



State Enterprise Specialized Foreign Trade Firm

PROGRESS



UKROBORONPROM

Ukrainian Defence Industry

RADAR LOCATION AND AIR DEFENCE



WE DO:

- production of artillery armament
- repair and upgrade of air defense equipment, communications
- design and production of radars, electronic warfare stations and optical electronic countermeasure stations





RADAR-X1-M

DOPPLER GROUND SURVEILLANCE RADAR /PERIMETER SURVEILLANCE RADAR

Application

Detection of (slow) moving ground targets in severe clutter environment detection of low altitude, low rcs air targets

Measurement of target coordinates (distance and azimuth), rcs, radial velocity, and moments of doppler spectra

Key markets

1. Defence
 - Forward operating base (fob) security
 - Mobile force protection
 - Checkpoint security
 - Forward observation
2. Critical infrastructure protection
 - Airport cz/rz boundary monitoring
 - Nuclear power station security
 - Security of oil, gas and water pipelines
 - Crisis response
3. Coastal security
 - Harbour, seaport and naval base protection
 - Coastal surveillance
 - Offshore platform security
 - Lake and inland waterway monitoring
4. National border security
 - Detection of illegal immigrants and smugglers of contraband goods
 - Prevention of narco-terrorism
 - Monitoring of border incursions

Advantages

Capability of detection of slowly moving targets with low rcs in the strong clutter background including marine targets radar can be mounted on a mobile platform (car, track, trailer etc.)

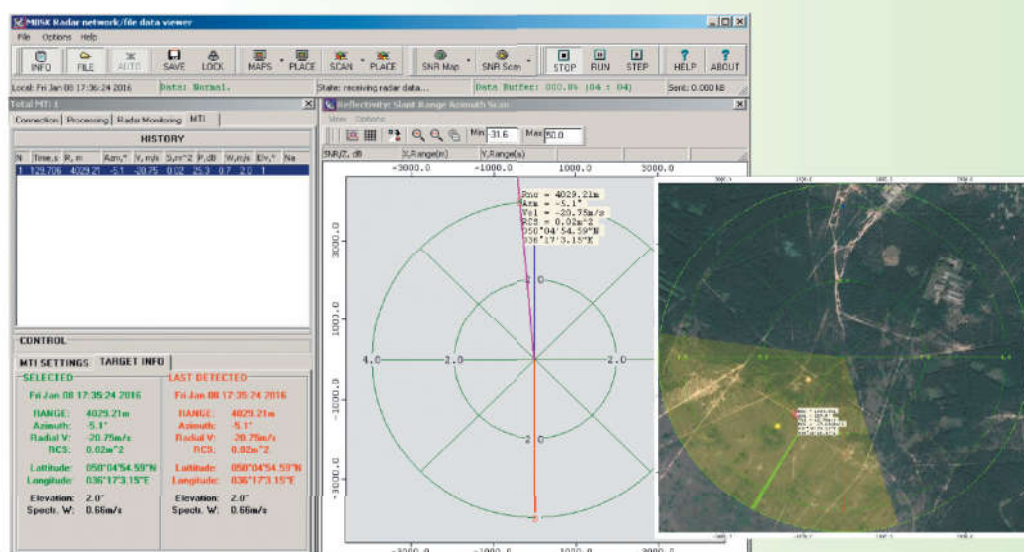
All weather operation

Integration of radar data with standard geographic information systems Industry-standard communication interface



Technical specification

Target with typical RCS, m2	Detection range provided by SNR>15dB
UAV (UAS), 0,01	7 km
Man, 0,5	18 km
Vehicle, Airplane, Boat, 1	25 km



T typical moving target detection performance

Target with typical RCS, m2	Detection range provided by SNR>15dB
Instrumental range	0.1...30km
Antenna type	Waveguide slotted
Peak power	30W
Elevation span	25°
Azimuth scanning	360° (continuous)
Scanning rate	90°/s (max)
Targets coordinates	Azimuth-Range
Target location accuracy	
- range	up to 5m
- azimuth	1°
Target radial velocity accuracy	0.1m/c
Min. radial velocity	0.2m/c
Coordinate system	WGS-84 and polar
Dimensions	12x0.5x0.75m ³
Weight	65kg
Input Power	300W (max)
Data and Control Interface	1000BASE-TX Ethernet





RL-08

LASER GYROS FOR NAVIGATION SYSTEMS



Purpose:
measurer of base angular rate vector projection on laser gyro sensitivity axis.

