

BlackTALON Counter-Drone System

Model 982

The BlackTALON Counter-Drone System provides detection, location, identification, tracking and RF inhibition of drones. BlackTALON Model 982 incorporates Radar and RF sensors for drone detection, identification, location and tracking; an electro-optical sensor for drone verification and video tracking; and a multi-channel RF inhibitor for drone defeat.

BlackTALON is the result of a technology partnership between TCI International and Enterprise Control Systems (both of SPX Corporation),

working together with a number of valued partners with more than 135 years combined experience. This experience in the RF, EO, C2, and Counter-Drone domains for military applications ensures high performance, reliability and availability of the BlackTALON Counter-Drone solution.

The BlackTALON capability is delivered using only fully proven TRL9 systems, proven in combat operations through multiple deployments in hostile territories and the harshest environments.

KEY FEATURES

- > Multi-sensor detection and tracking (active and passive)
- > Long range, directional multi-band RF inhibition defeat
- > Intuitive user interface
- > Automated operations
- > Fully integrated solution

BEST VALUE SOLUTION

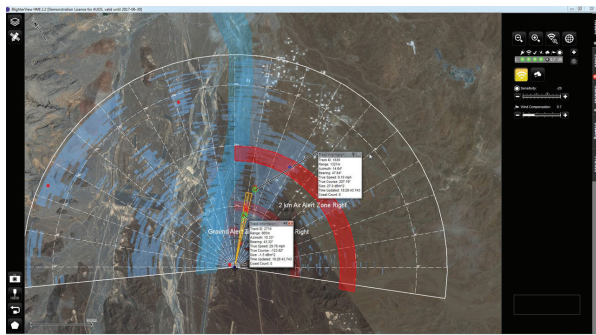
- > Fixed, transportable and mobile deployment options maximize CONOPS flexibility
- > Modular and scalable architecture ensures mission success today and in the future
- > Minimized total lifecycle cost



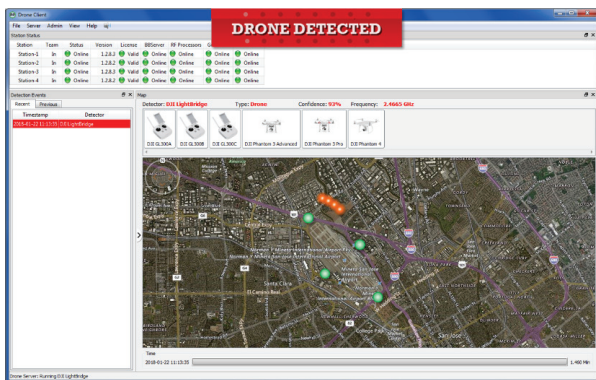
BlackTALON Overview

The User Interface

A single operator console provides full control and display of all BlackTALON subsystems, while individual screens for each subsystem can be displayed. The integrated multi-sensor capability enables the operator to make a timely informed decision to defeat a threat drone utilizing the long range, directional RF Inhibitor to disrupt the drone C2, telemetry and navigation systems.



> Radar Screen



> RF Sensor Screen



> EO Sensor / Inhibitor Screen

The Radar

The A400 air security radar is a modular non-rotating, electronic-scanning (e-scan) system using power efficient PESA (passive electronically scanned array) and FMCW (frequency modulated continuous wave) technologies to provide reliable active detection, including of small and fast or slow-moving drones in complex environments.

The A400 radar is optimized for drone detection and integration into multi-layered, multi-sensor solutions. The radar employs digital drone detection technology that combines low power, fast scan rates, and sophisticated Doppler techniques to enable the detection of a wide range of drone types and sizes. The radar's Ku band operation is ideally suited to challenging drone targets in complex and cluttered environments.



> A400 Air Security Radar

The RF Sensor

The Blackbird drone detection and geolocation application running on the next generation BlackSWIFT™ hardware platform provides automated drone and controller RF detection, direction finding, tracking and geolocation (when multiple sensors are used). The RF Sensor utilizes a field upgradable drone detector library to automatically identify the type of drone/controller with high probability of intercept and low probability of false alarm.

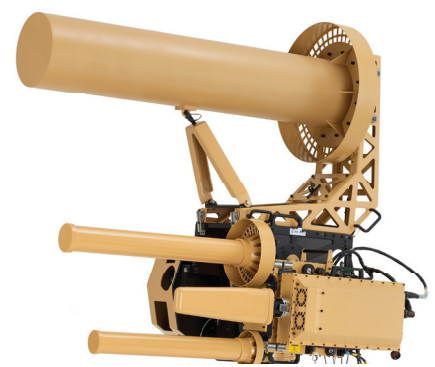
The RF sensor provides one or two channels, each with 80 MHz RF instantaneous bandwidth, able to scan from 20 MHz to 8.5 GHz, and utilizes multiple DDCs. TCI's proprietary dual-channel DF First® technology uses 9-element correlative interferometry, providing DF accuracy between 2 and 5 degrees RMS depending on the DF antenna, deployment CONOPS, and deployment environment.



