GEM elettronica ®

BSR-50
Border Security Radar System

Security and surveillance of land and sea borders is vital to every Nation. GEM elettronica Land Border Security solutions are based on a specific sensors integrated in a Command and Control to support military and law enforcement agencies in their real-time surveillance missions.

BSR-50 is specifically designed to provide a Radar based solution for Border Security, Airport Security, UAV's detection, Bases Perimeter Protection, Mobile Surveillance (installed on the vehicle) and Wildlife reserve applications; BSR-50/T, in the Tactic Configuration, is employed for battlefield situational awareness due to its quick and easily deployable configuration with a tripod or vehicle mounted.

In border security the BSR-50 allows security Agencies to monitor and intercept threats in remote and difficult access locations where usually smugglers and traffickers operate.

The BSR-50 configuration can be single (single mast mounted or mobile) or as part of multi radar and electro optic camera system deployable for both mobile and semi-permanent requirements.

APPLICATIONS

√ Border Security
√ Force Protection
√ Coastal Surveillance
√ Critical Infrastructures
√ Mobile Surveillance
√ Airport and Harbors
√ Harsh Environments

MAIN FEATURES

√ Solid State Electronics
√ Graceful Degradation
√ Fast Radar Power Up
√ Continuous System Health Monitor and Built in Self Test
√ Pulsed, Coherent
√ Pulse Compression
√ Pulse Doppler
√ Doppler Processing
√ Signal Processing
√ Waveforms
√ Automatic Power Optimisation
√ Adaptive Clutter Suppression
√ 360° and Sector Scanning
√ Resistant to Jamming
√ Constant False Alarm Rate

Infrastructures Security

Mobile Surveillance

BSR-50

BSR-50 transmits a low power GEM pulse sequence, enabling the radar operator to maintain situational awareness regardless of the range or zoom setting of the radar display. X-Band pulse radar has other benefits including an excellent long and short range capability unlike FMCW or microwave sensors which are typically limited to shorter ranges.

High radar doppler processing provides coherent information concerning target velocity (radial) and enables the detection of very small and slow moving targets with a low Radar Cross Section (RCS). Through a series of doppler filters BSR-50 is able to distinguish between the targets of interest in spite of land and environmental clutter such as wind and heavy rain or sand storms.

The radome enclosed unit contains a rotating antenna providing 360 degree coverage, GPS and it is environmentally sealed to IP67 allow working in extreme cold, hot and wet conditions.

BSR-50 radar will provide day and night detection of the airport or base security perimeter: radar can be deployed as part of a multi node, or single system mounted on fixed towers/masts, or utilized as a mobile radar sensor settle in a vehicles.

DEPLOYMENT

GEM elettronica normally interacts with the customer conducting border security and advise on the best methods of deployment for BSR-50 and electro optic sensor selection (if required).

A common method of deployment includes GEM BSR-50 and camera co-located on a single mast. This simplified approach enables the radar and cameras to be quickly and cost effectively deployed on a single mast with one cable connection giving 360 degree pan and tilt capability (no blind arcs).

Software Management Application
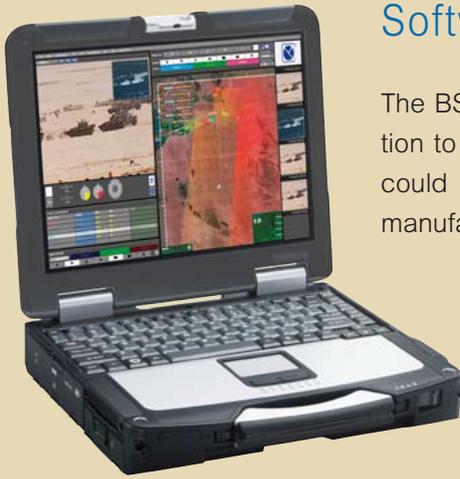
The BSR-50 radar provides situational awareness information to GEM control and display software application and could be paired in option, with electro optical camera manufactured by Gem or even other manufacturers.

GEM BSR-50 control and visualizationsoftware is predisposed for integration of a range of complementary sensors as electro optical that can be designed on target.

GEM software application may show the camera information in the same picture of the radar.

GEM BSR-50 control and display software, integrates multiple sensors, such as radars and camera, into a single, easy to use display package. The management application software allows the operator to get a real-time situational awareness by early detection of possible threats and will provide "actionable data" to launch prompt response missions and counter measures. The system makes the tracks "fusion" of geo-referenced radar tracks from multiple radar heads into one user-friendly display.