Features:
laser gyros with 3 different values of perimeter length. Monoblock structure, ring laser on a dither stand in electromagnetic screen.

Scope of application:
laser gyros are used in strapdown inertial navigation systems.

Technical characteristics:

Bias stability error, deg/hour	0.3...0.7
Angular random walk, deg/√Thour	0.03...0.08
Scale factor stability error	100 ppm
Angular rate range, deg/s	±1000
Operating temperature range, °C	-40...+65

Perimeter - 8 cm

RL-16

LASER GYROS FOR NAVIGATION SYSTEMS

Technical characteristics:

Bias stability error, deg/hour	0.01...0.03
Angular random walk, deg/√Thour	0.002...0.04
Scale factor stability error	20 ppm
Angular rate range, deg/s	±600
Operating temperature range, °C	-40...+65

Perimeter - 16 cm

Purpose:
measurer of base angular rate vector projection on laser gyro sensitivity axis.

Features:
laser gyros with 3 different values of perimeter length. Monoblock structure, ring laser on a dither stand in electromagnetic screen.

Scope of application:
laser gyros are used in strapdown inertial navigation systems.



RL-28

LASER GYROS FOR NAVIGATION SYSTEMS



Purpose:
measurer of base angular rate vector projection on laser gyro sensitivity axis.

Features:
laser gyros with 3 different values of perimeter length. Monoblock structure, ring laser on a dither stand in electromagnetic screen.

Scope of application:
laser gyros are used in strapdown inertial navigation systems.

Technical characteristics:

Bias stability error, deg/hour	0.002...0.005
Angular random walk, deg/√Thour	0.001...0.003
Scale factor stability error	10 ppm
Angular rate range, deg/s	±400
Operating temperature range, °C	-40...+65