> Hawkeye EO Sensor



> BlackSWIFT RF Sensor



> Claw RF Inhibitor

The EO Sensor

The Hawkeye Deployable System (DS) and EO Video Tracker, featuring both a long range color camera and a high sensitivity Thermal Imager (TI), along with state-of-the-art video tracking technology, is able to TRACK the UAV and, combined with radar target information, classify the target.

The EO sensor pod employs a dual camera system, comprising a medium wave thermal imager (TI) and a high definition (HD) daylight camera. Additional sensors or active elements can be provided within the pod. The TI is coupled with the latest generation of advanced image processing electronics to deliver superior imaging performance in addition to enhanced narrow FoV 'full resolution e-zoom' capability.

The third-generation Piranha 46 daylight TV camera is fully sealed and ruggedized

for harsh environments. The camera has a built-in IR cut filter that can provide good low light functionality for imaging at dusk and in the dark.

The RF Inhibitor

The RF Inhibitor is a purpose-designed multi-band system, engineered for maximum effectiveness against drone command and control (C2) links. RF inhibition can be activated either selectively or simultaneously across the 400 MHz to 6 GHz spectrum, targeting five threat 'bands' which are designed to defeat the C2 links commonly deployed throughout the drone threat landscape (i.e. 433 MHz, 915 MHz, 2.4 GHz, 5.8 GHz and GNSS bands).

The RF Inhibitor uses software defined radio (SDR) source generation, delivering an inhibition waveform best suited for counter-

drone operations. Changes and new threats may be accommodated under software control.

High gain directional antennas, coaxially mounted with the EO sensor pod, transmit the inhibition waveforms ensuring that the antennas illuminate the target drone. The antennas have a nominal 20° beamwidth that provides the designed power density at the target drone and mitigates collateral impact.

Flexible CONOPS / Installations

The BlackTALON system is modular and scalable to maximize CONOPS flexibility. The solution can be deployed in fixed transportable and mobile implementations.



BlackTALON Specifications Overview

Radar Specifications

Model	A400 Series Air Security Radar
Radar Type	E-scan frequency modulated continuous wave (FMCW) doppler
RF Frequency	Ku-Band
Azimuth Coverage	360° using 4 radar elements
Detection Range	10 km (nominal, environment and RCS-dependent)
Minimum target size (RCS)	0.01 m ²
Power Output	4 Watts (nominal)

RF Sensor Specifications

Model	BlackSWIFT with Blackbird Drone Detection, DF & Geolocation
RF Frequency Range(s)	20 MHz to 8.5 GHz; Scan for drones in 433 MHz, 915 MHz, 2.4 GHz and 5.8 GHz ranges
DF Methodology	Dual channel correlative Interferometry using 9-element DF antennas
Geolocation Methodology	AOA, TDOA and Hybrid AOA/TDOA (multiple RF sensors required)
DF Accuracy	2° to 5° (typical) – depending on DF antenna and environment
Deployment Options	Fixed, mobile, transportable, man portable

EO Sensor Specifications

Model	Hawkeye DS and EO Video Tracker
Cameras	Long range color camera (2.3 MP, 30x optical zoom, 12X digital zoom) High sensitivity TI (HD 1280 x 720, 3 - 5µm, hot sensor, 24° to 1.8° FOV, 13.5x continuous zoom)
Positioner	Viper Dynamic
Azimuth	Continuous (no cable wrap)
Elevation	-50° to +60°
Max Speed	60° per second

RF Inhibitor Specifications

Model	Claw Directional RF Inhibitor
Radio Type	Software Defined Radios (SDRs)
RF Frequency Range(s)	GNSS, 433 MHz ISM, 915 MHz ISM, 2.4 GHz ISM and 5.8 GHz ISM/WiFi
Antennas	Four integrated 15 dBiC nom. circular polarized high gain One integrated 17 dBi nom. high gain log periodic
Waveforms	Please inquire, Custom inhibition waveforms specific to the threats
Output Power	GNSS: Variable 100 mW min. 10 W max. 433 MHz ISM: Variable 5 W min. 33 W max*. 915 MHz ISM: Variable 5 W min. 33 W max*. 2.4 GHz ISM: Variable 1 W min. 40 W max. 5.8 GHz ISM: Variable 1 W min. 10 W max.

*Note: The combined 433 MHz and 915 MHz ISM RF output power is 33 W max.

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