

UNMANNED HELICOPTERS





KB UNMANNED HELICOPTERS –
A LEADER IN THE UNMANNED INDUSTRY
SPECIALIZING IN THE DEVELOPMENT
AND PRODUCTION OF UNMANNED
HELICOPTERS AND MULTIFUNCTIONAL
HELICOPTER-TYPE COMPLEXES.

**29 YEARS OF DESIGN AND ENGINEERING
EXPERIENCE OF EMPLOYEES IN THE FIELD
OF UNMANNED AVIATION**

MORE THAN 400 EMPLOYEES

MORE THAN 50 DEVELOPMENTS

OWN PRODUCTION BASE

TESTING CENTRES AND LABORATORIES

SERVICE MAINTENANCE

**OWN AIRFIELD AND FLIGHT
TESTING STATION**

THE PRODUCTS UNDER DEVELOPMENT
HAVE A WIDE RANGE OF APPLICATIONS
AND CAN BE EQUIPPED WITH
VARIOUS PAYLOADS, DEPENDING
ON THE PURPOSE AND USE.

SCOUT ATTACK UNMANNED COMPLEX HUNTER

- TWO SCOUT ATTACK UNMANNED HELICOPTERS “HUNTER”
- GROUND CONTROL STATION
- TRANSPORT VEHICLE FOR GROUND SUPPORT
- TWO TRANSPORT PLATFORMS

THE UNMANNED AERIAL COMPLEX “HUNTER” IS THE MOST PROMISING DEVELOPMENT OF KB UNMANNED HELICOPTERS, WHICH HAS NO ANALOGUES AMONG THE HELICOPTER-TYPE UAV MANUFACTURERS. THIS IS THE COMPLEX OF THE MOST ADVANCED TECHNOLOGIES FOR EFFECTIVELY SOLVING THE MOST DIFFICULT TASKS WITHOUT THE RISK OF CREW LOSS.



MISSION

DESIGNED TO SEARCH AND DESTROY AT ANY TIME OF THE DAY:

- surface drones;
- low-speed aerial targets;
- armored vehicles;
- enemy manpower.

It is equipped with an avionics complex that ensures automatic mission performance as well as combat payload control.

**THE MAIN ADVANTAGE OF UAVs
USING IS THE EXCLUSION
OF THE THREAT TO THE CREW
LIFE WHEN PERFORMING TASKS
IN DIFFICULT CONDITIONS
AND THE PROMPT RESPONSE
POSSIBILITY: MANEUVERABILITY
AND THE COMPLEX MINIMUM
DEPLOYMENT TIME.**

TARGET DESIGNATION

Guidance and fire adjustment. Target designation is a determining factor in the effectiveness of the artillery and missile armament use in modern warfare conditions with the use of high-precision weapons.

RECONNAISSANCE

Due to maneuverability, propeller noise and the use of ultra-low altitudes, reconnaissance can be done almost unnoticed by the enemy.

STATE BORDER SECURITY

The complex can be used to monitor the border area and identify of frontier infringement facts.



EQUIPMENT

SCOUT ATTACK UNMANNED COMPLEX

HUNTER

WEAPON SYSTEM

- Remote controlled turret with 7.62 mm machine gun;
- System of uninterrupted ammunition feed with 550 rounds;
- Two launchers for eight unguided missiles;
- 16 anti-tank aerial bombs of 2.5 kg caliber.

HELICOPTER ONBOARD DEFENSE:

- Radiation warning station;
- Jamming machine.

