

# Technical Data Sheet

## *HARRIER*

### Aircraft Detection Lighting System



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#### SUMMARY SPECIFICATIONS

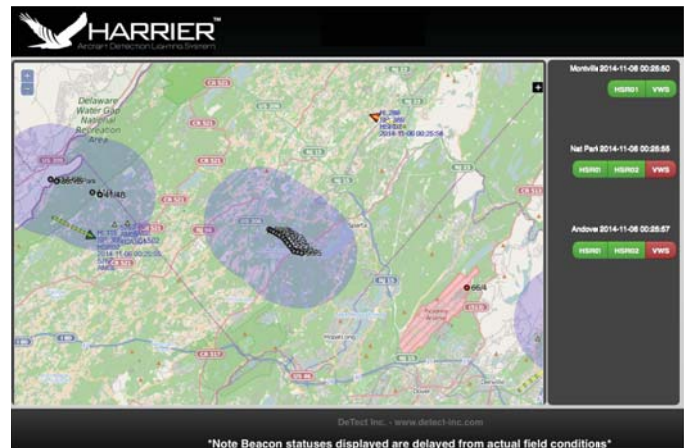
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- Model :** ADLS-200d
- Application:** High resolution, airspace surveillance with automatic activation of obstruction lighting when aircraft are detected approaching to within defined perimeters
- Configuration:** Fully self-contained fixed system for obstruction lighting activation for wind farm, power transmission, communication and other projects that require automated obstruction lighting
- Sensors:** 200 watt solid state S- or X-band radar sensors with Doppler processing; Traffic Advisory System (TAS) and Automatic Dependent Surveillance - Broadcast (ADS-B) secondary surveillance for cooperative aircraft
- Operation:** Extended range detection of cooperative (transponder equipped) & non-cooperative aircraft & ultralights with automatic activation of obstruction warning lights at user-defined perimeters (10 mile minimum recommended)
- Operating Range:** Full 360 degree 3D coverage with detection to 20 miles
- Power:** 110/220 VAC, 60/30 amps service with UPS back-up & power conditioning (30 minutes) & optional auto-start single or dual 6 kW propane or diesel generator & fuel tank to support 10-20 days 24-7 operation
- Network:** TCPIP connection supports multi-user web remote real-time system display, control & data access via fiber optic



**ABOVE:** The HARRIER ADLS is typically supplied as a fixed, self-contained skid mounted system for ground based installation.

**BELOW:** HARRIER ADLS web display



#### Advantages of the HARRIER ADLS

- Longer range detection provides greater safety margin
- Secondary transponder receivers for detection backup
- Fewer sensors required for complete coverage
- Ground-based sensors with lower installation & O&M costs
- Based on FAA tested, military-grade technology
- Advanced solid-state Doppler technology
- Meets or exceeds all FAA, Transport Canada and European requirements
- Multi-functional capable for ADLS, site security & bird detection from a single sensor
- Fully compatible with all SCADA systems and turbines
- ADSB integration minimizes lighting activation from high altitude commercial aircraft



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Many stakeholders recognize the environmental and social impacts of obstruction lighting at wind farms and similar project sites and are exploring strategies to mitigate the impact on surrounding communities. In response, DeTect developed the HARRIER Aircraft Detection Lighting System (ADLS), an advanced ground radar-based ADLS using high-resolution airspace surveillance with automated activation of wind farm obstruction lighting when aircraft are detected within defined parameters. DeTect HARRIER ADLS systems are currently operating in the US, Canada and Europe.

