UkrOboronProm
Ukrainian Defence Industry

UKRSPECEXPORT

ELECTRONIC WARFARE, SURVEILLANCE AND TARGET DETECTION SYSTEMS

CATALOGUE

UKRSPECEXPORT

CONTENTS

80K6K1

3D AIR SURVEILLANCE RADAR

The mobile 3D air surveillance radar for low, medium and high altitudes with coordinate and track outputs, operating off-line or as a part of regional and national automatic control post (ACP) is designed to be used:

- as a part of anti-aircraft missile troops to issue targeting to anti-aircraft missile complexes;
- as an information link in the air forces and air defense units for air traffic control.

Operating frequency range: S

Scanning interval, s: 5, 10

Antenna type: DPAR

Number of transport units: 2

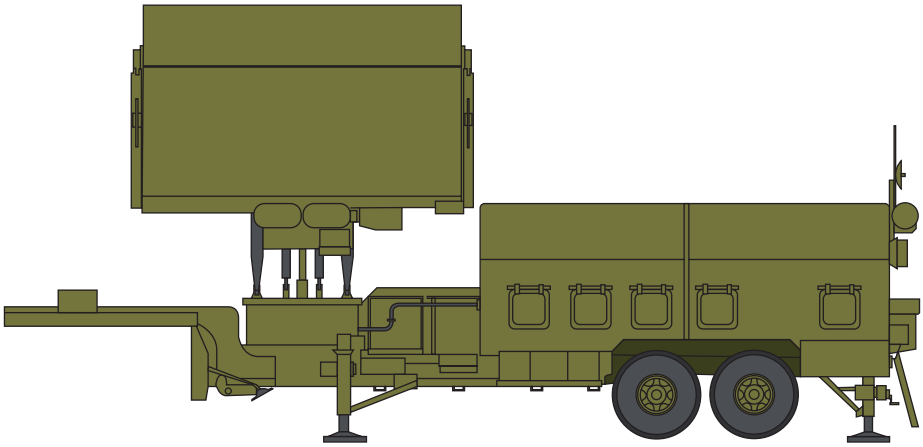
Deployment/closing time, min: 30

Main Specifications:

Maximum radar operation limits:	
in range, km	400
in azimuth, deg	360
in elevation,deg	0...35, 0...55
in altitude, km	40
Target detection range, RCS=3-5 m^2 (at P=0,8 $F=10^{-6}$):	
at flight altitude 10 km	200...250
Transmitter type	Multibeam klystron
Transmitter peak power, kW	130
Number of beams	12
Clutter suppression, dB	50
Jamming cancelling, dB	20
Track throughput, more than	300
IFF equipment	built-in

THE RADAR SYSTEM PROVIDES:

- detection, tracking and measurement of the airborne target coordinates and their ground speed under conditions of no interference and of natural noise and active and passive jamming as well as under their combined effect;
- recognition of the aircraft IFF-equipment, the individual and flight information gaining from friendly aircraft, data representation and issuing to users;
- jamming station direction finding in elevation and azimuth;
- data issuing to off-line display facilities and interaction with command posts of regional and higher national ACP.



RADAR STATIONS

80K6M

MOBILE 3D AIR SURVEILLANCE RADAR

Mobile Radar 80K6M designed to be used as a part of radio and anti-aircraft missile troops. The radar systems provides: detection, air objects three-coordinates and Doppler velocity measurement, air objects tracking; recognition of the aircraft IFF equipment; calculation of elevation and azimuth bearing at active jamming stations; data issuing to the radar workstations and the integrated systems.

Operation band: S

Frequency q-ty: 6

Indicator range, km: 400

Scanning rate, sec: 5, 10

Main Specifications:

Detection range of aircraft with RCS 3-5m^2, km	
At flight altitude 10 km	200
At flight altitude 100 km	40
Elevation coverage area, deg (In mode 1)	0…35
Elevation coverage area, deg (In mode 2)	0…55

80K6T

MOBILE 3D SURVEILLANCE RADAR

Mobile 3D air surveillance radar with transistorized transmitter, intended for low, medium and high flying targets detection is designed to be used:

- as a part of anti-aircraft missile troops to issue targeting to anti-aircraft missile systems;
- as an information link in the air forces and air defense units for air traffic control.

The radar can be transported by C-130 “Hercules” aircraft.

Frequency range: S

Scanning interval, s: 5, 10, 20

Antenna type: DPAR

Deployment/closing time, min: 15 - 20

Main Specifications:

Target detection range, RCS=3 m^2 (at P=0,8 F=10^{-6}):	
at flight altitude 10 km	350
Maximum radar operation limits:	
in range, km	500
in azimuth, deg	360
in elevation, deg	0...70

36D6-M2

3D AIR SURVEILLANCE RADAR

The mobile 3D air space surveillance radar is intended for detection and target identification at the low and high height at the influence of active and passive jammings with the coordinate and track data output.
Radar is designed to be used as a part of modern automated air defence systems and to provide target designation to air defence anti-missile systems.

Main Specifications:

Detection range for low flying targets: RCS = 1-2 m²	
- at flight altitude 100 m	42 km
- at flight altitude 1000 m	110 -115 km
Azimuth coverage	360⁰
Elevation coverage	0.5⁰…30⁰ in two rev.
RPM	>48 dB
Track capability	>256
Accuracy, range, m	100
Accuracy, azimuth, min	10…15
Accuracy, altitude, m	400 AT < 70 KM
MTBF	800 hours

Operation band: S

Instrumented range, km: 90, 180, 360

Antenna type: DPAR

Number of transport units: 2

Deployment/closing time, min: <30

MAIN SPECIFICATIONS:

- High probability of detection of small air targets, hovered helicopters including targets slowly moving tangentially to the radar.
- High-noise immunity.
- Capability of jammers bearings detection.
- Automatic association of echo-signals with return signals of the built-in IFF equipment.
- Capability to represent radar information and targeting over narrowband communication channels.
- High reliability.
- High mobility.
- Extreme stability of transmitter with true coherency.
- Unique doppler system of moving targets automatic detection

RADAR STATIONS

MR-18

HIGHLY MOBILE 3D AIR SURVEILLANCE RADAR

The mobile air surveillance radars with coordinate and track outputs, operating off-line or as a part of regional and national automatic control posts (ACP) are designed to be used:

- as a part of radio technical air defense units for air traffic control;
- as a part of antiaircraft missile troops to issue targeting to antiaircraft missile complexes;
- as a part of radio technical air force units for aviation training support.