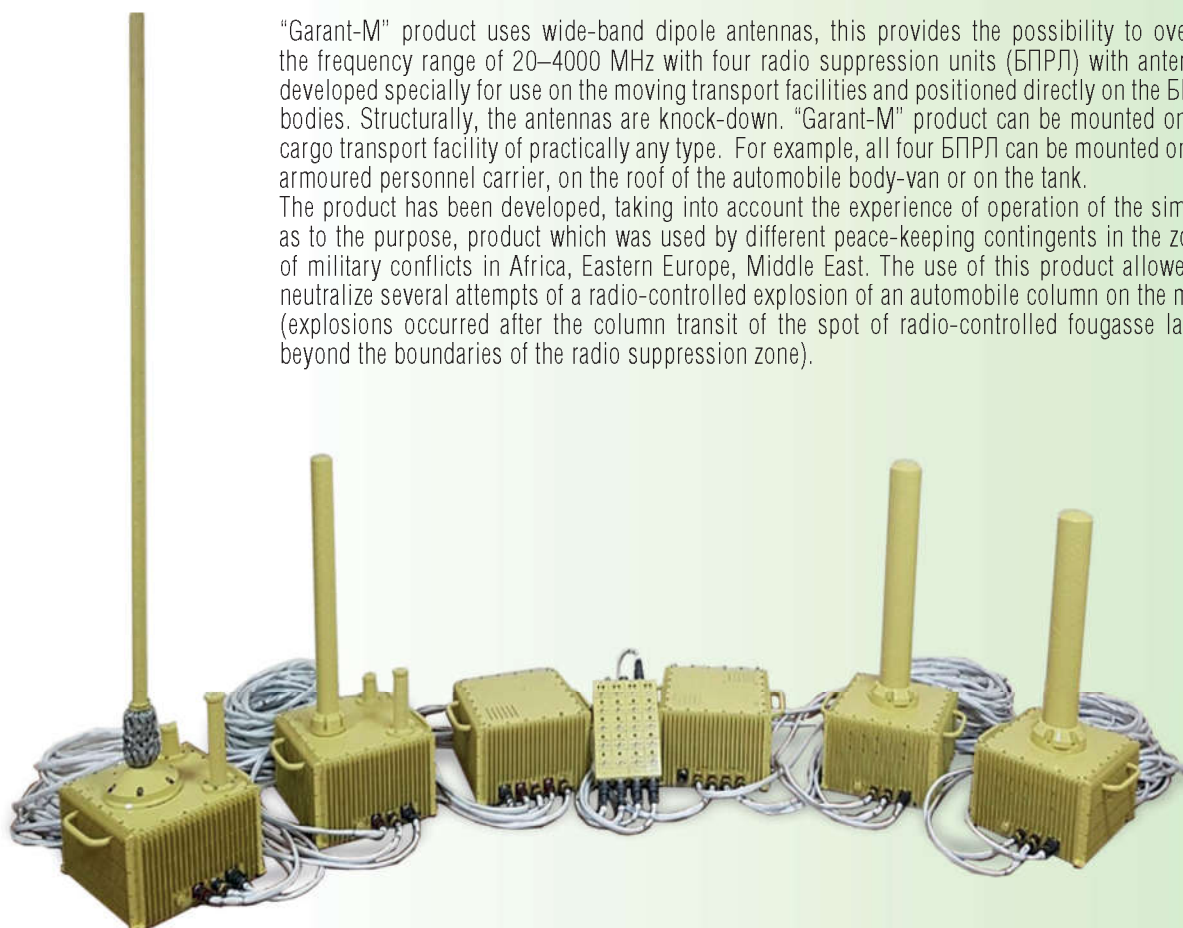
Perimeter - 28 cm



GARANT-M

SYSTEM TO SUPPRESS CONTROL RADIO LINKS OF RADIO FUSES OF FREQUENCY RANGE OF 20–4000 MHz

"Garant-M" product uses wide-band dipole antennas, this provides the possibility to overlap the frequency range of 20–4000 MHz with four radio suppression units (БРПЛ) with antennas developed specially for use on the moving transport facilities and positioned directly on the БРПЛ bodies. Structurally, the antennas are knock-down. "Garant-M" product can be mounted on the cargo transport facility of practically any type. For example, all four БРПЛ can be mounted on the armoured personnel carrier, on the roof of the automobile body-van or on the tank. The product has been developed, taking into account the experience of operation of the similar, as to the purpose, product which was used by different peace-keeping contingents in the zones of military conflicts in Africa, Eastern Europe, Middle East. The use of this product allowed to neutralize several attempts of a radio-controlled explosion of an automobile column on the move (explosions occurred after the column transit of the spot of radio-controlled fougasse laying beyond the boundaries of the radio suppression zone).



Basic Technical Characteristics:

Frequency range of noise radiation	20–4000 MHz
Type of noise	wide-band barrage
Summary integral output power of noise	800 W, minimum
Radio suppression distance	75–500 m (depending on the suppressed radio link parameters)
Consumed power	2200 W, maximum
Supply voltage	from 21 to 27 V (2 storage batteries of 12 V or vehicle-borne system of +24 V)
Ambient temperature	from minus 40 °C to +60 °C
Any of the jamming transmitters can be switched on/switched off with the help of the control panel	





GM-03AV

INERTIAL MEASUREMENT UNITS

**Technical characteristics:**

Gyro bias stability, °/hr	<0.015
Gyro dynamic range, °/sec	±90
Gyro random walk, °/Vhr	<0.01
Gyro SF accuracy, ppm	10
Acc bias stability, pg	<30
Linear Acc range, g	±25
Acc SF accuracy, ppm	100

IMU-08

INERTIAL MEASUREMENT UNITS

**Technical characteristics:**

Gyro bias stability, °/hr	<0.5
Gyro dynamic range, °/sec	±400
Gyro random walk, °/Vhr	<0.05
Gyro SF accuracy, ppm	200
Acc bias stability, pg	<200
Linear Acc range, g	±40
Acc SF accuracy, ppm	400

IMU-16

INERTIAL MEASUREMENT UNITS

**Technical characteristics:**

Gyro bias stability, °/hr	<0.1
Gyro dynamic range, °/sec	±300
Gyro random walk, °/Vhr	<0.01
Gyro SF accuracy, ppm	20
Acc bias stability, pg	<60
Linear Acc range, g	±40
Acc SF accuracy, ppm	200

IMU-28

INERTIAL MEASUREMENT UNITS

**Technical characteristics:**

Gyro bias stability, °/hr	<0.015
Gyro dynamic range, °/sec	±90
Gyro random walk, °/Vhr	<0.01
Gyro SF accuracy, ppm	10
Acc bias stability, pg	<30
Linear Acc range, g	±25
Acc SF accuracy, ppm	100



AKS-05M

ARE PENDULUM COMPENSATION ACCELEROMETERS WITH SILICON SENSITIVE ELEMENT, CAPACITIVE SENSOR OF SENSITIVE ELEMENT POSITION, AND INTEGRATED TEMPERATURE SENSOR



Parameter::

