



RADIOLOGICAL AND CHEMICAL SURVEILLANCE MODULE

PM2100

The module is designed for emergency preparedness and remote environmental survey in detection of radioactive materials as well as chemical warfare agents (CWA) and toxic industrial chemicals (TICs).

The module can be installed on board of different robotic platforms (land, water and air). The module equipped with the protective cover with direct air pumping can also be mounted on armored vehicles.

Module consists of:

- **gamma radiation detector**
- **chemical warfare agents detector** (CWA: Mustard gas, Lewisite, Sarin, Soman, Vx)
- **toxic industrial chemicals detector** (TICs: Chlorine, Ammonia)

PM2100 model is designed to be installed on board of unmanned vehicles. This model is powered from the onboard power supply. The module control and data transfer are performed via the unmanned vehicle data transmission channel.

PM2100-01 model is additionally equipped with protective cover with direct air pumping for the installation on armored vehicles.

PM2100-01M model is equipped with GM counter for radiation hazard assessment and protective cover for installation on armored vehicles.

PM2100-02 model is designed to be used autonomously and equipped with visual and audible alarm. It can be operated as a hand-held instrument or installed on board of unmanned vehicles and on motor transport.

PM2100-02 represents a complex including PM2100 and autonomous power supply module equipped with the positioning system GPS/GLONASS, data transfer radio channel, receiving antenna and Software (for Windows 10 OS). The protected tablet PC is supplied optionally.



Monitoring and mapping of contaminated territories



Search and localization of gamma radiation sources



Automatic determination of chemical warfare agents and toxic industrial chemicals in the environment



Component of collective protection system of armored vehicles

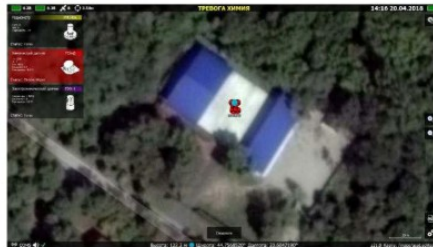
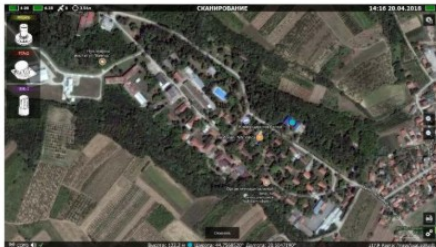
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Special Software

Provides:

- down loading and storage of required location maps
- indication of detectors status
- recording of the events of each detector with date, time and coordinates indication, as well as displaying the events sites individually for each detector on the map
- switching on/off sound alarm



Specifications

PM2100

- dimensions: 65x155x103 mm
- weight: 590 g
- power supply: vehicle socket
- interface: CAN bus

PM2100-01

- dimensions: 310x140x140 mm
- weight: 7100 g
- power supply: vehicle socket
- interface: CAN bus

PM2100-01M

- dimensions: 310x140x140 mm
- weight: 7250 g
- power supply: vehicle socket
- interface: CAN bus

PM2100-02

- dimensions: 75x145x168 mm (plus antenna length 190 mm)
- weight: 1075 g
- battery lifetime: 4 h
- radio channel range: up to 1.5 km

Specifications of gamma radiation detector

The gamma radiation detector is design for search and localization of gamma radiation sources, as well as measurement of dose equivalent rate (DER).

- Detector: CsI(Tl)
- Average count rate range: 1 – 65000 cps
- DER range (for PM2100-01M): 0.1 μ Sv/h - 1 Sv/h
- Energy range: 0.06 – 1.5 MeV
- Sensitivity for **PM2100 and PM2100-02**
 - by ^{137}Cs : at least 260 $\text{s}^{-1}/(\mu\text{Sv/h})$
 - by ^{241}Am : at least 2500 $\text{s}^{-1}/(\mu\text{Sv/h})$
 - by ^{60}Co : at least 120 $\text{s}^{-1}/(\mu\text{Sv/h})$
- Sensitivity for **PM2100-01 and PM2100-01M**
 - by ^{137}Cs : at least 300 $\text{s}^{-1}/(\mu\text{Sv/h})$
 - by ^{241}Am : at least 100 $\text{s}^{-1}/(\mu\text{Sv/h})$
 - by ^{60}Co : at least 150 $\text{s}^{-1}/(\mu\text{Sv/h})$
- Minimum detectable amount at a distance of 0.2 m, movement speed 0.5 m/s and radiation background level no more than 0.25 $\mu\text{Sv/h}$:
 - gamma radiation sources (activity):
 - for ^{133}Ba : 55 kBq
 - for ^{137}Cs : 100 kBq
 - for ^{60}Co : 50 kBq

Specifications of CWA and TICs detectors

CWA (Chemical Warfare Agents) detector is designed to automatically control chemical agents (Mustard gas, Lewisite, Sarin, Soman, Vx) and to alert the user in case the thresholds of the following chemical agents concentration are exceeded.

The detector includes ionizing chamber with beta-source ^{63}Ni and activity of 33 MBq (radioisotope instruments of the 1st group, source's activity less than 1 minimum significant activity (MSA)).

TICs (Toxic Industrial Chemicals) detector based on electrochemical sensor is designed for automatic control of toxic industrial chemicals (Chlorine, Ammonia) and alarm in case the thresholds of the following hazardous materials concentration are exceeded.

- Sensitivity:
 - for Sarin: 0.05 mg/m^3
 - for Soman: 0.02 mg/m^3
 - for Vx: 0,005 mg/m^3
 - for Mustard gas, Lewisite: 0.1 mg/m^3
 - for Ammonia: 60-100 mg/m^3
 - for Chroline: 4-6 mg/m^3
- Response time at threshold concentration:
 - of chemical warfare agents: 5 s
 - of toxic industrial chemicals: 15 s
- After-action:
 - chemical warfare agents: 30 s
 - toxic industrial chemicals: 300 s
- warm-up time: not more than 2 min

The instrument complies with the requirements of ITRAP/IAEA, ANSI N42.32 and IEC 62401.

Design and specifications of the device can be changed without further notice.

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Quality management system
ISO 9001

- Customer focus
- Customer satisfaction
- Continuous improvement
- System/process effectiveness

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