Operating frequency Range: VHF

Consumption power, kW: 30

Number of transport units: 1+1

Scanning interval, s: 10 OR 20

Main Specifications:

Radar operation limits in range:	
Minimum, km	2,5
Maximum, km	400
in azimuth, deg	360
in elevation,deg	0...45
in altitude, km	40

RCP1M

MOBILE RADAR CONTROL POST

Construction is made on the basis of the van-vehicle of high cross-country capability KrAZ 6322 AF1. The van body is divided in two compartments.

Main specifications:

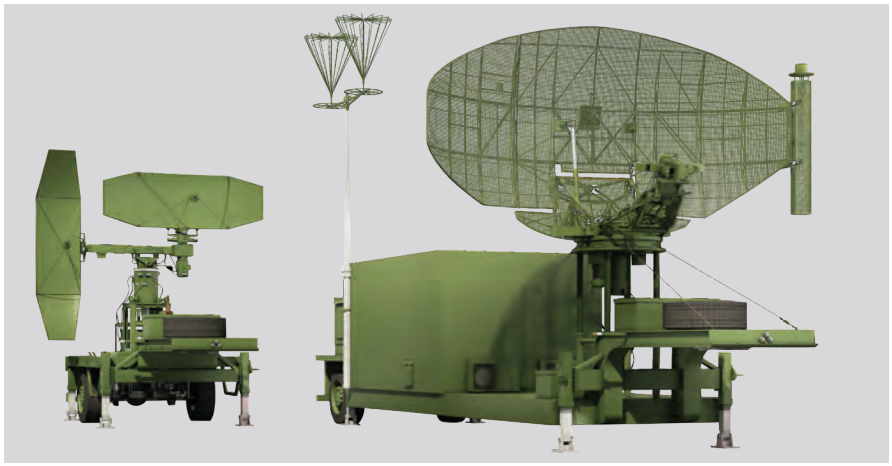
- Remote control for 36D6M, 80K6K1 radars
- Radar data collection and processing coming from radar with digital output as a part of AD radio communication unit and issuing the air situation picture to the command posts via wire and satellite communication channels
- Collecting the radar data from the remote posts and creation the integrated air situation picture
- Fighters' pilot control
- Providing target designation to AAMC (option)

Main Specifications:

Remote control for 36D6M, 80K6K1 radars
Radar data collection and processing coming from radar with digit output as a part of AD radio communication unit and issuing the air situation picture to the command posts via wire and satellite communication channels
Collecting the radar data from the remote posts and creation the integrated air situation picture
Fighters' pilot control
Providing target designation to AAMC (option)

RSP-10MA

UPGRADED GROUND-CONTROLLED APPROACH SYSTEM



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). Ground Controlled Approach System RSP-10MA is adopted by MoD of Ukraine for its Armed Forces.

Main Specifications:

	PSR	SSR
Range of working frequencies, MHz	1250 – 1350, 250 frequencies with step 0.4 MHz	1030 – interrogation, 1090 – RBS response, 740 – Eastern IFF response
Detection range for a target with RCS of 2.5m^2		
- minimum range	1000 m	2.7 km
- maximum range	110 km	150 km

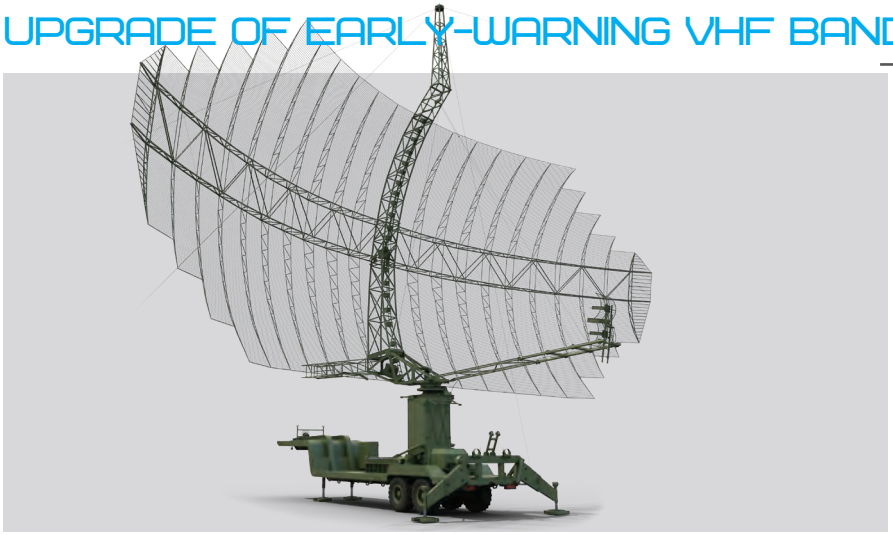
Start-up time, min: 3

Power consumption, kW: 15

Track capacity: NOT LESS THAN 100

P-14MA

UPGRADE OF EARLY-WARNING VHF BAND RADAR



Offers the best (in terms of efficiency/cost ratio) alternative to restoration or repair of legacy prototypes.

Features:

- metric band for “counter-Stealth” capability;
- maximum use of COTS components;
- option of containerized solution (two 20ft ISO);
- stable, fail-soft, modular solid-state transmitter and receiver;
- built-in test equipment;
- no special adjustments required during operation;
- largely simplified maintenance;
- engineered for minimum cost of ownership.

Upgraded P-14MA radar is adopted by MoD of Ukraine for its Armed Forces.

Main Specifications:

Range of working frequencies, MHz	160-200
Detection range for a target with RCS of 2.5m^2:	
at altitude of H=100 m	37 km
at altitude of H=1000 m	130 km
at altitude of H=3000 m	220 km
at altitude of H=10000 m	400 km

RADAR STATIONS

P-18MA

GROUND-BASED LONG-RANGE VHF BAND SURVEILLANCE RADAR

Is offered as the upgraded follow-on to its prototype, the analogue P-18.
Features:
- metric band for "counter-Stealth" capability;
- maximum use of COTS components;
- stable, fail-soft, modular solid-state transmitter and receiver;
- built-in test equipment;
- no special adjustments required during operation;
- largely simplified maintenance;
- engineered for minimum cost of ownership.

Upgraded P-18MA radar is adopted by MoD of Ukraine for its Armed Forces.