Measurement range, g	±45
Bias stability:	
- run-to-run, g;	±3x10 ⁻⁵
- in run (6 hours), g	1...3x10 ⁻⁵
Current scale factor, mA/g	1.0±10%
Temperature coefficients of:	
- bias stability, g/°C	0.5...3.0x10 ⁻⁵
- scale factor, ppm/°C	<50
Nonlinearity	< 5x10 ⁻⁵
Bandwidth (-3 dB), Hz	>1200
Impact resistance (0,5 sin)	45g/6ms
Electronics unit	In-built
Weight, g	85

AKS-06M

ARE PENDULUM COMPENSATION ACCELEROMETERS WITH SILICON SENSITIVE ELEMENT, CAPACITIVE SENSOR OF SENSITIVE ELEMENT POSITION, AND INTEGRATED TEMPERATURE SENSOR

Parameter::

Measurement range, g	±45
Bias stability:	
- run-to-run, g;	±5x10 ⁻⁵
- in run (6 hours), g	5x10 ⁻⁵
Current scale factor, mA/g	1.0±10%
Temperature coefficients of:	
- bias stability, g/°C	5x10 ⁻⁵
- scale factor, ppm/°C	50
Nonlinearity	-
Bandwidth (-3 dB), Hz	800
Impact resistance (0,5 sin)	45g/6ms
Electronics unit	out-built
Weight, g	55





36D6-M1

MOBILE THREE-DIMENSIONAL RADAR STATION

The 36D6-M mobile 3D airspace surveillance radar station is designed to be used as a part of modern automated Air Defence Systems, Anti-Aircraft Missile Complexes and to detect low flying air targets under active or passive jamming, as well as for military and civil air traffic control.

Radar SPP-15

Dimension:
13882x2890x3325



Dimension:
9040x2870x3300

Weight:
21,54 t



Weight:
10,8 t

Transport vehicle:
on the customer's



Transport vehicle:
on the customer's



Main Specifications:

Detection range for low flying targets: RCS – 1 m ²	
■ at 50 m flight altitude	31 km
■ at 100 m flight altitude	42 km
■ at 1000 m flight altitude	110–115 km
RCS – 0.1 m ² (cruise missile) at 50 m flight altitude	27 km
Azimuth coverage	360°
Elevation coverage	-0.5° ... 30°
RPM	6 and 12 rpm
Suppression factor	>48 dB



80K6

MOVABLE THREE-DIMENSIONAL RADAR STATION OF ALL-ROUND VIEW

Movable three-dimensional radar station of all-round view at small, medium and high altitudes with the coordinate and the trace outputs; works independently or as part of regional and national Automated Control Systems (ACS).

Main Specifications:

Limits of the station in range:

■ minimal	31 km
■ maximum	42 km
■ by azimuth	110–115 km
■ elevation	27 km
■ adjustment	360°
Target detection range, RCS = 3–5 m ²	
■ at an altitude 100 m	40 km
■ at an altitude 1000 m	110 km
■ at an altitude 10 ... 30 km	300–350 km

Operating Frequency Range: S



Time of inspection: 5 or 10 sec





80K6M

MOBILE THREE-DIMENSIONAL RADAR STATION OF ALL-ROUND VIEW

The 80K6M mobile radar station is designed to be used as a part of radiotechnical and anti-aircraft missile troops for targeting providing.



Operating band:
S



Frequency quantity:
6



Indicator range:
400 km



Quantity of elevation scanning modes:
2



Time of mode switch-over:
not more than 0.1 sec



Main Specifications:

Elevation coverage area:	
■ in mode 1	0...35 degrees
■ in mode 2	0...55 degrees
Scanning rate	5, 10 sec
Clutter suppression	≥50 dB
Beam shaping method	digital
Quantity of antenna beams	12
Target detection range, RCS = 3–5 m² (Probability of adequate detection P=0.8 and false alarm probability F=10–6)	
■ at 10 km flight altitude	200 km
■ at 100 km flight altitude	40 km



Main Specifications:

Range exploration VP:	
■ artillery	30 km
■ mortars	30 km
■ MLRS	30/40 km
■ tactical missiles	55 km
Range control Accuracy:	
■ artillery	30 km
■ MLRS	30/40 km
■ tactical missiles	80 km
Throughput goals	50 per minutes

1L220U, 1L220U-KS

COUNTER-BATTERY RADAR

Multifunctional complex 1L220U (1L220U-KS) has a flexible hardware and algorithmic tools that can be easily adapted for various combat missions.

