ISSN NO: 2770-4491
March 2024

The main technical capabilities of the existing signalization guarding complex.

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Abstract: The territorial integrity and inviolability of the borders of the Republic of Uzbekistan is one of the national interests. In this regard, the measures that ensure the security and territorial integrity of the State have a special place in the system. The achievements of modern science and technology are now tactically reducing the possibility of easily breaking the borders of the state. Therefore, the border troops have the task of equipping the state border with modern high-tech signaling security complexes along the perimeter of the entire territory. In order to improve the quality of state border protection, the task is to introduce a system that combines various sub-systems into a single complex and provides unified management of all technical means included in it. This article compares the advantages and disadvantages of existing technical tools.

Keywords: A complex of security alarm systems , vibration sensors, linear unit, blocking sensor, central control panel, sensitive vibration sensors, electromagnetic waves, radio waves, optical fiber, operator, vibration transmission cable, IP camera, RS-485 interface, barbed wire fence.

1. Introduction

Current at the time Our Republic Borders protection to do and safety to provide in order to vibration sensor, electromagnetic, radio wave, high frequency, optical and another physicist in the principles working signaling protection complexes work release as well as existing one's reconstruction to do as relevant remains. In this regard, the study of signaling security complexes produced by developed countries and local manufacturers, the analysis of their parameters, as well as the modernization of existing security systems are becoming more and more important.

This allows to combine organizational and technical resources to solve the defined tasks, to minimize duty parts in protected areas. The solution to this problem, the use of technical means to ensure the security of the state border, contributes to increasing the effectiveness of the actions of the border units and thereby brings closer the solution of tasks to ensure the protection of national interests in the border territory of the Republic Uzbekistan has reached a qualitatively new level.

It should be noted that the use of technical means of border protection not only reduces the need for human control, but also makes it possible to significantly increase the effectiveness of border protection when there are multifaceted features of the situation in its various departments. The optimal ratio of human and technical resources should be selected according to the defined tasks and the acceptable level of possible threats. The transition of guarded facilities to more advanced security and control methods involving the use of a wide range of modern and high-performance engineering and technical equipment leads to a simultaneous reduction in duty shifts. To ensure high-quality security systems in facilities, it is necessary to analyze the possibilities of modern rapidly deployed security and video surveillance equipment.

2.The main part

Integrated security systems make it possible to ensure high-quality protection of large and medium-sized strategic high-risk facilities that meet modern security requirements.

Theoretical Background

The requirements for these modern signaling security systems are as follows:

- various tools (vibration sensors, magnetic doors, turnstiles installed at entry points, barriers) organization of security through;

- video surveillance, video surveillance and video recorder of unauthorized entry (or attempted entry);

ISSN NO: 2770-4491
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- management of the technical systems of the protected object or building (warning, alarm, signaling, etc.);
- the ability to receive, store and process data in the object's security system through electromagnetic signals, radio waves and transmission cables;
- real-time monitoring, registration, recording and archiving of all events occurring in the system in the central control database;
- transmission of information over long distances through various means.

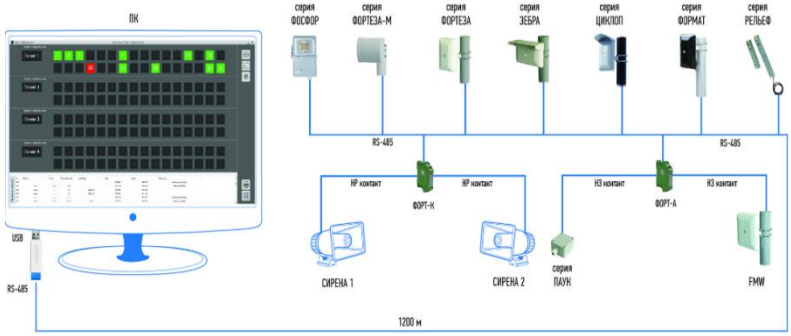
Discussion

Examples of integrated signaling security systems that can meet the above requirements are "INTREPID MicroPoint II" of the USA, "T-REX 6000" of Russia, "Гроза-ТВД", "ФОРТЕЗА-КС", "KS-195K", " Ворон " of Belarus ", Ukrainian "Aral-1M", "KS-200" and "SURHAN-NEW" produced in the Republic of Uzbekistan models have been protecting the facility's security at a high level.