Main Specifications:

Range of working frequencies, MHz	140-180
Detection range for a target with RCS of 2.5m^2:	
at altitude of H=100 m	30/32 km
at altitude of H=1000 m	70/80 km
at altitude of H=3000 m	110/120 km
at altitude of H=10000 m	300/360 km

P-190MA

GROUND-BASED MOBILE UHF LOW, MEDIUM AND HIGH ALTITUDE SURVEILLANCE RADAR

Is offered as the modernized follow-on to its prototype, the analogue P-19.
P-190MA radar features:
- maximum use of COTS components;
- stable, fail-soft, modular solid-state transmitter;
- built-in test equipment;
- no special adjustments required during operation;
- largely simplified maintenance;
- engineered for minimum cost of ownership.

Modernized P-19MA radar is adopted by MoD of Ukraine for its Armed Forces.

Main Specifications:

Range of working frequencies, MHz	825-890
Detection range for a target with RCS of 2.5m^2, P=0.5:	
at altitude of H=100 m	35 km
at altitude of H=1000 m	90 km
at altitude of H=3000 m	150 km
at altitude of H=10000 m	300 km

TRASSA-1

STAND-ALONE MOBILE SECONDARY RADAR

The solid-state stand-alone mobile secondary radar with the phased antenna array operates under standards of both the NATO IFF system Mk XA (Mk XII), "Parol" identification system and international ATC system RBS. The radar is designed to issue radar data to units of radio-technical troops of air defense, air forces and AAMS as well as to ATC services.

Frequency band: L

Scanning interval, s: 6

Consumption power, kW: 8...10

Deployment/closing time, min: 30

Main Specifications:

Maximum radar operation limits:	
- in range, km	2…360
- in azimuth, deg	360
- in altitude, km	25

MANDAT-B1E

RADIO COMMUNICATION JAMMING COMPLEX

Complex "Mandat-B1E" is intended for electronic environment monitoring and jamming radio communication channels within frequency range of 1,5-1000MHz.
The complex "Mandat-B1E" provides for detection, determination of coordinates and setting time and frequency spot jamming against sources of emission operating either on fixed frequencies with any kind of modulation or frequency hopping (FH) with a hop rate amounting to 1000 hops per second.

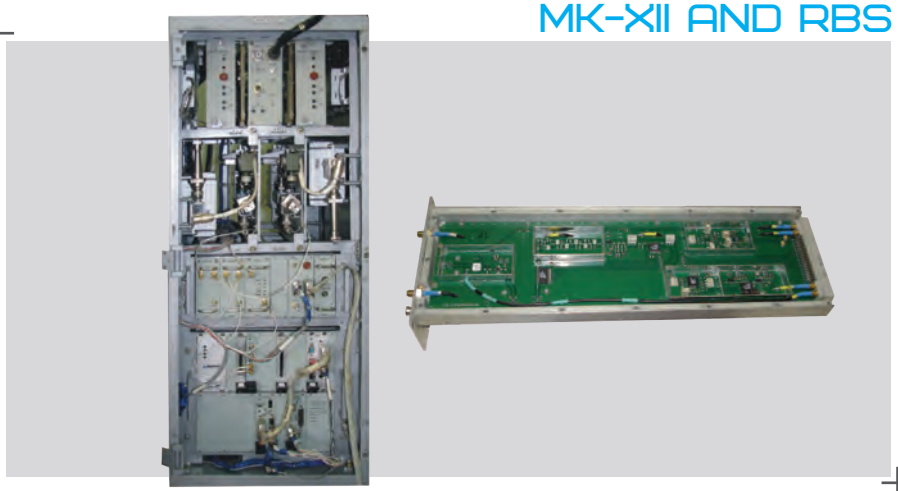
Main Specifications:

Name of the article	R-330RD	R-330KV1	R-330UV1	R-330UV2
Application	Automated reconnaissance station HF, UHF	Automated Jamming station HF	Automated Jamming station UHF1	Automated Jamming station UHF2
Operating frequency range, MHz	1,5 - 1000	1,5 - 30	30 - 230	225 - 1000
Coverage area (front / depth), km	up to 90 / up to 60			

INTERROGATOR 69Л02

BUILT-IN RADAR INTERROGATOR OF SYSTEM MK-XA, MK-XII AND RBS

Built-in radar interrogator 69Л02 meets the requirements of NATO (STANAG 4193) and ICAO standards.



Power consumed, W: <130

Turn-on time, min: LESS THAN 3

Power-supply system: DC VOLTAGE 27V

Weight, kg: 80

Main Specifications:

Pulse power of each transmitter is not less than 2000 W reducible by 12 dB at interval 3 dB	> 2000 W
Receivers' sensitivity is not less than	-126 dBW
Pulse amplitude difference between side-lobe suppression channel and main channel	<1 dB
Side-lobe suppression on response within dynamic range	70 dB

ЭД80

POWER STATION

The mobile body-type power station is designed to supply special-purpose products with thee-phase alternating current, 400V, 50Hz, from diesel-generator set or 380 V, 50Hz, from supply mains. Power station is equipped with a master and standby diesel-generator for the radar continuous operation.

Voltage, V: 380

Consumption current, A, no more: 165

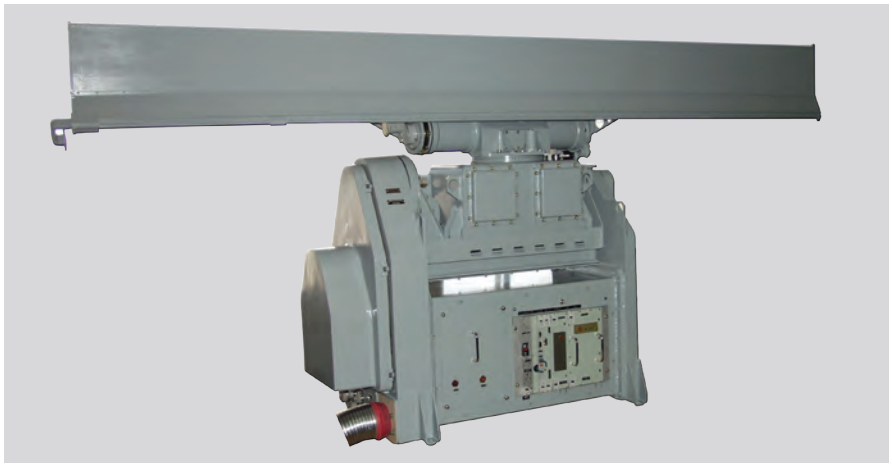
Power, kW, no more: 85

Output Parameters:

current	alternating, three-phase
rated power of master and standby diesel-generator, kW, no less	80
rated power of auxiliary diesel-generator (P13,5-4), kW, no less	10
current frequency, Hz	50
rated current, A, no more	126
power factor	0,8

DELTA–M

NAVAL 2D SURVEILLANCE LPI SOLID STATE RADAR



"Delta-M" is modern naval two-dimensional pulse coherent solid-state radar for surface and air surveillance with low probability of interception of its electromagnetic radiation.

