

# BYSTRA

## Redeployable Radar

The **BYSTRA** Redeployable Radar is designed for detecting and localizing air targets at short ranges and for supporting air-defense units that cover tactical battle groups against attacks from the air. **BYSTRA** is a multifunction and multi-mission radar with versatile capabilities and various applications, including detection and tracking of typical air threats as combat aircrafts and helicopters (also when hovering), as well as missiles, UAVs and mortar shells.

The radar can operate in several modes matched to the predefined combat missions. In each mode, an omnidirectional search is performed by rotating the antenna and by scanning space using software formed antenna beams. This enables the effective use of the radar resources and allows for adjusting search patterns to characteristics of a deployment site and to the accomplished function (detection/tracking) or the combat mission.

### Advantages:

- technical means that decrease the probability of intercept by the enemy's electronic warfare
- enhanced immunity against clutter and jamming
- redeployable with various transportation means, including planes
- short deployment and march order time
- enhanced immunity against anti-radar missiles (ARM)
- capability of co-operating with the automated anti-aircraft C2 systems used by different armed forces
- capability of detecting low observables
- capability of detecting active mortars and of determining coordinates of launch and impact points.



In the design of the BYSTRA Redeployable Radar, several new technologies are applied to obtain required performance in terms of ranges of targets detection and tracking the targets of different classes, jamming and clutter suppression, high measurement accuracy of targets' coordinates of the, increased resolution and enhanced reliability.

These technologies include: an active electronically steered antenna with software controlled beams, liquid cooled solid-state T/R modules, digital beam-forming, digital synthesis, coding and matched filtering of signals, robust coordinates estimation of with the use of the algorithm that limits the influence of multipath propagation, tracking subsystem using the multi-hypothesis algorithm, subsystem for detecting hovering helicopters.

Basic components of the radar, its deployment subsystem, wire and radio communication subsystem, navigation subsystem (GPS and inertial), power generator, two operator's posts (one of them portable) and auxilliary components (cooling subsystem, meteo station etc.) are installed on the armored ŻUBR/P vehicle.

A radar decoy with an own power generator is located on the trailer.

Specification	
Operating frequency	C band
Antenna	AESA
Instrumented range	80 km
Elevation coverage	up to 70°
Azimuth coverage	360°
Information refreshing time	2 s
Communication and data exchange system	radio and wire
Identification system IFF	Mode 1, 2, 3/A, C (SIF), Mode 4 (SM) and Mode S, Mode 5-ready
Crew	2