1L220U	1L220U-KS
Dimension: 9214x3250x3350	Dimension: 11500x3160x3800
Weight: 39,5 t	Weight: 23,5 t
Transport vehicle: TM 5951	












“DELTA”

NAVAL 2D SURVEILLANCE SOLID-STATE RADAR

«Delta» is a modern naval/land two-dimensional pulse coherent solid-state radar for surface and air surveillance with low interception probability of its electromagnetic emission. It delivers the current coordinates of any target located within its detection range in a fully automatic way.

	Frequency: I band
	Number of targets tracked: not more than 50
	Antenna rotation period: 3, 6, 12 s
	Range scales: 12, 24, 48, 96 km
	Power supply: 220 V, 50 Hz
	Power consumption: not more than 500 W
	Equipment weight: 150 kg

Main Specifications:

Coverage:	
■ in range	96 km
■ in azimuth	0–360 °
Maximum target detection range:	
■ small size air type	8–20 km
■ ground-based (automobiles)	16–20 km
■ surface type	radio horizon range
Coordinates determination accuracy:	
■ range	20–40 m
■ azimuth	8–10 mrad
Communication with command post	RS-422
Deployment time with full operation mode preparation	not more than 2 min



TRACE-1


MOVABLE AUTONOMOUS SECONDARY RADAR

A solid state movable autonomous secondary radar (PAVRL) with phased array antenna (AFD), working in the system of radar identification (SART) NATO Mk XA (Mk XII) and international ATC system RBS. It provides radio-locating information for radio- engineering Air Defence units, Air Force and Anti-Aircraft Missile Troops SMP, as well as for Air Traffic Control services.

Main Specifications:

The rms error of determining the coordinates:	
■ in range	≤ 100 m
■ in azimuth	≤ 50 min
Indicators of quality en-route information:	
■ coefficient wiring	0,95
■ factor false trails	0,0001
Number of simultaneously accompanying air objects	not less than 250

Field of view in range:  2 ... 360 km

Field of view in azimuth:  360°

Field of view in height:  25 km





“POLOZHENIYE 2” (1AR1)

SOUND RANGING SYSTEM

Automated Sound Ranging System “Polozheniye 2” (1AR1) is intended for reconnaissance of enemy's artillery guns and mortars positions and for servicing its artillery's firing.



Fire positions reconnaissance range:
25 km



Deployment time:
45 minutes



Clotting time:
30 minutes



Crew:
8



Main Specifications:

Accuracy of target location:

■ by the range	0.6 - 0.8 %
■ by azimuth	0-03 - 0-04
Target engagement rate	30 Objective / min
Time of identification of one target's coordinates	less than 3 sec.
Number of vehicles	1 armored chassis MTLB- 1



RCU-1

MOBILE RADAR COMMAND AND CONTROL UNIT

Main Specifications:

Communication channels PCU-1 provide:

Receiving radiolocation information from the RLS 36D6-M and P-18, control RLS 36D6-M on wired communication channels

Transmit / receive of radar data:

■ through satellite modem

■ through modems «TAYNET» on commutation or dedicated telephone line

Radar data transmission

on a radio channel to CP-12M (ZRK) in the frequency range UKV radio station (optional)

Operational-command communication through radio channels:

■ with the staff management of command posts in the operating frequency range radio station Micom-2TS (1,6-30 MHz)

■ the navigator with the pilots of the aircraft in the operating frequency range radio station R-862 (100-149, 975 МГц) и (220-399, 975 MHz)

■ with the staff control point PU-12M (ZRK) in the the operating frequency range of VHF radio station (20-52 MHz)

It is intended for organization of the Air Defense automated systems, aviation control, radar remote control, data recording, staff training
The main functions:

- remote command and control of RLS 36D6-M;
- collection and processing of radar data from the RLS 36D6-M and RLS P-18 as part of radio air defense units with air situation information providing to command posts over wired and satellite channels;
- collecting radar information from remote sources, the formation of a unified picture of the air situation;
- fighter aircraft pilots' control;
- target indication providing for PU-12M command and control centers and mobile Anti-Aircraft Systems (optional).



AMBER-1800

VHF-BAND RADAR

Ground-based mobile VHF-band radar AMBER-1800 provides automatic deployment on prepared sites and is designed for detection of air targets, determination of their coordinates and distribution of radar information to consumers. Transmitter and receiver of AMBER-1800 radar are solid-state.

Mobile VHF-band radar AMBER-1800 is designed on the basis of automatically deployed multi-section antenna system. The antenna itself represents a stacked array of dipole-slot antennas with linear horizontal polarization.



