

SKYRON SO

UAV based surrounding area control system



STVF.424252.064

PURPOSE

SKYRON SO UAE based surrounding area control system is designed to protect the facility perimeter, State borders sections, large industrial enterprises and infrastructure assets.

FIELDS OF APPLICATION

- facilities and territories of the Russian Ministry of Defense, Ministry of Internal Affairs and EMERCOM
- large industrial facilities
- included in SYNERGET VK Integrated Facility Security System

VERSION

- the system consists of an unmanned aerial vehicle (UAV) equipped with a removable payload, a launch container, an antenna module with Pan-tilt unit and an Operator's automated workstation (AWS)
- the UAV is a quadcopter of a undismountable design with four lift rotors and interchangeable power supply modules
- the quadcopter is equipped with electric commutatorless motors with direct drive to the propellers

- a removable UAV payload is a video camera on a gyrostabilized platform (included into standard delivery set) or a thermal imaging camera on a gyrostabilized platform (presence is specified in the supply contract) mounted on a quick release lock on UAV bottom part
- launch container is a launch-landing pad which provides fully autonomous operation of UAV
- the launch container is equipped with a battery charger, radio control channels, a microclimate maintenance system and a weather station
- operator's automated workstation is an LCD monitor with an backwall attached compact PC with preinstalled SYNERGET software

FEATURES

- video surveillance, thermal imaging surveillance, aerial patrols and data transfer to Operator's workstation
- flying according to pre-set flight plan in an autonomous mode without an operator's input
- automatic landing in the launch container upon a mission completion or, on the absence of this option, in the backup point automatically or via the operator's command
- receiving, viewing and recording real-time video feed from the UAV at Operator's workstation
- creating, editing, saving of flight maps
- display of UAV telemetry data and its position on the flight map on Operator's AWS
- flying according to pre-set flight plan: upon launching UAV follows a predefined route consisting of navigation points with preset altitude and time of stay parameters
- creating flight plans on location map including up to 200 waypoints with specified location coordinates, altitude and time of stay
- speed and altitude adjustment by the operator during flight to a waypoint
- operator changing the aircraft heading angle during flight to the waypoint maintaining the flight path
- operator changing the angle of inclination and zoom of the video camera during flight to the waypoint
- control of the aircraft when the navigation point is reached, its displacement, U-turn, altitude, video camera tilt, increase of the dwell time in the navigation point and leaving the navigation point before the end of the set dwell time in the navigation point
- operator's interruption of flight at any time with command to return, in this case the aircraft will stop, continue to fly to the launch container and perform automatic landing
- forced interruption of the flight mission in case of low battery voltage and, depending on the battery level, return to the starting point or landing at the current position

PECULIARITIES

- automatic system for UAV landing control in the launch container
- fully automatic perimeter patrol mode with a specified time interval between flights
- telemetry based recognition of the aircraft approaching to the launch container followed by automatic slide out of the launch-landing pad
- manual UAV placement in the launch container after landing at the reserve point
- extended zone of UAV operation
- system operates with SYNERGET special software
- interaction with SYNERGET VK software when operating as part of SYNERGET VK

SCOPE OF SUPPLY

Name	Quantity
✓ Start container PS5	1 pc.
✓ SKYRON PS UAV	1 pc.
✓ Power supply module	2 pcs.
✓ PN-AB2-VK2-10 Video camera on gyrostabilized platform	*
✓ PN-AB2-T1 Thermal imaging camera on gyrostabilized platform	*
✓ PN-AB2-VK5-T1 Gyrostabilized video camera-thermal camera bracket	*
✓ STM-1611 Support	*
✓ Operator's AWS	1 pc.
✓ Stationary antenna module with Pan-tilt unit	1 pc.
✓ STM-1631 Mast	*
✓ STM-17150 Mast	*
✓ FOCL set	*
✓ Mounting parts set STVF.424921.057	1 set
– Ziplock bag gripper	1 pc.
– Connector 8P8C	8 pcs.
– Flexible power cable KG 2x1,5	120 m
– Twisted pair cable (FTP) cat. 5 e, outdoor	120 m
– Corrugated HDPE pipe 20 mm	120 m
✓ Spare parts set-O STVF	1 set
✓ Packaging	1 pc.
✓ Operational documents list	1 pc.
✓ Formulary	1 pc.
✓ Operating guidelines	1 pc.
The number of parts of the system marked with «» is specified in the supply contract	
Operating guidelines available at: http://stilsoft.ru	