Frequency band: X

Bandwidth, MHz: 150

Range scale, km: 12, 24, 48, 96

Number of tracked targets: UP TO 50

Main Specifications:

Maximum detection range:	
- small air target	8…20 km
- small surface target	up to horizon
Accuracy	20…40 m – range 4…6 mrad – at azimuth
Readiness time	up to 2 minutes

MINERAL – ME

MULTIFUNCTIONAL TARGET DESIGNATION RADAR SYSTEM

The complexes "Mineral–ME", of marine and coastal basis, are the integrated multifunction information-and-control systems that are based on the usage of different information sensors (of active, passive, mobile surveillance posts) within one information field, provide the over-the-horizon detection of surface targets and deliver of targets designation data for full firing range of missile weapon.

Main Specifications:

Radar		Active	Passive	MEI-MOR
Frequency band		X	X, G, E/F, D	X
Scanning zone	Through azimuth	360°	360°	360°
	Through range	up to 250 km	up to 450 km	up to 30 km

RADAR STATIONS

KASKAD

SHIP SELF-DEFENCE SYSTEM

KASKAD is a modern system which is intended to collect and process information and to ensure ship armament control. The system is based on DELTA and ROSA radars.
KASKAD performs collection, fusion, and identification of information on detected (within the ship's zone of responsibility) targets. The system also ensures evaluation of the danger level degree (hazard analysis),output of the plan on formidable targets' distribution, output of the target designation to the ship fire means'control units and direct control of the ship artillery armament.

Main Specifications:

	DELTA-M radar	ROSA radar
Frequency range	X (3 cm)	S (10 cm)
Coverage zone		
- range, km	96	200
- azimuth, deg	0…360	0…360
- elevation angle, deg	from minus 10 up to plus 60	0…35
Range scale, km	12, 24, 48, 96	50, 100, 150, 200
Resolution:		
- range, m	50…60	40…60
- azimuth, deg	1,0…1,5	2,0…2,5
Maximum detection range:		
- small air targets, km	8	≥ 45
- air targets with RCS > 10m^2	20	≥ 100
- surface targets, km	radio horizon	radio horizon
Peak radiation power, W	from 8 up to 80	≥ 1500
Number of tracked targets	up to 50	up to 50

ROSA

2D COHERENT-PULSE SOLID-STATE SURVEILLANCE RADAR

Radar "Rosa" is up-to-date marine coherent-pulse, solid-state, two coordinate all-around surveillance radar, which is intended for the surveillance after the on-land, surface and air situation in the area of responsibility.
Radar construction allows to place it on board of corvette, frigate etc.

Frequency range: S

Range scales, km: 25, 50, 100, 200

Peak-pulse power, W: UP TO 1500

Readiness time, m: UP TO 2

Main Specifications:

Maximum detection range (of airborne targets with the fly altitude of 1000m):	
- with RCS>10 m^2	≥100 km
- with RCS>2 m^2	>45 km
Maximum detection range of anti-crafts with RCS>0.05 m^2 with the fly altitude of >5m	>12 km
Number of tracked targets	up to 50

INTEGRATED DATA PROCESSING AND CONTROL SYSTEM

Main Specifications:

Coverage zone (limited by the parameters of the information sources)	
- at range, km	400
- at azimuth, deg.	0…360
- at elevation angle, deg.	85
- at height, km	30
Number of simultaneously processed targets	up to 400
Number of information sources	Up to 16
Number of information users	Up to 10
Cycle of exchange by data of targets designation, ms	20
Modes of targets designation:	automatic, semi-automatic
Modes of targets distribution:	centralized, autonomous
Number of operator's console	1 with 2 displays (up to 5)
To output of targets designation, s	≤0,5

IDPCS is the ship/land-based automated information-and-control system for data collection and complex data processing which is used when working with multiple information sources, and ensuring interaction with users. IDPCS is formed on the base of up-to-date apparatus means, advanced computer technologies and data processing methods.
Mission:

- data collection, storage and generalization on air and surface combat/tactical situation;
- situation assessment and prediction on decisions and plans on weapon application.

TRIADA

OPTOELECTRONIC FIRE CONTROL SYSTEM

Main Specifications:

Detection range in the daytime	not less than 5000 m
Detection range in the night time	not less than 800 m
Power supply	27 V
Weight	up to 70 kg

"Triada" – the universal fire control system for light armored vehicles, designed for surveillance, detection, automatic tracking of surface targets (armored vehicles, personnel), control the panoramic vision system "Pannorama-2P" targeting and armored personnel carrier module weapon control (IFV):

- automatic 30-mm machinegun cannon ZTM-1;
- automatic grenade launcher AGS-17;
- 7.62 mm machinegun PKT type;
- 212 antitank missile systems;
- smoke screens laying means.

MLME

MOBILE LABORATORY OF MEASURING EQUIPMENT

For checking of measuring apparatus in places of its operation.
Functionally it consists of two mobile complete sets УА2-4/А and УА2-4/Б, developed on the basis of bodies-vans of KrAZ truck.
The laboratory is equipped by life-support systems, including support of a thermal mode (air-conditioning, heating, ventilation) which allow to maintain inside of a body-vans temperature (20±5)^{0}C in a range of temperatures of outside air from minus 30^{0}C to +40^{0}C.
The chassis of the all-wheel drive truck provides reliable moving of laboratory on roads of different categories.

BK07-9200010-00

SPECIAL BODY FOR INSTALLATION ON A VEHICLE

SPECIAL BODY FOR INSTALLATION ON A VEHICLE BK07-9200010-00 is designed for personal, laboratory, workshop, field kitchen, electronic system, medical center and other accommodation type, with for beloved truck adjustable chassis.

