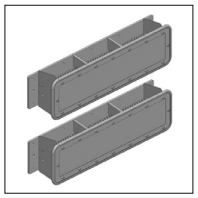
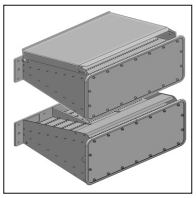
DATASHEET

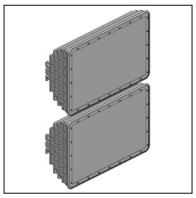
Blighter® B400 Series Radars

Blighter B400 Series Radar Unit
(shown with W20S Antennas)

- Family of long-range ground surveillance radars suited to fixed, mobile and portable applications
- Detects crawlers, walkers and vehicles
- Modular scanning from 90° to 360°
- Fully electronic scanning (E-Scan) with zero moving parts for ultra high reliability
- Unsurpassed ground clutter suppression with low false alarm rate
- Simultaneous Doppler and FMCW processing whilst fast-scanning (no mode change required)
- Choice of antennas for optimal terrain coverage:


W20S Antennas


M10S Antennas


N5S Antennas

Blighter addresses a broad range of security requirements in the defence, homeland security and civil/commercial markets. Blighter radars are part of a range of advanced BSS technologies that provide class-leading protection against both conventional and asymmetric/terrorist threats.

Blighter B400 series ground surveillance radars scan and detect moving vehicles and persons (inc. 'crawlers') over a wide area and provide exceptional detection performance out to 32 km.

Detected targets are reported via a standard Ethernet TCP/IP network connection, allowing target recognition and identification through the automatic slew-to-cue of optional cameras or thermal imagers. Accurate positional information is reported, including target lat/long co-ordinates, range and bearing. The data bandwidth required for target output and radar control is very low.

E-Scan Ground Surveillance Radar

The B400 series is Blighter's flagship e-scan ground surveillance radar (GSR). Blighter e-scan radars have no moving parts to wear out, maintain or replace and offer dramatic improvements in reliability over mechanically scanned radars. Blighter radars are all-in-one fully integrated units comprising antennas, signal processing, plot extractor, GPS and compass. Angular coverage is provided in modular units of 90°. Blighter radars are proven to withstand harsh environmental conditions and provide many years of maintenance free operation. The radar operates in all weather conditions and includes a built-in precipitation filter that suppresses false detections from rain or snow. Day/night 24-hour operation is fully supported.

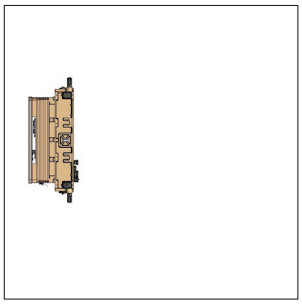
Low-power FMCW Doppler Technology

Blighter radars incorporate a unique combination of FMCW and Doppler processing technology, ensuring unsurpassed ground clutter cancellation with the ability to detect incredibly slow movement. Radio transmission power is just 4 Watts, making the radar safe for human operation and difficult to intercept (i.e. electronically covert). Power consumption is 100 Watts, allowing operation from battery, vehicle, mains and renewable sources.

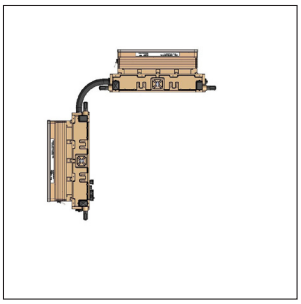
Wide Elevation Beam

In order to maximise long range detection performance, radars are typically mounted high on a tower or on top of a hill. However, when mounted in this way, the narrow vertical elevation beam of traditional radars results in the problem of 'dead ground' close to the radar. Blighter radars benefit from having a very wide vertical elevation beam, allowing them to detect targets in the distance as well as close-up simultaneously. In complex mountainous regions, the Blighter radar's wide elevation beam also ensures that hill tops and valleys can be scanned simultaneously, without the need to physically tilt the radar. Over flat land and calm water, the wide beam also provides rapid detection of low flying manned and unmanned aircraft including planes, helicopters, UAVs, microlights and hang gliders.

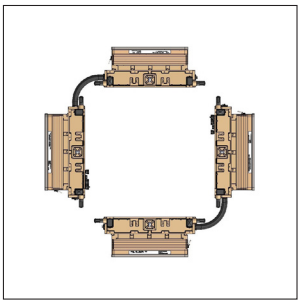
Configurations



B402 Radar - 90° E-scan
1x Main Radar Unit
Shown here with N5S antennas



B422 Radar - 180° E-scan
1x Main Radar Unit
1x Auxiliary Radar Unit
Shown here with N5S antennas



Dual B422 Radars - 360° E-scan
2x Main Radar Unit
2x Auxiliary Radar Unit
Shown here with N5S antennas

Specification

Architectural Overview

- Radar type: E-scan Frequency Modulated Continuous Wave (FMCW) Doppler Ground Surveillance Radar
- Frequency band: Ku band
- Spectrum occupancy: 15.7 to 17.2 GHz
- Scan type: Low-power symmetric dual-beam electronic scanning in azimuth ('e-scan')
- Transmitter power (nominal): 4 Watt
- Multi-radar operation: supported and unlimited
- Embedded software and firmware: field upgradeable via network connection

Target Detection Performance

- Maximum targets per scan: 700
- False Alarm Rate (FAR): 1 false alarm per day
- Minimum detectable target radial velocity: 0.37 km/h (0.23 mph)
- Maximum detection ranges*:

	Crawler	Walker	Vehicle
W20S	3.2 km	7.4 km	16 km
M10S	4.6 km	11 km	20 km
N5S	6.4 km	15 km	28 km

*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.

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: 90° (B402), 180° (B422), or 360° (Dual B422) horizontal e-scan
- Elevation beam: 5°, 10° or 20° vertical beamwidth
- Fastest scan time (for 90°): 1 s

Target Output & Identification

- Data format: XML Interface to BlighterNexus
- Doppler audio modes: optional

Connectivity & Software

- Main I/O interface (for radar control and target data): 10/100 Ethernet network interface
- 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 (SDK available)

Electrical

- Battery/regulated-PSU input range: from 12 V to 28 V (DC)
- Vehicle supply input range: from 12 V to 24 V (DC)
- Power consumption (from 24 V regulated-PSU): 100 W (nominal)
- Endurance: 12 to 14 hours continuous operation from six 2590-type batteries

Physical, Environmental & Reliability

- External dimensions of radar unit(s) (W x H x D)*: 666 mm x 503 mm x 128 mm (26.2 in. x 19.8 in. x 5.0 in.)
- Weight of main radar unit (approx.)*: 25 kg (55 lb.)
- Weight of auxiliary radar unit(s) (approx.)*: 21 kg (46 lb.)
- Operating temperature: from -32° C to +65° C (from -25° F to +149° F) Note: extended operating temperature version available
- IP rating: IP66 (dust tight and protected against powerful water jets)
- MTBF: > 65,000 h

* excluding antennas, mountings and solar shield

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