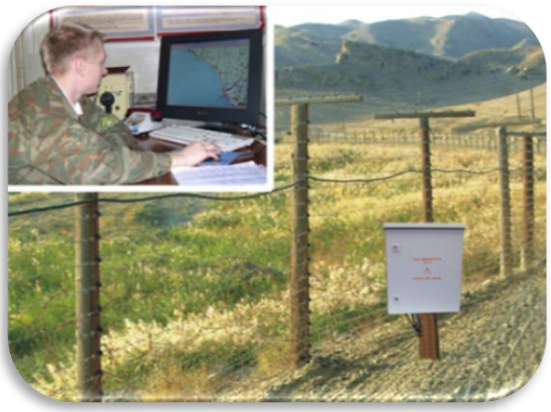
“INTREPID MicroPoint II”, built on the basis of an integrated security system, is a 3-meter-accurate border intrusion detection, the maximum perimeter length for 1 module is 400 m, operating temperature: from -40°C to +70°C, integration with video surveillance and access control systems, provides security with high detection of the breach.

" ФОРТЕЗА-КС " signaling security complex is designed to protect 18 km long borders with the help of modern electronic computers. 4 loops of 32 devices each transmit data over a 2-wire loop using an RS-485 interface.

"KS-195K" installed on the protected object is connected to the station equipment located in the building of the operator on duty using a conductor cable line. A separate four-wire connection line (КСПП 1х4х0.9) is used for each wing, and the length of the connection line from the station equipment to the end of the wing (supply) can reach 10 km (depending on the power), and from the station equipment to the end of the wing - 20 km. The length of the connection lines from the signal protection device to the station equipment can reach 1.5 km.



"Ворон" alarm system is a fence made of welded mesh, equipped with a video surveillance system. Equipped with an optical-electronic module, two-channel video surveillance and thermal imaging. It allows to monitor the border situation online round the clock. The 16-kilometer section is equipped with a fiber-optic security signaling system, which is widely used on the borders of Belarus and the Russian Federation. Belarusian border guards have been using such a system for more than 10 years. When a person trying to cross the border hits a barrier, the vibrio sensors are activated and the post officer's monitor displays an emergency status. At the same time, the operator does not need to constantly monitor the entire border section. The system automatically directs the optical-electronic module to the point of impact, and the border post takes measures to detain the intruder. Smart settings allow devices to distinguish intruders from weather conditions or animals.



"Гроза-ТВД" vibration sensors allow to detect aggression to an object in any climatic zone with an accuracy

ISSN NO: 2770-4491
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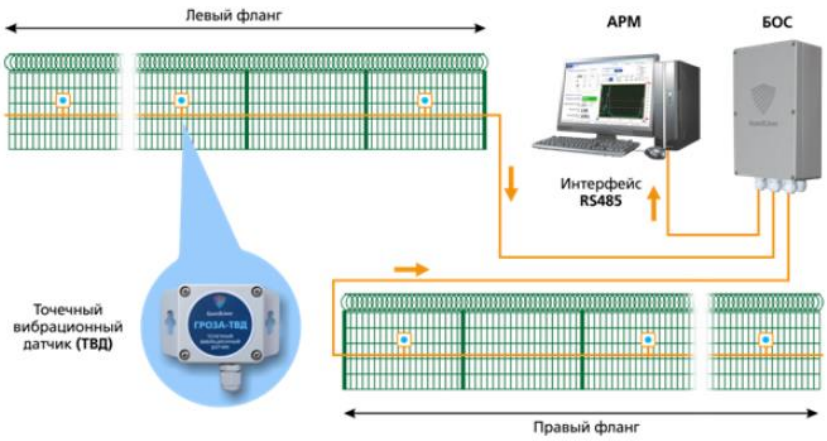
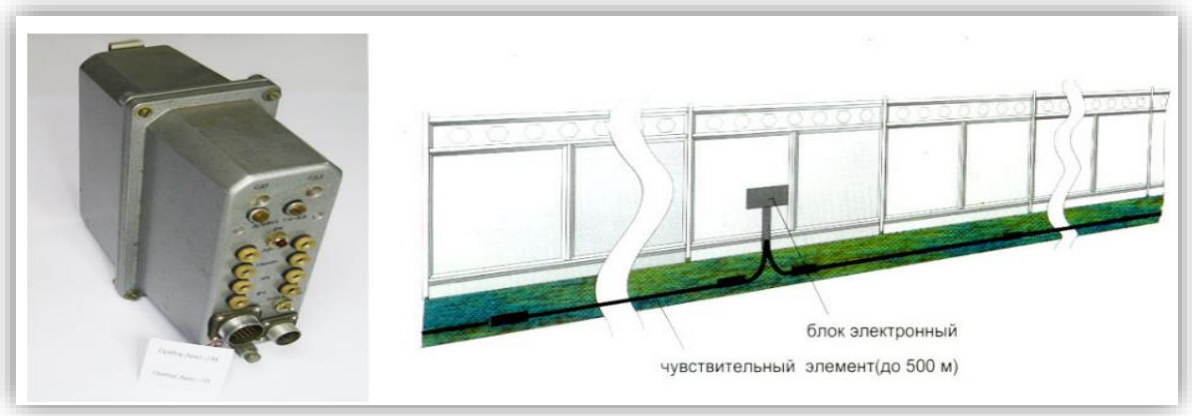
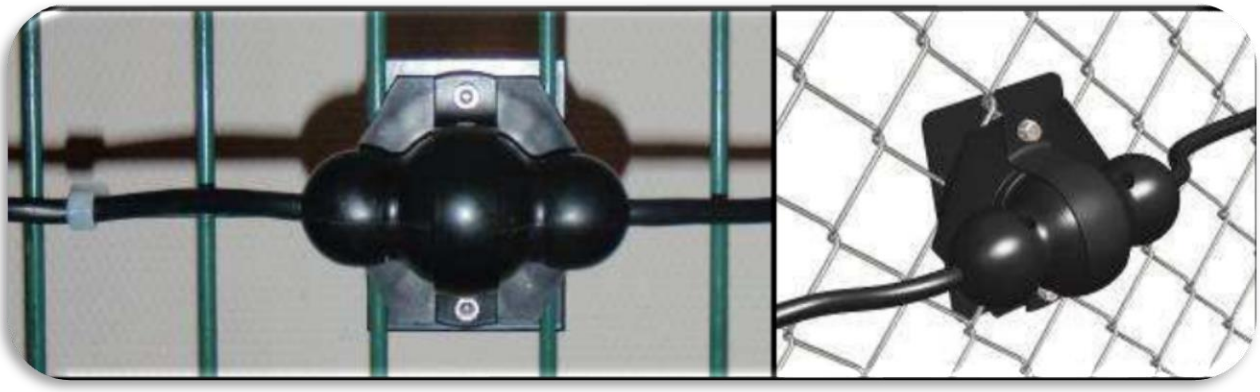