Length, mm:	4 600
Width, mm:	2 500
Height, mm:	2 300
Weight, kg:	4 000

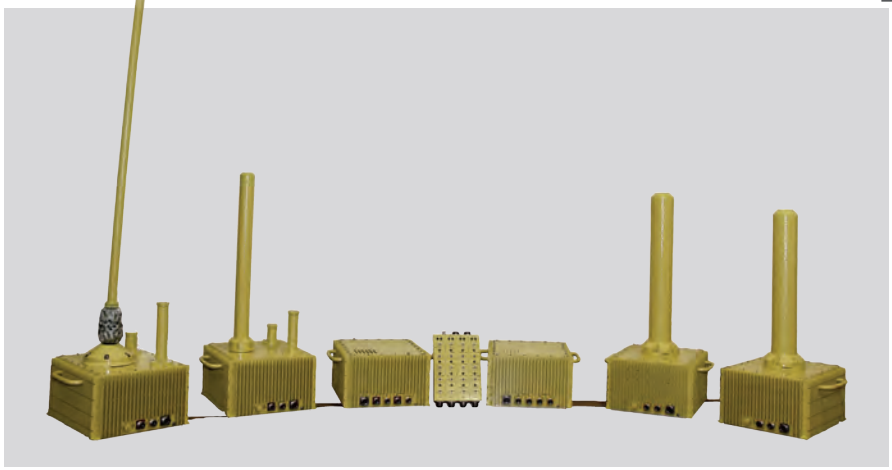
Equipment:

- Heating ventilation appliance
- Filter ventilation appliance

Version with some sound isolation and humidity absorption level is provided at the Customer's request

GARANT-M

CONTROL RADIO LINK SUPPRESSION SYSTEM



"Garant-M" product is designed for radio suppression of receiving sections of various radio technical facilities, radio communication channels of stationary, mobile and portable radio stations, radio telephones of cellular communication systems as well as for protection of mobile facilities (columns on the move and single combat and transport facilities) by preventing a radio-controlled explosion of explosive devices (mines, fougasses et al.).

Main Specifications:

Type of noise	wide-band barrage
Summary integral output power of noise	not less than 700 W
Radio suppression distance (depending on the parameters of radio lines)	not less than 50 m
Ambient temperature	from minus 40 °C to 50 °C

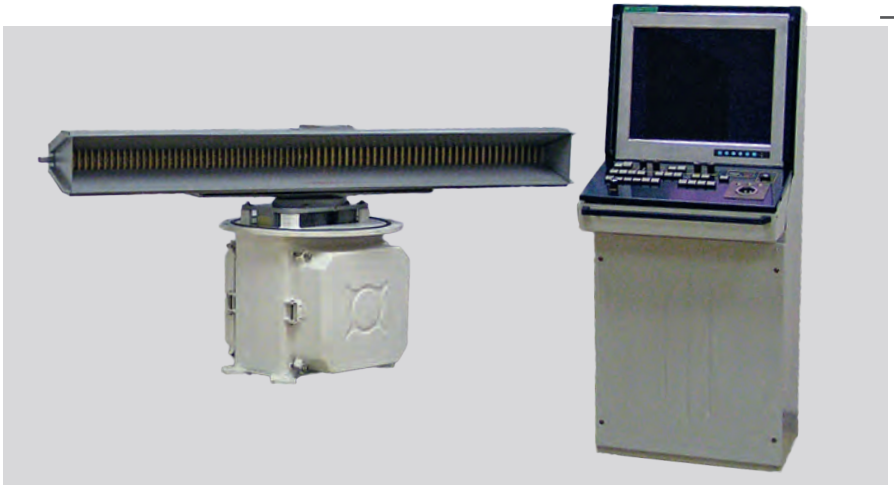
Frequency range of noise radiation, MHz:
20–4000

Power consumption, kW:
NOT MORE THAN 1,6

Supply voltage, V:
24

BUREVESTNIK-1M

RADAR UNIT



Purpose: installation on the sea-, river- and high-speed vessels, including those with the dynamic suspension, on the shore-based look-out stations

Main Specifications:

Maximum range of detection	
- average sea buoy	6 miles
- vessel of the displacement of 5000 tons	40 miles
- beacons, motor boats	4 miles
Minimal range of detection with the aerial lifted over the sea level 10 meters	10 – 36 m

Pulse power of the transmitter:
20 KW

Power supply, V:
170 – 265

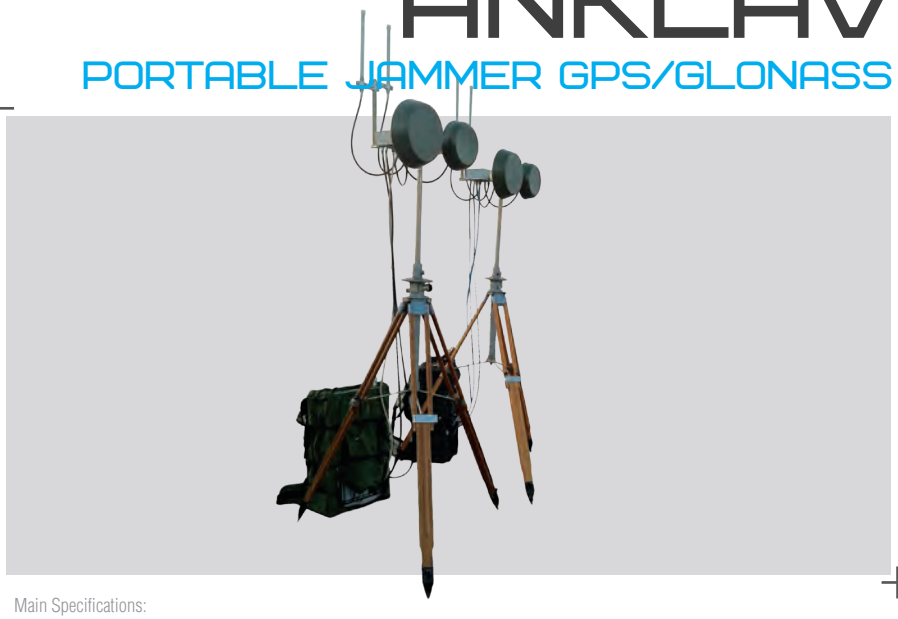
Power consumed, kW
1.0

PORTABLE RADAR AND DEFENCE SYSTEMS

ANKLAV

PORTABLE JAMMER GPS/GLONASS

Portable jammer “ANKLAV” is intended to provide jamming navigation receivers GPS/GLONASS. It is an effective tool in combating drones and precision-guided weapons. Portable jammer “ANKLAV” is manufactured in portable and stationary version with directional antennas and omnidirectional ones.



