**Albatross 2 UAV-based surrounding territory control system**

Albatross 2 UAV-based surrounding territory control system is intended for operational observation and survey of emergency locations (or their estimated occurrence), detection of violators of the regulations, search of missing citizens including those of limited access

## Purpose

Albatross 2 UAV-based surrounding territory control system is intended for operational observation and survey of emergency locations (or their estimated occurrence), detection of violators of the regulations, search of missing citizens including those of limited access

Structurally, the system consists of the "Albatross 2" unmanned aerial vehicle (UAV) with the target load, the electrical power module, the charger, the antenna module with the rotary device, the stationary unit including the laptop, the transportable container and the tent.

"Albatross 2" UAV is equipped with a removable target load – a video camera on the gyro-stabilized platform PN-AB2-VK2-10.

Albatross 2 UAV-based surrounding territory control system may include a removable target load – a thermal camera on the gyro-stabilized platform, a charging device for simultaneous charging up to 4 accumulator batteries, and a manipulator for the UAV manual control. The removable target load can be changed quick and easy and connected without pre-settings.

UAV and target load are powered by a power supply module.

The UAV operation is implemented under control of the base server software "Synerget" through the laptop with the portable ground control station (GCS).

The wireless link between UAV and GCS is managed through the antenna module with the rotary device.

**Scope of supply**

| Name, unit | Quantity |
|---|---|
| "Albatross 2" UAV, pc. | 1 |
| Video camera on gyro-stabilized platform PN-AB2-VK2-10, pc. | 1 |
| Antenna module with pan-tilt unit, pc. | 1 |
| Power supply module, pc. | 3 |
| Charging device iCharger 306B 1-6S 30A 1000W, pc. | 1 |
| Power unit Skyrce fuel 30a, pc. | 1 |
| Ground control station, pc. | 1 |
| Transporting case, pc. | 1 |
| Thermal camera on gyro-stabilized platform PN-AB2-T1, pc. | * |
| Charging device, pc. | * |
| Tent Outventure Royal House, pc. | 1 |
| Multi-purpose anemometer Megeon 11990, pc. | 1 |
| Packing | 1 |
| Spare tools and accessories kit – O, set | ** |
| Equipment book, copy. | 1 |
| Operation manual, copy. | 1 |
| 1. The quantity of system parts marked with «*» is determined by the supply contract.<br>2 Spare tools and accessories kit – O marked with «**» are supplied through the separate contract agreed with the Customer according to ZIP-O statement.425973.190 ZI | |

**Design features**

"Albatross 2" UAV is the unmanned aerial vehicle (quadcopter) with four electric motors and an undismountable construction. The UAV body is made of composite materials.

UAV is equipped with electric collector-less motors with the direct drive to propellers. The SC power supply module is attached to the UAV backside. The target load is placed on a quick removable lock in the lower part of the UAV.

The UAV stabilization system is based on an artificial horizon according to the mathematical tool of quaternary transformations with the original patented algorithm based correction.

The rotary device is used for pointing the UAV antenna in azimuth and the tilt during the flight. It includes a magnetic compass, a satellite navigation receiver and a battery.

The operator controls the UAV with the help of the ground control station by issuing commands, e.g. "take-off", "landing", "5 meters up", "5 meters right", "move to coordinates…" and so on. The distinctive feature is the automatic flight along a planned route.

Control options:

· flight of a pre-defined flight assignment;

· flight without pre-defined map and flight assignment;

· switching from automatic to manual control with a manipulator and vice versa.

The operator can interrupt the flight on a programmed flight assignment at any moment, the UAV will stop and continue the automatic en-route flight after examining the object that attracts the operator's attention.

The radio channel of the control and telemetry system is designed with the requirements of noise immunity and protection of the transmitted data. The noise immunity is ensured by a changing carrier frequency of the transmitted signal as the data is transmitted in a camouflaged form.

The built-in software provides multi-level protection against incorrect operator's inputs increasing the functioning reliability of the adjacent area control system based on the "Albatross 2" unmanned aerial vehicle.

It is possible to arrange a real-time broadcast the video signal from the "Albatross 2" UAV to the regional situation centre and/or the mobile control point.

**Scope of application**

Albatross 2 UAV-based surrounding territory control system is applied for addressing search and reconnaissance tasks, suppling the border services, the Ministry of Internal Affairs, the Ministry of Emergency Situations the multi-functional system of aerial reconnaissance and surveillance.

## Specification

| Parameter | Value |
|---|---|
| Effective application height, m | 20-300 |
| Flight speed, km/h<br>- m/s;<br>- decelerating flight, up to, m/s | from 0 to 54<br>from 0 to 15<br>1 |
| Maximum height of takeoff point above sea level, m | 3000 |
| Radius of action, up to, m | 4000 |
| maximum wind speed ensuring effective UAV operation | 10 |
| En-route maximum wind gusts, m/s | 14 |
| Maximum vertical speed, m/s<br>- at climbing / descending | 5 / 2,5 |
| Maximum flight time at sea level and under standard conditions *, up to, min. | 40 |
| time required for one-person preparation for use, up to, min. | 10 |
| Control over secured digital radio channel<br>Frequency, MHz / distance to, km | 868 / 6 |

| | |
|---|---|
| Gyro-stabilization of camera platform (thermal camera) | Pitch / Roll |
| Filming position hold / flight on pre-recorded flight assignment with applying positioning signals | Glonass / GPS |
| Autoreturn on supply voltage reduction | Yess |
| Interruption of flight assignment on operator's command with manual UAV control option | Yes |
| PN-AB2-VK2-10 camera resolution, Mp | 2 |
| PN-AB2-VK2-10 focal distance, mm | 5-50 |
| Operating temperature range, ºC** | from -25 to +50 |
| UAV takeoff weight with PN-AB2-VK2-10 target load, up to, kg | 3,8 |
| Weight, max., kg | 40 |
| UAV overall dimensions (without propellers and antenna), max., mm<br>- length<br>- width<br>- height in park position | <br>620<br>620<br>150 |

* Standard conditions: normal pressure 760 mm Hg, wind speed up to 3 m/s, temperature from 0 ºC and higher.

** Subject to preliminary holding the UAV within two hours before the start at a positive temperature.