of up to 3 meters in a perimeter of up to 3 kilometers. Border security is provided by power supply and vibration transmission cable. Using precise localization, it is possible to activate the video surveillance system of IP cameras and track the exact location of the intruder. "Гроза-ТВД" vibration sensors are easy to install and use. The signal processing unit continuously monitors the status of each sensing sensor, transmits alarm and fault notifications via signal chains to the central monitoring and control panel via the RS-485 interface.

"Aral-1M" the vibration sensor is installed on the barbed wire fence, and if the vibration of the fence deviates from the specified parameters, the alarm system is activated. Vibration sensors are manufactured in Ukraine based on the ГОСТ 32498-88 certificate. (ТППВ-10х2х0.32) and (ТППВ-10х2х0,2) brand transmitters are connected through similar. The device of all modifications KS-85, KS-195, KS-200, KS-205, KS-210 and "Гоби", "Алтай-К", "Trassa-1", "Trassa-3", "Trassa-6" can work with signaling systems. "Aral-1M" the device can secure 2 adjacent sections with a length of 3 to 1000 m using a 1.2-2.5 m high barrier.



"T-REX 6000" security system "T-REX 6000" system, developed by "Group LB holding", regardless of the geographical location of the object, types of engineering security equipment, terrain, weather conditions and other factors, is a universal technical tool to ensure its safety. The sensors of the SL-6000 system are highly sensitive multi-directional vibration detectors.



Sensors are installed on the cable, installed on the wall along the entire length in the protected boundary. Sensors do not require special adjustment during installation. SL-6000 sensors ensure reliable operation of the system in obstacles. The body of the SL-6000 is completely waterproof and made of heat-

