Receiver and Antenna	Included

Multi-mission Tactical Radar

Feature	Specification
Frequency Range	X Band
Average Power Consumption	350 W
Supply Voltage	16 V to 33 V DC MIL-STD-1275E or 110-220 AC
Antenna Type	AESA
Operating Mode	Pulse Doppler/Micro Doppler
Number of Simultaneous Targets	10,000
Azimuth Coverage	360°
Elevation Coverage	Up to 80° (±40°)
Types of Drones	Nano, Micro, Mini and Small Size UAVs
Detection Range	• Up to 180 m to 4000 m for Nano UAVs (e.g., DJI Mavic) • Up to 6,000 m for Micro UAVs (e.g., DJI Phantom) • Up to 1000 m for Mini UAVs (e.g., Raven) • Up to 20,000 m for Small UAVs

EO/IR (Electro-Optical-Infrared) Camera

Feature	Specification
Daylight Camera	
Type	HD/CCD
Resolution	1920 x 1080 pixels
FOV	2.0° to 27° - Continuous Optical Zoom
Digital Zoom	X4
Lens Zoom Ratio Value	X13
Thermal (Infrared) Camera	
Type	Cooled Thermal Imaging Camera
Spectral Range	3-5 µm
Detector Resolution	640 x 512
FOV	1.5° to 27° - Continuous Optical Zoom
Power	14-32 VDC
Weight	40 kg
Operating Temperature	-32°C to +55°C
Environmental Compliance	IP 67, MIL STD 461E & MIL STD 810F
Integrated Out-Video Tracking Capabilities	Locking and automatic continuous tracking over target, Slew-to-Cue from sensor to day-and-night camera, stationary or on-the-move

RF Jammer

Feature	Specification
Jamming Module Types	SDR Exciters & Power Amplifiers
Antenna Type	Selectable Directional or Omnidirectional Antenna
Operating Bands	400 MHz – 6000 MHz
Azimuth Coverage	Omnidirectional (360°) or Sector
Jamming Coverage	Up to 10 km with Directional Antenna
Transmission Power	100 W per band 50 W @ GNSS
Out-of-Band Emissions	Out-of-band emission reduction (using band-pass filters)

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