

# **Blighter**<sup>®</sup> B422 LR Border Surveillance System



Dual Blighter B422 Radars on  
Border Surveillance System Tower

- Person at 15 km\* long range ground surveillance
- Pure solid-state 360° electronic-scanning
- Ultra-high reliability with no moving parts
- Passive cooling even in extreme heat
- Low power and low bandwidth for remote operation
- Easy system integration with multi-format support
- Low-flying aircraft/drone detection
- Enhanced short range ground cover with 'shadow-boost'
- Compatible with BlighterNexus

The Blighter B422 LR (Long Range) Border Surveillance System comprises Blighter's longest range radar configuration, the B400 series high-power ground radar system fitted with 'N5S' extended range antennas. This system provides up to 360° of pure electronic-scanning coverage with no mechanical rotation, using low-power solid-state transmitters.

B400 series radars have been installed in extreme environmental conditions in more than 35 countries, including the hottest, toughest locations close to the Equator. With very low power consumption of just 200 W for full 360° operation, and without the need for additional forced air cooling, border surveillance towers based around Blighter radars can be operated from solar or other local power sources. Blighter radars offer exceptionally high reliability with very low levels of routine maintenance. Blighter can offer various support packages ranging from remote UK-based phone support to full in-country manufacture, maintenance and support.

### Dual Radars for 360°

The standard system comprises dual back-to-back 180° radars. This provides synchronous scanning ahead and behind the tower for optimal situational awareness. In flat desert conditions the 'N5S' extended range antennas provide a narrow, focused radar beam to detect small targets at the longest possible line-of-sight ranges.

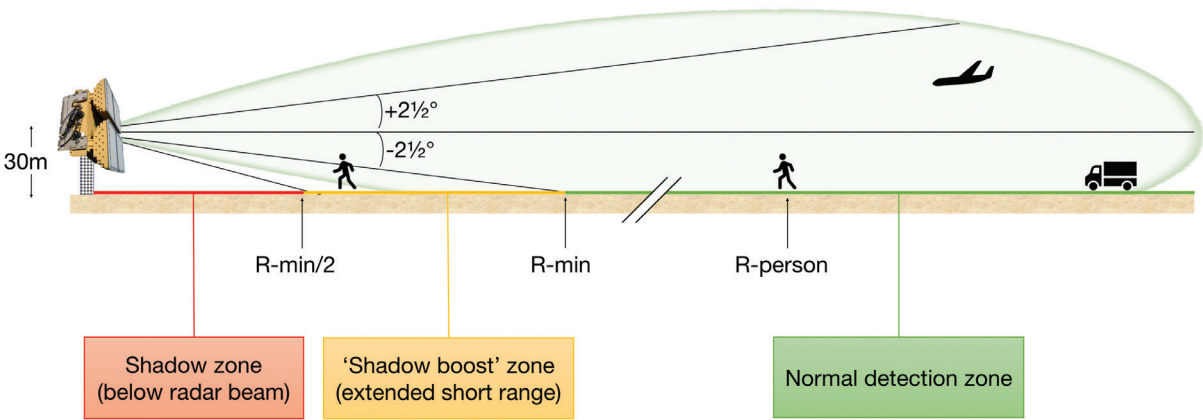
### Shadow Boost

B400 series radars include a 'Shadow Boost' feature that halves the minimum detection range when radars are mounted on tall masts or towers (see over). In locations where there is flat ground on one side of the tower, and hills on the other, Blighter's interchangeable antennas allow wider elevation beamwidth antennas such as the 'M10S' or 'W20S' to be installed to provide simultaneous hill-top and valley coverage. For example, in the main photo above, 'N5S' extended range antennas are fitted to the two front-facing radar units and 'M10S' long range antennas are fitted to the two rear-facing radar units.

### Long Range Border Surveillance System

Blighter uses the international Ku-band radar frequencies to achieve the best long range person detection on standard 30 to 40 m border surveillance towers, where radio multipath propagation effects actually boost performance compared to X-band radars at the same height. B400 series radars detect larger moving targets out to a maximum instrumented range of 32 km, allowing plenty of time to track and intercept targets of interest. Although not specifically designed for air target detection, the radar is capable of detecting low-flying manned/unmanned aircraft, in the cluttered near-ground region often excluded from traditional air surveillance radars.

# Shadow Boost Overview



| Radar height | Radar tilt angle | R-min/2 | R-min | R-person |
|--------------|------------------|---------|-------|----------|
| 30 m         | 0° (horizontal)  | 350 m   | 700 m | 15,000 m |

\*Illustrative figures only

# Performance Overview

## Architectural Overview

- Radar type: E-scan Frequency Modulated Continuous Wave (FMCW) Doppler Ground Surveillance Radar
- Frequency band: Ku band
- Scan type: fully electronic scanning in azimuth ('e-scan') using a Passive Electronically Scanned Array (PESA)
- Transmitter power (nominal): 4 Watt

## Target Detection Performance

- Maximum detection ranges:
  - Walking person: 15 km (9.3 mi.)
  - Larger moving targets: 32 km (19.9 mi.)

\*Target detection ranges are affected by radar mounting height, terrain and environmental conditions. Figures provided indicate performance under ideal conditions. Contact Blighter for more details.

## Coverage

- Instrumented maximum range: 2, 5, 8, 16 or 32 km (1.2, 3.1, 5.0, 9.9 or 19.9 mi.)
- Instrumented minimum range: less than 10 m (33 ft.)
- Azimuth scan angle: 180° (B422) or 360° (Dual B422) horizontal e-scan
- Elevation beam: 5° vertical beamwidth (with N5S antennas)

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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