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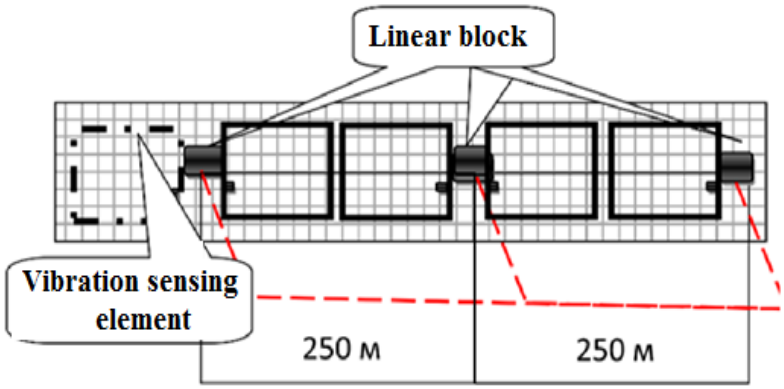
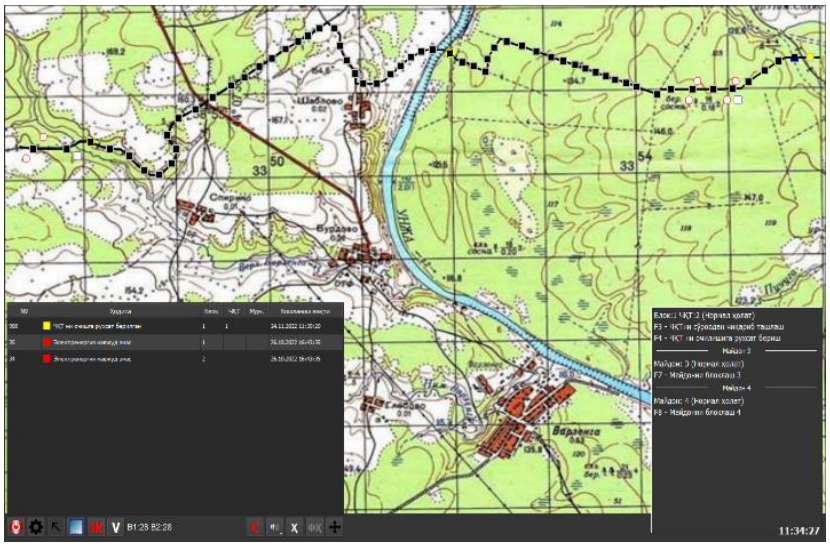
resistant polymer material. Sensors do not fail under the influence of electromagnetic fields and radiation.

KS -200" signaling security complex " Cord Avia Service ", designed to protect against unauthorized border crossing . The complex includes a central control station, line equipment, doors with locking devices, cable products, sensitive sensors and additional equipment. "KS-200" video surveillance system can connect up to 16 IP video cameras recording events. Spare parts supplied with the complex ensure its operation not only during the warranty period, but also for 5 years. The complex is equipped with active sensors with backup power and an autonomous fire and security alarm system. The warranty period for the operation of the "KS-200" complex is 18 months.

"SURHAN-NEW" signaling security complex is designed for continuous monitoring of linear security signaling systems located along the perimeter up to 15 km long according to the ГОСТ В2039.304-76 standard. The complex allows for the creation of a safe section of 30 linear blocks of up to 500 meters each. The complex is powered by a 220V±15% (min-185V, max-253V) alternating current (AC) network with a frequency of 50 Hz. When the power supply is disconnected from the 220-volt main network, the complex is provided with continuous operation for at least 8 hours using an additional power source and batteries.



The complex consists of 30 linear blocks, thirty blocking sensors, six door sensors and six automatic lock blocking devices that monitor the state of the protected environment and notify the central control panel through light and sound signals when a violation is detected. The operating temperature of the linear devices of the signaling protection complex is from -30°C to +50°C, and the relative humidity does not exceed 80%.



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Comparison of the general parameters of the signaling security complexes:

Parameter	INTREPID MicroPoint II	ФОРТЕЗА-КС	KS-195K	Ворон	Гроза-ТВД	АРАЛ-1М	T-REX 600	«SURXAN-NEW»
Range of protection	-	18 km	20 km	16 km	3 km	1 km	51.2 km	15 km
Number of sensors	-	32	40	40	128	2	32	30
1 for the module	400 m	300 m	500 m	400 m	30m	500 м	-	500 m
Operating temperature	-40°C +70°C	-40°C +70°C	-50°C +50°C	-40°C +70° C	-	-	-40°C +70°C	-30°C +50°C
Total power consumption	12 VDC - 650 mA	-	-	-	30V DC 300 mA	100mW	24V DC 250 mA	80-150V 20 mA
Connection communication line	Using a jumper cable	Using a jumper cable	КСПП 1x4x0.9	Ethernet	-	КСПП 1x4x0.9	-	КСПП 1x4x0.9
Warranty period	-	3 years	-	-	-	-	10 years	12 months

3. Summary:

Analyzing the parameters of the signal protection systems indicated above, it should be noted that the selected system must be able to meet the following conditions:

- Ownership of the manufacturer's licensed, insured products and services;
  - produces its products under the quality assurance mark (ГОСТ, ISO, CSA, UL, CE);
  - Optimality of cost and offers;
  - Protection of the security system;
  - Availability of an effective means of protecting your objects from unauthorized access;
  - Perimeter video surveillance system;
  - Availability of remote monitoring and control of the protected environment;
  - Ability to work directly with other sensors and devices;
  - Ownership of future modernization projects;
  - Availability of additional spare parts for short-term elimination of possible failure situations.

By gradually performing the above tasks in parallel with production, it is possible to increase the security level of the facility protected by the security complex of the SSB and completely prevent unauthorized access to the territory.

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