Performance characteristics of the stacked array antenna:

Elevation of the antenna phase center	6 meters
Operational frequency band from	140 MHz to 180 MHz
Output impedance	50 Ohm
Beamwidth	6 degrees
Level of sidelobes	minus 20 dB
Antenna rpm	3 to 6

Time of deployment (stowing down) and leveling of the antenna mast assembly after vehicle positioning on prepared site does not exceed 12 minutes.

P-18MA

SOLID STATE LONG-RANGE SURVEILLANCE RADAR

P-18MA radar features:

- metric band for «counter-Stealth» capability;
- maximum use of COTS components;
- stable, fail-soft, modular solid-state transmitter;
- largely simplified maintenance;
- engineered for minimum cost of ownership.

Detection range for a target with RCS of 2.5m²:

Altitude (meters):	Range (km):
100	32
500	70
1000	80
3000	120
10000	360



-  Transmitter pulse power:
8 kw
-  Frequency range:
140 – 180 MHz
-  Clutter suppression ratio:
40 db



MARS-L

MOBILE RADAR SYSTEM

Purpose:

- Automatic detection at low/med/high altitudes;
- Combined mobile PSR and SSR solution on one vehicle;
- Automatic tracking and data distribution.

Function:

- Aircraft automatic detection by PSR and SSR;
- Aircraft azimuth and range measurements;
- Displaying air situation at operator workstations;
- Automatic output of air situation to users via communication channels;
- Recording of air situation.

Applications of MARS-L:

- as aerodrome control radar for flight mission assurance units;
- as radar field gap filler for radar troops;
- as mobile low-altitude surveillance radar for Land Forces Air Defense;
- as mobile NATO standardized secondary radar for rapid reaction force peacekeeping operations;
- as target acquisition and designation radar for prospective anti-aircraft missile systems.



Secondary channel:

Support of RBS, MK XA and Eastern IFF transponder systems

Time of deployment (tearing down) by qualified personnel	10 min
Protocol of data acquisition and output	ASTERIX (CAT 001, 002)
Service life	10 years or 60000 h



Detection Range (target of fighter type):

Altitude (m):	Range (km):
100	40
500	80
1000	120
45000	210

PRV-16MA

MOBILE HEIGHT-FINDER

Mobile height finder PRV-16MA is intended for measurement of aircraft altitude from target designations provided by interfaced radar or automated control system and bearing of active jammers. By default PRV-16MA distributes data in ASTREIX format. Along with two-dimensional range finders (such as upgraded P-18/19 etc.) PRV-16MA forms the back-bone of 3D Radar Complex. System is offered as the upgraded follow-on to the prototype, analogue PRV-16. PRV-16MA can be easily interfaced with surveillance radars and command and control centres such as P-18MA, P-14MA, MARS-L, Module, etc.

Advanced digital technologies of radar signal processing and solid-state components have allowed to improve performance characteristics and jamming immunity, electromagnetic compatibility, decrease power consumption.

Resolution (not worse):

On the slant range	300 m
On the azimuth	3°
On the elevation	0.5°
Time of deployment	15 min



5N84AMA

SOLID STATE SURVEILLANCE RADAR

Upgrade of early-warning VHF band radar 5N84A (5N84, 44Zh6 or P-14) offers the best (in terms of cost/efficiency ratio) alternative to restoration or repair of legacy prototypes.

As a result of upgrade the radar's detection performance is efficiently improved. 5N84AMA (P-14MA) features automatic tracking capability as well as acquisition of data from other surveillance radars and height-finders. Data can be exchanged over pro-vided communication channels in approved format.



Detection range up to:
500 km



Transmitter pulse power:
30 kW



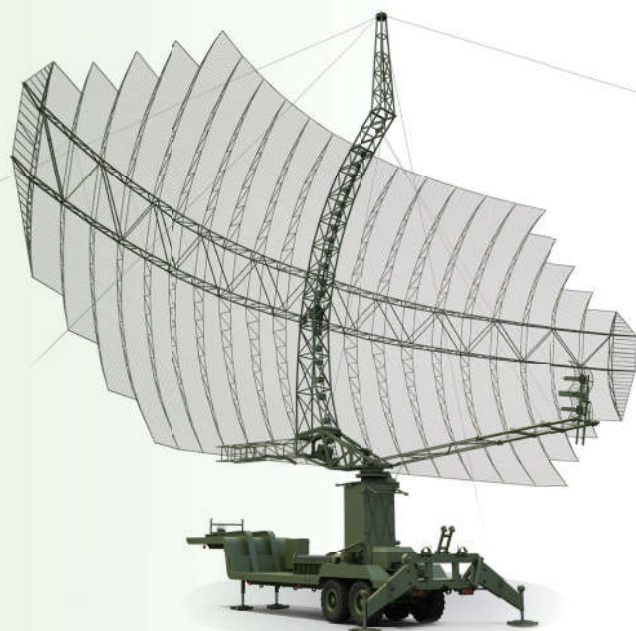
Frequency range:
160-200 MHz



Clutter suppression ratio:
40 db



Dynamic range of receiver and DSP:
up to 100 db



Advantages of early warning radar system:

- Metric band for effective "Counter-Stealth" capability
- Extremely Long Range
- New stable, fail-soft, modular solid-state transmitter and receiver
- Largely simplified maintenance
- Modernized antenna rotation system

S-125-2D (PECHORA-2D)

SAM SYSTEM



Upgraded Surface-to-Air Missile System S-125-2D is intended for protecting political and administrative centres, strategic civil and military sites, friendly forces against various means of enemy air attack.

System features:

- Service life not less than 15 years;
- High efficiency and mobility;
- High immunity to RF interference;
- Survivability;
- Exceptional performance characteristics.

Missile guidance methods:

- 3 point
- half lead
- optimal dynamic control (new)

Engagement envelope:

Min. altitude	20 meters
Max. altitude	21 km
Min. range	3.5 km
Max. horizontal range	27 km
Max. slant range	34 km

Engagement range (fighter):

Altitude 7 km	37 km
Altitude 350 m	27 km
Altitude 50 m	25 km



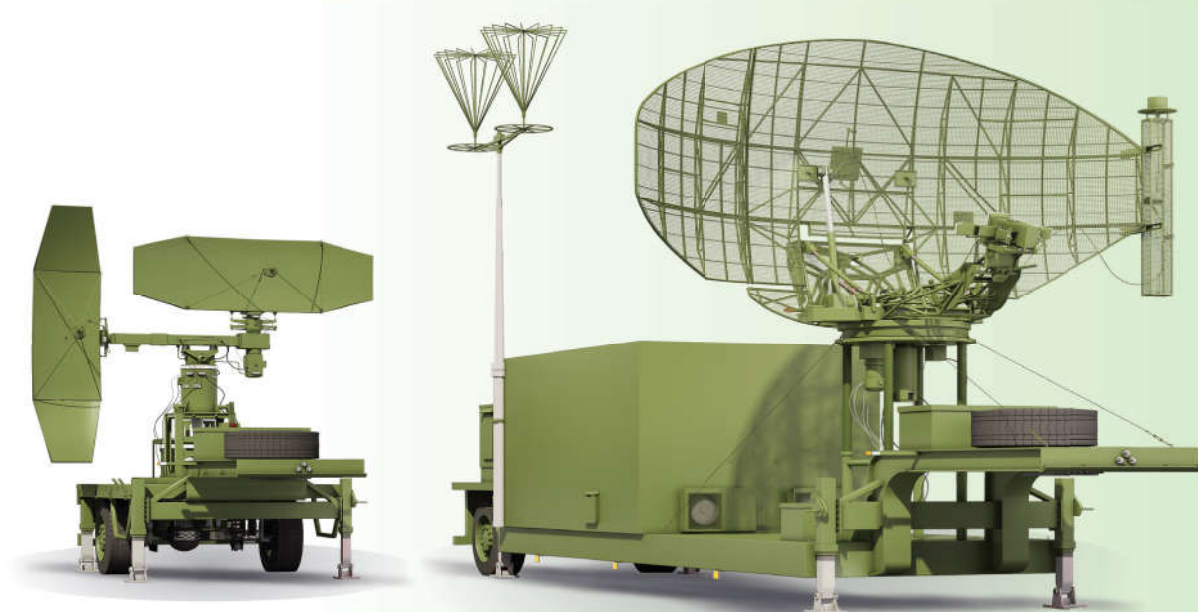
MIBI:
1500 hours





RSP-10MA

GROUND-CONTROLLED APPROACH SYSTEM



Upgraded Ground-Controlled Approach (GCA) system RSP-10MA is intended to ensure flight safety of aircraft and helicopters within terminal airspace, obtain positional information and guide aircraft to a safe landing in normal and adverse weather conditions. RSP-10MA consists of the surveillance radar (ASR) combining primary and secondary channels and Precision Approach Radar (PAR).

RSP-10MA features efficient protection against asynchronous pulse interference, active and passive jamming.

