

Blighter® C400 Series Radars



Blighter C402 Radar
(shown with M10S Antennas)

- Coastal security radars suited to fixed, mobile and portable applications
- Optimised for detection of small and slow moving boats
- Modular scanning: 90°, 180° or 360° (2x 180°)
- Fully electronic scanning (e-scan) using PESA and FMCW technologies for ultra-high reliability
- Unique sea clutter filter (SCF) for low false alarm rate
- Choice of radar configurations:
 - Low-cost, short-range system
 - High-performance, long-range system
- Enhanced environmental protection (marinised)
- Static target detector

Blighter Surveillance Systems (BSS) 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 C400 series coastal security radars build upon the heritage of the Blighter B400 series ground surveillance radars (GSR). C400 series radars have a modular, non-rotating, entirely solid-state design. The radar's electronic-scanning (e-scan) system is implemented using low-power passive electronically scanned array (PESA) and frequency-modulated continuous-wave (FMCW) technologies. This ensures industry leading levels of reliability with minimal in-situ maintenance.

Blighter C400 series radars are designed for coastal security applications including seaport security surveillance and water-side security of land based coastal assets, such as oil and gas installations, desalination plants, nuclear power stations, palaces and other high value assets. Additionally they can be used for river and estuary monitoring in situations where traditional bulky coastal surveillance radars are unsuitable.

Doppler Processing

Blighter C400 series radars use advanced Doppler signal processing to provide the ability to precisely

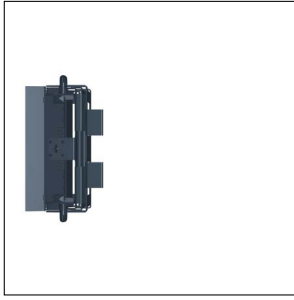
examine the motion of waterborne objects with respect to waves or ripples on the water surface. This allows the radar to separate targets of interest from the background water clutter so that it can detect very small targets even in cluttered environments. For example this allows an intruding kayak, RIB or other small boat to be detected alongside larger ships or in ports.

Detection of Static Targets

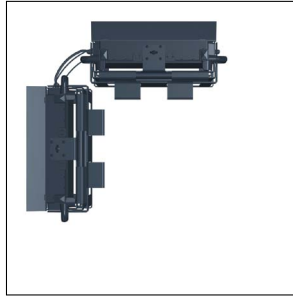
Unlike traditional Doppler radars, Blighter is able to characterise non-moving targets so that moored boats, buoys and other structures remain visible on the radar screen. The radar's built-in sea clutter filter (SCF) automatically adapts to changing sea states and wave conditions

Blighter C400 series radars can be used as part of a larger coastal security system including day/night and fog penetrating electro-optical camera systems, AIS (Automatic Identification System), other boat tracking systems and CCTV with control and display through the BlighterView HMI C2 (Command and Control) software application.

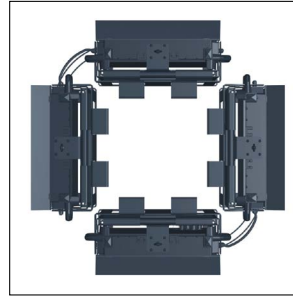
Configurations



Bligher C402 Radar - 90°
1x Main Radar Unit



Bligher C422 Radar - 180°
1x Main Radar Unit
1x Auxiliary Radar Unit



Bligher Dual C422 Radars - 360°
2x Main Radar Unit
2x Auxiliary Radar Unit

Specification

Architectural Overview

- Radar type: E-scan Frequency Modulated Continuous Wave (FMCW) Doppler Coastal Security Radar
- Frequency band: Ku band
- Spectrum occupancy:
 - Wide-band (WB): 15.7 to 17.2 GHz
 - Narrow-band (NB): 16.2 to 17.2 GHz
- Scan type: fully electronic scanning in azimuth ('e-scan') using a Passive Electronically Scanned Array (PESA)
- Transmitter power (nominal): 1 Watt (standard power transmitter version) or 4 Watt (high power transmitter version)
- Multi-radar operation: supported and unlimited
- Embedded software and firmware: field upgradeable via network connection

Target Detection Performance

- Maximum detection ranges:
 - Small wooden boat (RCS 1 m²): 5.9 NM (11.0 km)*
 - Rigid inflatable boat (RCS 5 m²): 8.6 NM (16.0 km)*
 - Small coaster (RCS 30 m²): 10.8 NM (20.0 km)*
 - Large coaster (RCS 100 m²): 13.5 NM (25.0 km)*
 - Container ship (RCS 1,000 m²): 17.3 NM (32.0 km)*
- Maximum targets per scan: 700

* HP version fitted with M10S antennas

- False Alarm Rate (FAR): 1 false alarm per day
- Minimum detectable target radial velocity: 0 kn (0 km/h)

Coverage

- Instrumented maximum range: 1.1, 2.7, 4.3, 8.6, 17.3 NM (2, 5, 8, 16 or 32 km)
- Instrumented minimum range: less than 10 m (33 ft.)
- Azimuth scan angle: 90° (C402), 180° (C422) or 360° (dual C422) horizontal e-scan
- Elevation beam: 10° or 20° vertical beamwidth
- Fastest scan time (for 90°): 1 s

Target Output & Identification

- Data format: QZ (custom, open-standard data format)
- Target output port: available for cueing of pan/tilt-mounted cameras and thermal imagers
- 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 (SDK): API software library (Windows) and generic Interface Control Document (ICD) are both available to System Integrators

Electrical

- Power supply input voltage range and type: from 12 V to 24 V (DC)
- Power consumption (from 12 V regulated-PSU)*: 38 W (average)

* SP version

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.):
 - Wide-band (WB): 25 kg (55 lb.)
 - Narrow-band (NB): 27 kg (60 lb.)
- Weight of auxiliary radar unit(s) (approx.):
 - Wide-band (WB): 21 kg (46 lb.)
 - Narrow-band (NB): 24 kg (53 lb.)
- Operating temperature: from -32° C to +65° C (from -25° F to +149° F) Note: extended operating temperature version available
- Humidity: 5% to 100% relative humidity (RH)
- Marineisation/environmental compliance: compliant with MIL-STD-810F
- IP rating: IP66 (dust tight and protected against powerful water jets)
- MTBF: > 65,000 h (zero maintenance)

* excluding antennas, mountings and solar shield

** depth of narrow-band radar units is 133 mm (5.2 in.)

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

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