Main Specifications:

Jamming range, km:	
- with directional antennas	40
- with omnidirectional antennas	20
Operation modes:	GPS jamming / GLONASS jamming / GPS/GLONASS jamming

JAB

MOBILE SYSTEM OF SURFACE RECOGNITION AND ECM

Mobile System of surface recognition and ECM “JAB” is intended for detection, classification and identification of surface moving targets as well as low-speed low-flying air targets, target pointing with the aim to provide performance of tasks on security of wide areas and reconnaissance.

System provides:

- automatic detection (with radar) and receiving detail information (with visual channel) about surface moving targets geographically referenced and with output of the information to command center;
- automatic affixment of the system on the terrain with the help of satellite navigation systems; calculation and record route traffic at PC.

Main Specifications:

Radar detection range, km:	
- person	2.5
- vehicle	6.4
IR channel detection range, km:	
- person	2.4
- vehicle	6.4

CH-3003M

NAVIGATION RECEIVER

It provides automatic continuous setting of coordinates, speed and moving direction. It displays the current coordinates in systems of coordinates WGS-84, CK-42, PZ-90.02, SK-95, MGRS i UTM, line coordinates in Gauss chart projection, in system, parameters of which are specified by the user.

Main Specifications:

32 receiving channels	GPS/GLONASS/SBAS, L1-range
Algorithm of receiving channel selection	All-in-view
Positional/altitude accuracy in off-line mode (RMS)	10/15 m
Operating temperatures	from -20°C to +50°C
Operating increased humidity	100 % at 25 °C

Dimensions, mm: 170X75X44

Power supply, V: DC 10-30

Power consumption, W: 2.5

Weight, kg: 0.8

CH-4215

NAVIGATION EQUIPMENT

New equipment CH-4215 has been developed on the results of CH-3210 equipment operation for installation on ground military equipment mobile objects (having possibility of individual use) and has improved operational and physical characteristics. CH-4215 is intended to determine location coordinates, ground speed and time on radio signals of GLONASS SNS and GPS of SBAS functional addition as well as to solve control and service tasks of military units.

Main Specifications:

32 receiving channels	GPS/GLONASS/SBAS, L1-range
Accuracy of coordinates determination	10 m
Operational temperature	from minus 30 to plus 50 °C
Time of autonomous operation (from the batteries)	not less than 3 hours
Interfaces	RS 232/422, USB 2.0, Wi-Fi, DigiMesh, ETHERNET

Overall dimensions, mm: 218 X 191 X 57

Power system , V: 12, 24, 27

Embedded memory, Gb 16

Weight, kg: 2.5

NAVIGATION EQUIPMENT

CH-3307

EQUIPMENT OF SATELLITE NAVIGATION GLONASS AND GPS SYSTEMS USERS

SNS CH-3307 user equipment is intended for interoperability with avionics of Su and MiG aircrafts in standalone and automatic modes.

Supply voltage, V: 27

Power consumption, W: 30

Total weight, kg: 10.5

Main Specifications:

coordinates	20 m
altitude	30 m
current time	1 μsec
ground speed vector	0.2 m/sec
UTC time mark	100 nsec

CH-4312

ON-BOARD SATELLITE NAVIGATION EQUIPMENT

CH-4312 equipment is intended for aircraft handling as a part of aircraft avionics system in all flight stages, including non-precision approaches. CH-4312 provides problem solving of navigation, planning, trajectory prediction, aircraft equipment control and air navigation process control using P RNAV requirements with RNP 0.3, RNP 1, RNP 5 accuracy.

Supply voltage, V: 27

Power consumption, W: 20

Main Specifications:

Receiver	GPS / Glonass/ SBAS: 24 channels
Data updating frequency	10 Hz
Information field range of color LCD monitor	78,7x53,6 mm
User's data base	1000 WPT and 90 routes

CH-3101M

NAVIGATION EQUIPMENT

Navigation equipment CH-3101M is designed for use on ships and riverboats for convenience determination of navigation parameters of movement by the signals of global navigation satellite systems GLONASS / GPS/SBAS in absolute mode and in differential mode.

Main Specifications:

quantity of receiving channels	32
positional accuracy	10 m
velocity accuracy	0.2 knot
Operating temperatures	from minus 10 °C to plus 50 °C
display, touch screen SAW	color, graphics, liquid crystal

Dimensions, mm:
218 X 187 X 89

Power supply, V:
DC 10-30

Onboard memory, Gb
16

Weight, kg:
3

CH-4003

AUTOMATED COMPLEX OF SECRET SERVICE

Automated complex of secret service of CH- 4003 - intended for the navigation providing and determination of coordinates of points (reference-points, targets) on terrain. A complex provides the measuring of distance to the objects (aims) and determination of directions on them.

Main Specifications:

range of measuring of distances	from 145 to 10000 m
accuracy of measuring of distances	±10 m
corner of eyeshot in the mode of exposure	from 1° to 11° (6,7°)
time of realization of calculations	real time
time of readiness to the next measuring	5 s

UM 321001

LOWNOISE TRANSISTOR AMPLIFIERS

Microwave modules UM 321001 employed with in receiver determination and accompanying channels of ZRC “OCA” instead vacuum bevices УВ-67,УВ-75. Modules secure 30% increase in distance of finding and escorting small-dimensions targets.

Operating frequency band, MHz: 14280-15790

Pulse power capacity at input, W: 100

Power voltage, V: ±12

Weight, g: 1,0

Main Specifications:

Transmission factor, dB	33-39
Irregularity of transmission factor, dB	3,0
Noise factor, dB	3,0
Rate of adjustment of transmission factor (time-varied gain control) TVGC, dB	23
Service life,hrs	10000

M34702

P-I-N ATTENUATOR

P-i-n Attenuator M34702 (M34713) Coaxial waveguide controller attenuator designated for controlling the VHF-signals within waveguide leads in radar “Kolchuga” and air defence missile complex “Tor”.