BSR-50 can achieve istantaneously threats in security areas and perimeters also through user-determined parameters.
Radar tracks, displayed in an easy to understand format will assist the user in detect, recognize, identify and then classify methodology.

Radar tracks and additional data can betransmitted through a range of communications options determined by the operational requirement. Multiple iterations can be integrated to build a wider surveillance network with data and communications passed automatically to ensure a real time response capability.

POWER AND COMMUNICATIONS

Depending on the application and customer requirements GEM elettronica can be the supplier and system integrator also for the below devices:

• **Military specification batteries for mobile and man portable applications.**

• **Solar panel and battery for mast mounted radar systems.**

• **Portable generators.**

• **Microwave and satellite communication links, portable or fixed, depending on the deployment method.**

BSR-50 BORDER SECURITY RADAR

PERFORMANCES

Peak Power	50W
Antenna Azimuth Beam Width	3.8° ± 0.2° @ -3dB
Antenna Elevation Beam Width	25° ± 2°
Range Discrimination	30 Mt (It depends on the impulse used)
Range Accuracy	5m RMS
Azimuth Accuracy	0.8° RMS
Number of Tracks	Selectable up to 500
Probability of False Alarm	10-4 Pfa
Moving Target Detection	Up to 128 Filters
Constant False Alarm Rate	√
Frequency Band	9.3 - 9.5GHz
Frequency Selection	9 User Selectable
Instrumented Range	80 Km
Minimum Target Speed:	0,2 m/sec

DETECTION RANGE

Walking Man — 5 Km

Jeep — 15 Km

Tank — 21 Km

ENVIRONMENTAL CONDITIONS

Operationg Temperature	-0° C to +55°C
Storage Temperature	-40° C to +85°C
Salt FOG	MIL-STD - 810G (meth. 509.5)
Vibrations	MIL-STD - 810G (meth. 514.6)
Shock	30g – 11ms
Waterproof	IP 66
Electromagnetic Interferences	MIL-STD 461
Reliability	MTBF ≥ 50.000 hours

POWER REQUIREMENTS

Power Supply	19-32 V DC
	100-250 V AC (With Optional Inverter)
Power Consumption	< 80 WATT

WEIGHT AND DIMENTIONS

Antenna	Ø 610 mm X 223 mm
Weight	Radar 15 KG (Radar) 4 Kg "Rugged" Laptop Tripod (Battlefield version): 5 Kg
Laptop	11.5" (L) x 11.9" (W) x 2.9" (H) 7.9 lbs. (8.2 lbs. with optional media bay 2nd battery)
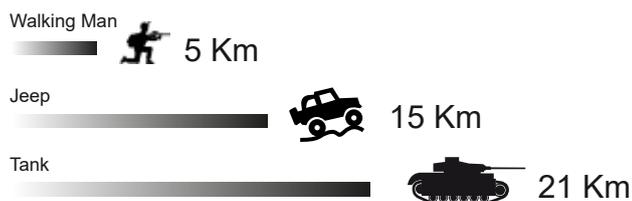
INTERFACES

TRANSCEIVER

LAN	GIGABIT ETHERNET RADAR OUTPUT (FIBER OPTICS IN OPTION)
ASTERIX	Asterix Cat 240 Protocol
VIDEO OUTPUT	Radar Video Data Output Over LAN
GPS	RF Input for internal GPS/Galileo receiver
"RUGGED" LAPTOP	- Docking connector 80-pin - HDMI Type A - VGA D-sub 15-pin - Headphones/speaker Mini-jack stereo - Microphone/line in Mini-jack stereo - Serial D-sub 9-pin - Ext. antenna conn. 50 ohm coaxial - USB 3.0 (x 1), USB 2.0 (x 3) Type A - Optional IEEE 1394a (FireWire) 4-pin - 10/100/1000 Ethernet RJ-45 - Optional 10/100/1000 2nd LAN (Ethernet) RJ-45

Surveillance & Security   **Guidance, Navigation & Positioning**   **Military & Defence**   **Marine Electronics**

GEM elettronica

Member of CISQ Federation

RINA — CERTIFIED MANAGEMENT SYSTEM ISO 9001

marketing@gemrad.com   www.gemrad.com