DATASHEET

Blighter® A800 Mk 2 4D Multi-Mode Radar



Dual Blighter A800 Mk 2 Radar Units
(Shown mounted on telescopic mast with optional mounting brackets)

- Simultaneous air, ground and coastline operation
- Latest generation monopulse elevation measurement
- Nano-quadcopter detection to 3 km
- Winged drone detection to 7 km
- 4D position measurement: range, azimuth, elevation and Doppler velocity
- Target classification using micro-Doppler signature analysis
- Encrypted Gigabit Ethernet interface
- Ruggedised case with options for fixed, portable and mobile mounting

The Blighter A800 Mk 2 is a 4D multi-mode electronic-scanning ('e-scan') radar, based on the latest generation monopulse antenna technology. It provides the unique ability to use its optimised air security modes to search for small drones, and at the same time, can use its ground/sea surveillance modes to search for surface targets over land and water.

The A800 Mk 2 performs its air, ground and sea detection functions simultaneously, allowing multi-mode operation with simple user setup. The A800 Mk 2 uses triple, transmit and receive, radar-beam spotlighting to focus all its energy on targets of interest. The radar ignores ground clutter and off-beam targets, giving rapid scanning of a 90° wide by 40° high cone.

A800 Mk 2 4D Multi-Mode Radar

The A800 Mk 2 inherits its core technology from Blighter's TRL-9 (technology readiness level nine) field-proven A400 series air security radars. However, the A800 Mk 2 combines the ability to detect land and water-based objects, which of course may include the drone operator.

Countering Low, Slow and Small (LSS) Threats

The A800 Mk 2 acts as the key detect element in C-UAS (counter-unmanned aerial system) products. It is designed to counter current low, slow and small (LSS) threats caused by the mis-use of commercial 'hobby' drones. (Including the commonly used 'DJI Phantom' style quadcopters, as well as larger winged drones.) To further enhance system performance, the A800 Mk 2 features smart micro-Doppler target filtering with AI target classification. This reduces false alarms from wildlife and helps improve the detection of multicopter and winged drones.

Ruggedised and Secure

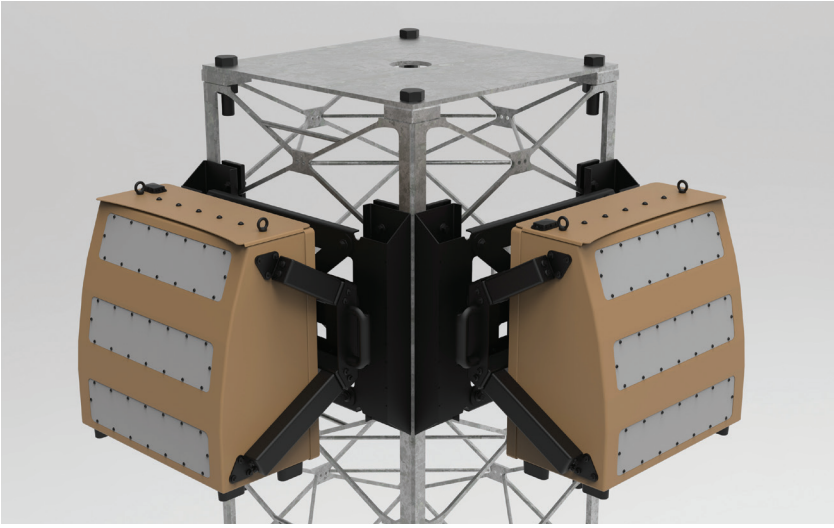
The A800 Mk 2's rugged e-scan design with zero moving parts, allows it to operate in harsh conditions of high or low temp. It comes with mounting options for:

- Tripods and quad-pods
- Land vehicles and trailers
- Fixed towers and masts

For use in critical security projects, the radar is fitted with either an optical or copper based Gigabit Ethernet interface with built-in robust data encryption. The A800 Mk 2 interfaces directly to the BlighterNexus Communications and Processing hub. BlighterNexus can combine a cluster of A800 Mk 2 radars into a single 360 degree Smart-Radar, and interface it to a variety of industry standard C2 (Command and Control) interface formats, including XML, ASTERIX and SAPIENT. A Software Developers Kit (SDK) is available for BlighterNexus with A800 Mk 2 radars.

Installation

Two A800 Mk 2 radar units mounted on a typical lattice tower mast



Optional installation mountings



Specification

Architectural Overview

- Radar type: 4D Multi-Mode Frequency Modulated Continuous Wave (FMCW) Doppler AESA Radar
- Radar mode: multi-mode (air, ground and coastline)
- Frequency band: Ku radar band
- Operational bandwidth: from 15.7 to 17.2 GHz
- Scan type: fully electronic scanning in azimuth ('e-scan') on both transmit and receive
- Elevation measurement type: multi-beam amplitude comparison monopulse
- Transmitter power (nominal): 4 Watt
- Embedded software and firmware: field upgradeable via network connection

Target Detection & Classification

- Rain mitigation filter: automatic
- Maximum detection ranges*:
  - Nano-quadcopter: up to 3 km
  - Walking person: up to 5 km
  - Winged drone (Class 2): up to 7 km
- Maximum targets per scan: 700
- False Alarm Rate (FAR): 1 false alarm per day (adjustable)
- Minimum detectable target radial velocity: 0.37 km/h (0.23 mph)
- Target classification: AI-based micro-Doppler analysis

Coverage

- Instrumented maximum range: 3.5 km, 10 km or 20 km (2.2 mi., 6.2 mi. or 12.4 mi.)
- Instrumented minimum range: less than 10 m (33 ft.)
- Azimuth scan angle: 90° horizontal e-scan
- Elevation beam: 40° vertical beamwidth
- Fastest scan time (for 90°): 1.0 s
- Fastest scan time (in Drone Spotlighting Mode): 0.25 s

Connectivity & Software

- Main I/O interface (for radar control & target data): encrypted 1000BASE-T Copper or 1000BASE-SX Fibre Gigabit Ethernet (RFC 8446 TLS 1.3)
- Auxiliary I/O interfaces: RS-232 and RS-422 control lines, opto-isolated control/status inputs and isolated switched contact outputs
- Software Interface: via BlighterNexus

Electrical

- Power input voltage: from 24 to 28 V (DC) (nominal)
- Power compliance: MIL-STD-1275E
- Power consumption: 130 W (nominal)

Physical, Environmental & Reliability

- External dimensions of radar unit (W x H x D): 600 mm x 550 mm x 270 mm (23.6 in. x 21.6 in. x 10.6 in.)
- Operating temperature: from -32° C to +65° C (from -25° F to +149° F) Note: extended operating temperature version available
- IP rating: IP65 (dust tight and protected against low-pressure water jets from any direction)
- MTBF: > 65,000 h

* Assumes ideal radar mounting height over flat terrain. Please note that local terrain features, buildings and structures may cause both multipath fading and occlusion of targets. A radar propagation analysis/site survey is required to estimate real-world detection performance.

Errors and omissions excepted. Blighter Surveillance Systems Ltd reserves the right to modify specifications without notice. Blighter radars are protected by a number of international patents. The Blighter name is an international registered trademark.

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