Operating Frequency Range: CENTIMETER

Power Input, W, not more than: 2,5

Control Current, mA: 100

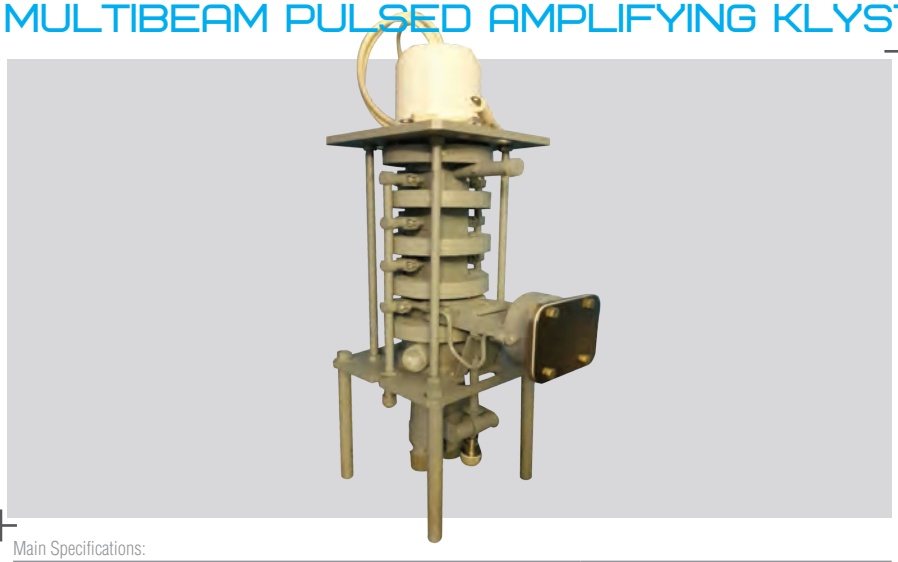
Weight, g: 160

Main Specifications:

Maximum Attenuation, dB	30
Start Attenuation, dB	1,0

UA КИУ-7

MULTIBEAM PULSED AMPLIFYING KLYSTRON



Pulse klystron UA КИУ-7 intended for receiving of powerful amplifying signal in transmitter of RLS 79K6, 80K6.

Dimensions, mm:
600X230-307

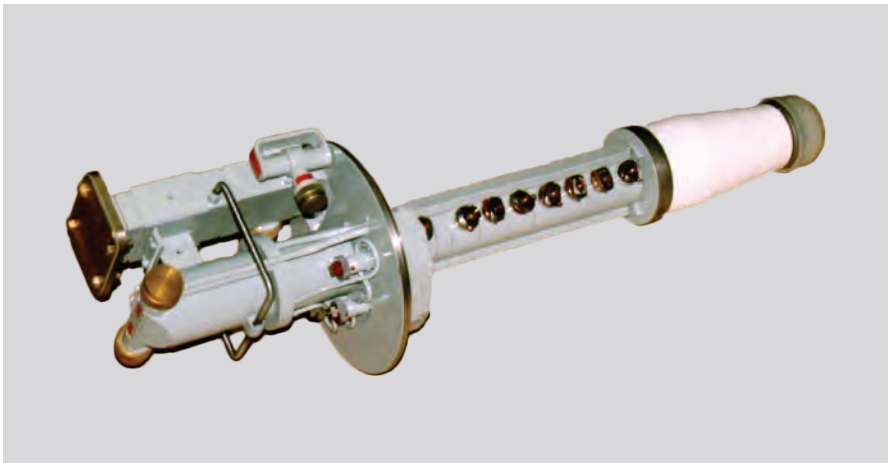
Weight, kg:
50

Main Specifications:

Heating Voltage, V	12,6
Cathode Voltage, kV	15-20
Voltage of Control Electrode, kV	4,0-6,0
Power Input, W	2
Cathode Current, pulse, A	30
Heating Current, A	6,0-8,0

UA КИУ-5

PULSE AMPLIFIER KLYSTRON



Pulse amplifier klystron of centimeter waveband. The devices have magnet-equipped cabinets and are metal/ceramics type. The cooling type is compulsory, done by liquid.

Dimensions, mm:
256 X 870

Weight, kg:
35

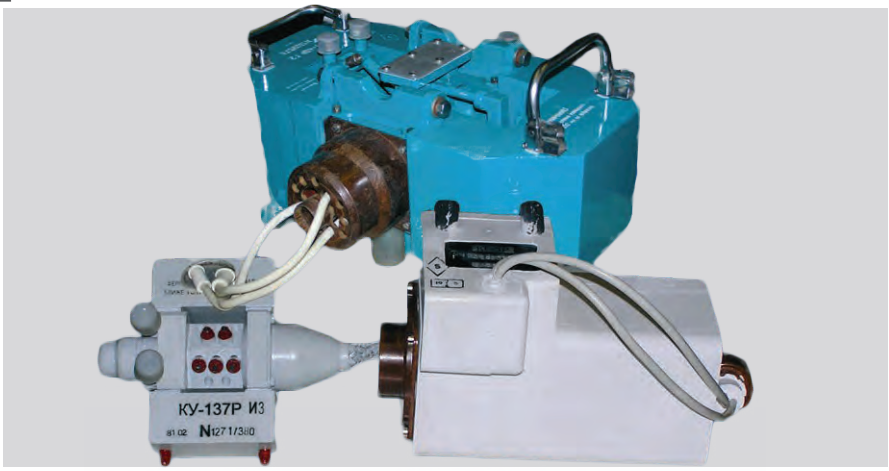
Main Specifications:

Heater voltage, V	12 - 14,7
Pulse cathode voltage, kV, not exceeding	50 - 55
Input power at pulse, kW	5 - 50
Output power at pulse, kW	355 - 525
Heater current, A	4 - 6
Cathode pulse current, A	19 - 24

КГ-3Р, КУ-137Р, КИУ-43Р

KLYSTRONS

Restoration repair of generator-convertor amplifier chain of klystron including КГ-3Р, КУ-137Р, КИУ-43Р for making up into S-300 PS Missile System. Klystron КИУ 43Р-pulsed amplifier device of packaged and metal-ceramics type, input and output waveguide type, compulsory cooling by liquid (resonator and collector) and air (cathode) cooling, Operated on fixed frequency. Klystron КИУ- 43Р - operated with intermediate converter-amplifier pulsed klystron КУ-137Р, packaged, metal-ceramics type with compulsory cooling by liquid. Klystron КГ-3Р-generator of continuous signal, fixed fraquency.



МІ-119

MAGNETRONS

Average capacity pulse magnetrons with precision tuning mechanism able to be re-tuned to any of the fixed preprogrammed cm-waveband frequencies. Employed within portable radars.