Asynchronous pulse interference is completely suppressed by digital signal processing. Jamming protection is achieved through expansion of the dynamic range of the signal processor and capability of electronic frequency shifting. The operator workstation graphically presents noise to the operator allowing for visual assessment of jamming and interference at given frequency and bearing of a jammer. Passive interference is rejected through digital MTI and generation of adaptive clutter map.

ADVANTAGES:

- Approach control from either of the two directions;
- Approach correction over the radio channel;
- Operation is independent of the airborne equipment;
- Aircraft collision prevention;
- Lowest dependence on weather conditions;
- Availability of the secondary channel (RBS, Mark X, Eastern IFF).

System displays the following data received from the RBS or Mk-XA enabled aircraft transponders:

- Aircraft position (azimuth, range);
- Mode 1,2 and 3/A response codes;
- Mode C altitude;
- Emergency alerts (Modes 1,2,3/A);
- I/P (Identify Position) signals (Modes 1,2,3/A).

System performs automatic switching to the standby power should cutoff of the mains or malfunction of the power plants occur. The uninterruptible power supply provides radar operation for not less than 20 minutes in case of mains cutoff, enabling system transition to standby power supply. Power consumption of the system is 15 kW.

PAR detects and measures horizontal and vertical deviation from glide path of an aircraft on approach as well as distance from aircraft current position to an estimated landing point.



Operating frequency:
1250 MHz – 1350 MHz (PSR)



Start-up time:
3-5 min.



MODULE

AUTOMATED MOBILE COMMAND POST



Automated Mobile Command Post (AMCP) "MODULE" is the basic element in the structure of Air Defense and Air Force Command, Control Communications & Computers (C4I) defense networks.

Flexible structure and open architecture concept allow "Module" to be easily configured as Control and Reporting Post (CRP) and Control and Reporting Center (CRC) and serve as the backbone of successful C4I operations.

AMCP "Module" can be reconfigured into a Joint Operations Centre (JOC). JOC is the highest element in the structure of Air Defense and Air Force Command, Control Communications & Computers (C4I) defense networks. JOC is intended for planning, directing and executing joint operations and has tailored composition, organization and functions.

JOC coordinates with other command and control units with special attention on integration and interoperability ensuring nationwide airspace control and flight following.

Advantages:

- Module design principle;
- Unification of hardware, data processing tools and facilities;
- Flexibility of structure;
- Capability of connection and usage in automatic mode of different types of radar sensors;
- Easy upgradeability and extendibility according to Customer requirements.

Performance characteristics:

MTBF	5000 hours
Interfaced surveillance sensors	16
Message protocol	ASTERIX, LINK 1, LINK 776 etc
Display coverage area:	
■ Range	800 km
■ Altitude	60 km
■ Speed	3600 km/h





KVADRAT-2D (2K12M1-2D)

SAM SYSTEM

Advantages of upgrade:

- Capability to detect and destroy low-flying targets including targets with small RCS;
- Improved operation in jamming conditions in presence of reflections from underlying surface;
- Automation of control from Command Post; automation of detection and tracking;
- Increase of kill area and kill probability due to optimization of signal processing. Increased detection and tracking range of low-flying targets;
- Improved survivability and control capabilities.
- Full remote control of engagement radar from remote workstations
- Crew protection of engagement radar from HARM

Upgraded 2K12M1-2D SAM System "KVADRAT-2D" features improved performance and extended functional capabilities due to new algorithms of data processing and displaying

Performance characteristics:

Time to acquire target:	3-6 s
MTBF:	1500 hours
Detection of cruise missile at altitude of 0.2 km: not less than	21 km



S-75M3A VOLGA-A

SAM SYSTEM

S-75M3A is upgraded high-altitude, command guided, surface-to-air missile system designed for point/area defence of administrative, industrial and military sites against all types of air threats at low, medium and high altitudes. S-75M3A is offered as the upgraded follow-on to S-75M3.

S-75M3A efficiently destroys strategic, tactical and army aircraft, high speed reconnaissance aircraft, drifting aerostats, helicopters and cruise missiles with radar cross-section of 0.1 m² and above.

S-75M3A "Volga-A" can receive target designations from command post of "Module" type or operate as a stand-alone system.

Advantages of upgrade:

- Capability to detect and destroy small targets including very low observable (VLO) aircraft;
- Improved operation in active and passive jamming environments due to new algorithms and technologies;
- Increased engagement envelope and kill probability in various jamming environment.

Performance characteristics:

Channel capacity target/missile:	3/3
Time to acquire target:	3-6 s
MTBF:	1500 hours
Deploy/stow time at site:	< 1 hour