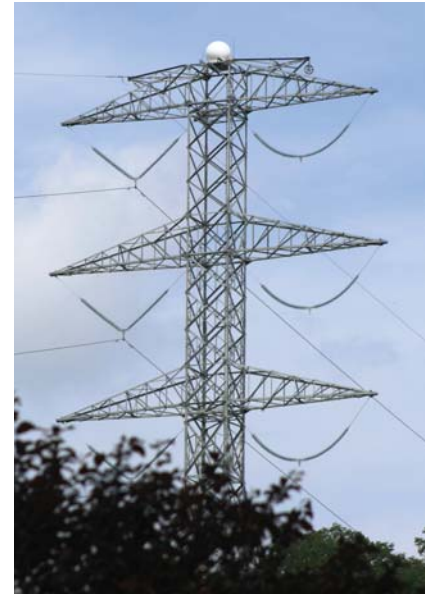
The HARRIER ADLS system provides extended-range detection of cooperative and noncooperative aircraft, including ultralight aircraft, with 360-degree coverage and detection up to 20 miles range, but only aircraft entering a custom configured exclusion zone will trigger the activation of the obstruction lighting. The HARRIER ADLS is also multi-function capable and can provide site security for aircraft, ultralights, and drones as well as bird detection for environmental monitoring and risk mitigation. The system is fully networkable and remotely controllable with real-time data display, data transmission, diagnostics, and Health and Status Monitoring (HSM).

DeTect's ADLS uses patented Operational Risk Management (ORM) algorithms and operates in a failsafe manner where the lights are held in an 'ON' state by the system unless a target is not detected within the defined risk zone. When the sensors detect an aircraft, the obstruction lights are activated. A "heartbeat" indicator provides constant system status reading of the ADLS and its network. Should the ADLS go offline, or heartbeat indicator lost, the lights will

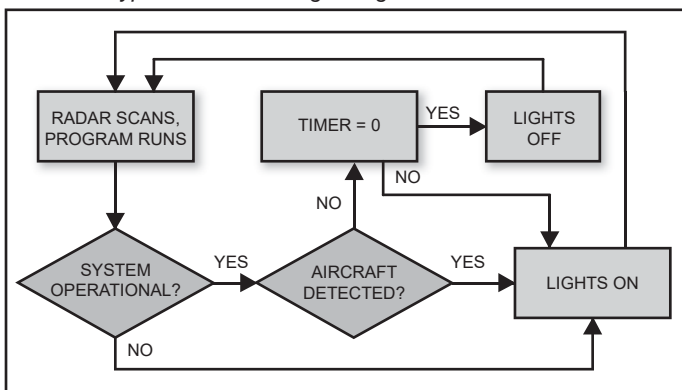
automatically activate and remain illuminated until the system returns online.

HARRIER uses an advanced solid-state S- or X-Band Doppler surveillance radar that has the ability to penetrate into moderate rain. The HARRIER ADLS logic always errs on the side of safety and if severe weather is detected by the HARRIER system, the system will automatically activate the lights. The HARRIER ADLS also incorporates secondary surveillance using a Traffic Avoidance System (TAS) and Automatic Dependent Surveillance – Broadcast (ADS-B) receivers. The radar sensors, TAS antennas and ADS-B antennas are ground-based resulting in lower installation and O&M cost over the life of the project. The system electronics can be located at the radars (generally on the perimeter of the site) or can be remotely located at a central facility equipment room up to 50 miles away for ease of O&M and for security (requires broadband fiber network).

BELOW: HARRIER Utility tower installation



BELOW: Typical HARRIER logic diagram



The HARRIER system is based on DeTect's MERLIN radar software and hardware platforms originally developed to detect and track low altitude, variable radar cross section (RCS), irregularly moving targets. HARRIER is not a modified aircraft or ship tracking system and all detection and tracking algorithms were specifically developed and programmed to 'look' for and follow targets with these complex characteristics to provide highly sensitive, reliable operation. DeTect's HARRIER radar processing software is user customizable and software definable to 'tune' the system to detect, track, and display only targets within the user desired target class based on a variety of parameters that include size, speed and track characteristics. Additionally, by using the S-band 3050 MHz frequency range, DeTect greatly minimizes the likelihood of frequency conflict with other systems such as air traffic control, weather radars, and communications networks.