DESCRIPTION OF SYSTEM PARTS

- SKYRON SO Unmanned aerial vehicle is designed for air transporting a video camera or a thermal imaging camera to the monitored area
- PN-AB2-VK2-10 Video camera on gyrostabilized platform installed on UAV is designed to gather video footage from the monitored section of the terrain
- thermal imaging camera on a gyrostabilized platform PN-AB2-T1, installed on the UAV, is designed to receive video feed from the monitored area under low-light conditions
- the launch container is designed for UAV stationing and charging
- SKYRON SO Antenna module with Pan-tilt unit is designed to extend UAV effective range, enable a wireless communication channel between UAV and Operator's AWS, video feed transmission as well as midflight azimuth and elevation guidance of UAV antenna
- STM-17150 mast is designed to deploy SKYRON SO antenna module with Pan-tilt unit
- operator's AWS is designed to control UAV and the launch container, real-time viewing and recording a video feed
- FOCL set is designed for arranging fiber-optic local network between antenna module with Pan-tilt unit and launch container

- replacement power supply modules are designed to provide energy to UAV and ensure its operability

DESCRIPTION OF SYSTEM SOFTWARE

Operator's AWS with pre-installed SYNERGET software enables system control, flight plan creating and editing, indication of emergencies, displaying UAV location marker on the map with attributes, direct UAV control, reception and processing of telemetry data, reception and transmission of UAV video feed, video/thermal imaging camera control, indication of the broadband access module Pan-tilt unit parameters

RELIABILITY AND WARRANTY

- Warranty operating period with regular maintenance every 50 hours of flight time - 3 years
- Assigned service period - 7 years

TECHNICAL PARAMETERS

Parameter name	Value
Effective application height, m	20–300
Flight speed: – km/h – m/s	from 0 to 54 from 0 to 15
Decelerating flight, m/s (maximum)	1
Maximum takeoff point altitude above sea level, meters	2700
Operating radius, m (maximum)	5500
Maximum wind velocity with ensured UAV operation, m/s	10
En-route maximum wind gusts, m/s	14
Maximum vertical speed, m/s - ascending - descending	5 2,5
Maximum flight time at sea level under standard conditions*, minutes	40
Single-person launch preparation time, minutes (maximum)	10
Control over closed encrypted digital radio channel: – frequency, MHz – range, km (maximum)	868 6
Video signal transmission channel, GHz / Range, km (maximum)	2,4–2,5/ 5,5
Holding filming position / Flight along preset route using positioning signals	Glonass/GPS
Automatic takeoff from launch container	Yes
Automatic landing in launch container	Yes
Battery charging in launch container	Yes
Auto return at battery voltage drop	Yes
Automatic UAV launch at security sensor triggering	Yes
Flight plan interruption by operator's command with UAV manual control option	Yes
Resolution of PN-AB2-VK2-10 Video camera, megapixels	2
Focal length of PN-AB2-VK2-10, mm	5–50
Area size visible in the frame at 50-meter flight, m	59,5x34
Maximum resolution of PN-AB2-T1 Thermal imaging camera, pixels	384x288
Focal length of PN-AB2-T1 lens, mm	17
Payload platform stabilization	Tilt/Tang/Course

Parameter name	Value
System power supply voltage of single-phase AC network, V/Hz	220/50
Operating temperature range, °C**	from -25 to +50
UAV take-off weight with PN-AB2-VK2-10 payload, kg (maximum)	4,2
Total set weight (without STM-17150 mast), kg (maximum)	500
Weight of STM-17150 mast, kg (maximum)	1100
Weight of PS5 launch container, kg (maximum)	450
Weight of Operator's AWS, kg (maximum)	7,5
Weight of power supply module, kg (maximum)	1,6
Weight of PN AB2-VK2-10 camera on gyrostabilized platform, kg (maximum)	0,4
Weight of PN AB2-T1 thermal imaging camera on gyrostabilized platform, kg (maximum)	0,4
Weight of antenna module with stationary Pan-tilt unit, kg (maximum)	7,5
Weight of STM-1631 mast, kg (maximum)	50
Weight of STM-1611 support, kg (maximum)	6
UAV Overall dimensions (without air rotors), mm (maximum)	600x600x300
Overall dimensions of launch container (without weather station), mm (maximum)	2430x1280x1500
Overall dimensions of launch container (with weather station), mm (maximum)	2430x1900x1600
*Standard conditions: standard pressure 760 mmHg, wind speed 3 m/s (max), temperature from 0°C and above.	
**If UAV stored at positive temperature for two hours before the start.	



Developed and produced in Russia

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