

## **RAPROZA**

### **RADAR FOR OBJECTS AND PREMISES SECURITY**

*At present, in connection with increasing security risks caused particularly by ascendant terrorist activities, increase demands for quality and complexity of various objects, premises and territories against objectionable entry and movement of persons. Considered is also possible violation from the air with the help of small sporting airplanes and hang gliders, or other flying appliances. Protected objects and premises can be of both military and civil character. Military objects and premises security is required particularly by virtue of military material, persons, or ammunition protection. As regards civil premises, concerned are especially sensitive industrial plants, connected with application and storage of dangerous chemicals, leakage of which may be induced purposely and which can result in large losses of civil residents. Plants connected with ensuring environment in large conurbations can be further endangered civil objects, for example, heat, water and electricity deliveries and distribution, essential transport infrastructure, etc. Considering quantity, spatial extent, division and intricacy of such area, it is virtually impossible to protect it only with the help of the surveillance. To ensure complex watch, it is necessary*



*to apply also an electronic security system. If such electronic security is to be successful, it shall be necessary to combine various principles and measures because security system based on the application of only single principle could be in some cases inoperative by objective reasons (meteorological conditions), or its principle could be disclosed by a potential violator. Classical case is an optical camera system, which has reduced effectiveness in intensive rain, fog, worse lightening conditions etc. Integration of electronic security system can*

*eliminate for example, human operator error at the direct surveillance of military material or car fleet, which could result in immense economic and strategic losses exceeding border of a state.*

*One of effective, however currently very little exploited technologies, consists in premises and their external place protection with the help of small and inexpensive radars that could be remote controlled and their information can be transferred to remote check points guarding both military areas and civil premises and objects.*

## Technical description

The radar is characterized by the most modular and flexible structure and concept. It can be utilized both in stationary, and mobile applications. Very important property of this radar consists in the application of a very low radiated power up to 2 W (continual wave). Such small output power is used on account of embarrassing, or possibly full excluding of the radar detection and localization with the help of personal detectors or passive tracking systems, because applied radiated power is practically hidden in ambient electromagnetic smog.

As opposed to the majority of currently applied equipment of this type, offered radar contains both analog output, and digital output of detected information. Its structure involves fully solid-state transmitter and sophisticated receiver utilizing applications of linear frequency modulation. Transmitter and receiver utilize automatic digital calibration and diagnostics.

Radar signal processor is designed for the analysis of information detected by the radar. Video signals filtered according to Doppler speeds are lead to it from the signal processor. Their filtering and properties analysis are performed here. After the filtering of noise, interference filtering and uninteresting ground targets removal, remaining information

<b>SYSTEM SPECIFICATIONS:</b>	
<b>Transmitter:</b>	
Frequency band	9 ÷ 10 GHz
Power	basic - 2 W decreased - 2 ÷ 1000 mW
<b>Antenna dimensions:</b>	
Horizontal	750 mm
Vertical	600 mm
<b>Antenna movement:</b>	
Azimuth:	rotary basic – 3 rpm accelerated – 6 rpm decelerated – 1 rpm
	sector basic – 20 °/s decelerated – 5 °/sec
Elevation:	adjustable tilt -10° ÷ + 15°
<b>Ranges, accuracies, and resolution:</b>	
Range (1 m <sup>2</sup> ):	16 km
Remote accuracy (RMS):	3 m
Remote resolution (RMS):	15 m
Angle accuracy (RMS):	0,5°
Angle resolution (RMS):	4,5°
Operation range:	3÷24 km
<b>Power supply:</b>	
System DC distribution	18 ÷ 36 VDC

enables compilation of the picture of bodies that are mathematically described and transmitted to higher processing systems via a modem line. Output from the extractor is available both in analog form for local application, and also in digital form. Data from the digital output can be integrated in automated command and control systems.

Analog output is intended only for displaying information within the framework of a local system where the radar dislocated.

Digital output provides a picture of the situation. After its delivery to superior control and protection systems through standard

communication means (LAN/WAN data network, serial/modem line) and evaluation in a superstructure system, it enables acquisition of more complex information on guarded area within the framework of electronic intelligence. Consequently, set of information increases, which contributes to the more definite determination of properties of particular ground and airborne objects in framework of the security realization. It shall significantly enhance security, and especially accelerate decision processes at critical situations resolution.

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