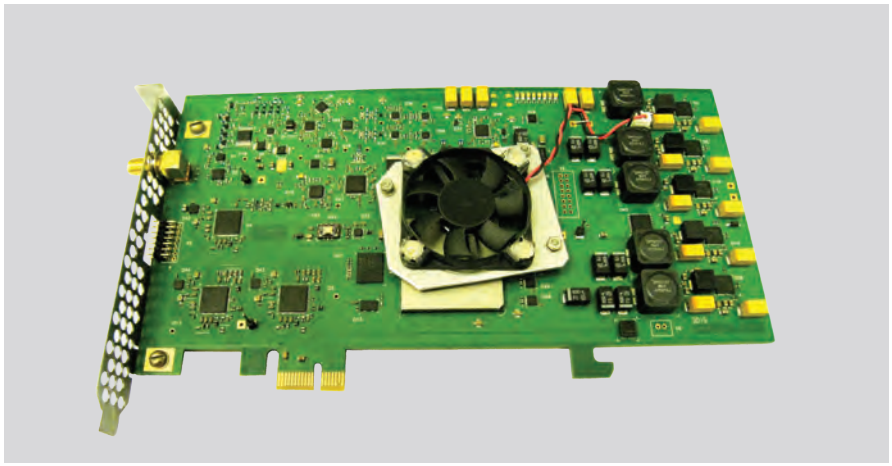
Dimensions, mm:
330 × 270 × 120

Weight, g:
7 000

Main Specifications:

Waveband, MHz	830-882
Heater voltage, V	6-8
Heater current, A	12-16
Anode voltage, kV	23
Anode pulse current, A	22-32
Readiness time, sec	120

DEMODULATOR



The demodulator was created and designed for functioning as a component part of a data receiving station from Earth Observation Satellites.

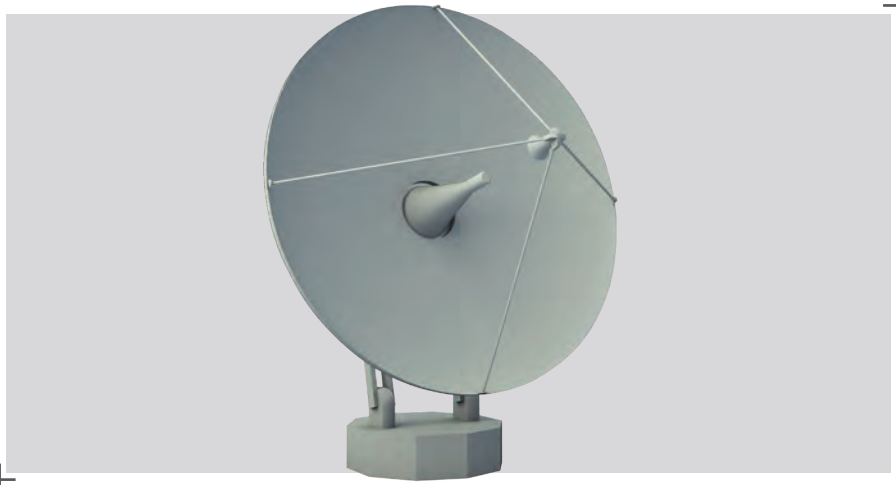
Input frequency range, MHz:
270...1100

Transmission data rate, Mbit/s:
1...500

Main Specifications:

modulation type	BPSK, QPSK, (S/O)QPSK, UQPSK, AQPSK, 8PSK
decoding type	convolutional (Viterbi algorithm), scrambling, differential
input signal frequency rate of change	up to 10 kHz/s (Doppler)
input signal level	minus 50…minus 10 dBm
data rate interface	PCI Express

DATA RECEVING STATION OF EARTH REMOTE SENSING



The ground receiving station meets the modern requirements and provides:

- automated choice of station operating mode;
- data receiving possibility from satellites with different characteristics of the X-band downlink with the speed up to 500 Mbit/channel;
- operational retuning on different satellites;
- operational control and diagnostics of station work;
- check of received data availability and quality
- received data ingestion, decompression and visualization.

INFRARED EARTH IMAGER

The long-wavelength infrared (LWIR) Earth imager is designed to produce digital images of an Earth surface in long-wavelength infrared range. To provide high technical characteristics in the imager the photonic detector with cooling based on solid solutions of cadmium telluride and mercury is used (under development).

Spectral range, μm
7,5 – 9,0

Power consumption, W:
30

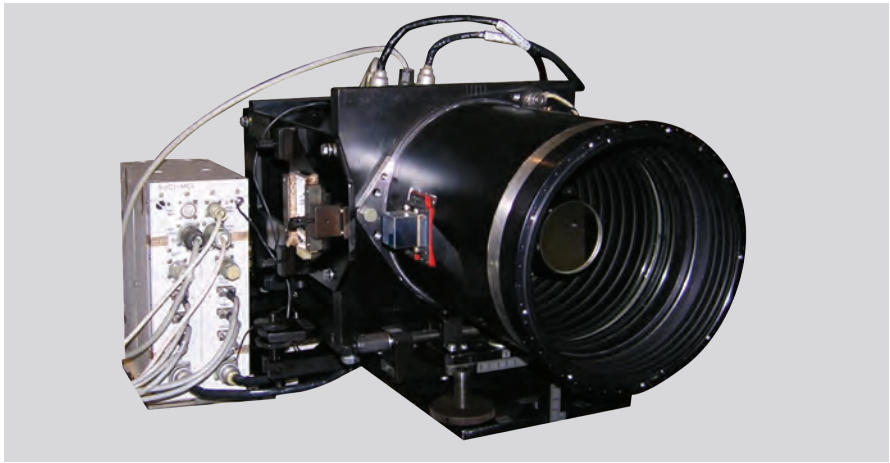
Weight, kg:
15

Main Specifications:

pixel projection in nadir at the orbit 690 km	96 m
frame area	61×49 km
noise equivalent temperature difference (NETD)	35 mK
cooling method	Stirling microrefrigerator

MULTIBAND EARTH IMAGER

The multiband Earth imager is designed to produce panchromatic and multispectral images of an Earth surface with resolution 2.0 m and measure of survey objects radiance. In order to improve image quality in the imager is used the photodetector array with the time delay integration mode.



Power consumption, W:
65

Weight, kg:
30

Main Specifications:

spectral channels range:	
- panchromatic	0,45 - 0,8 μm
- blue	0,45 - 0,51 μm
- green	0,52 - 0,59 μm
- red	0,63 - 0,69 μm
- near infrared	0,77 - 0,90 μm

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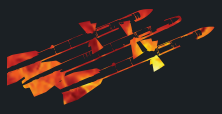
ARMOURED VEHICLES AND ARMAMENT

AVIATION EQUIPMENT AND WEAPONS

NAVAL EQUIPMENT AND ARMAMENT



ROCKET ARTILLERY WEAPONS AND MUNITIONS

ELECTRONIC WARFARE, SURVEILLANCE AND TARGET DETECTION SYSTEMS

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