NAVIGATION EQUIPMENT

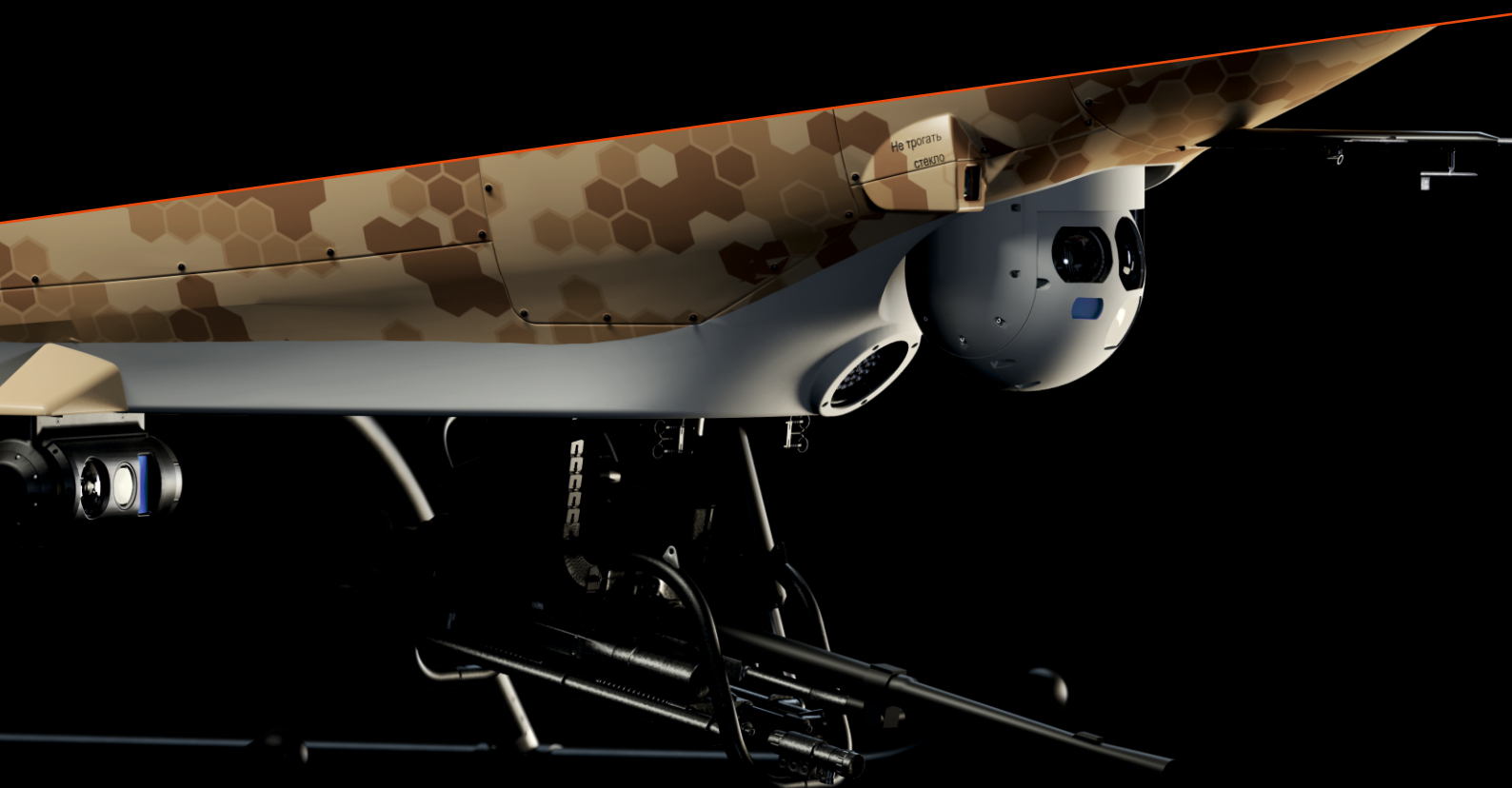
- Fiber optic inertial navigation system;
- Weather radar station;
- Radio altimeter;
- Noise-resistant navigation equipment with a digital adaptive antenna array;
- UAV return systems based on the bottoming surface image in the absence of satellite navigation data.

OPTOELECTRONIC SYSTEMS

- Gyro-stabilized optoelectronic system;
- A sighting system with ballistic calculator;
- Five all-round "day / night" cameras.

ADDITIONALLY, THE COMPLEX CAN BE EQUIPPED WITH THE FOLLOWING TYPES OF EQUIPMENT:

- Radar missile protection station;
- Barrier radar;
- Searchlight;
- Loudspeaker;
- Suspended automatically-dropped containers;
- Suspended automatically dropping inflatable life raft.





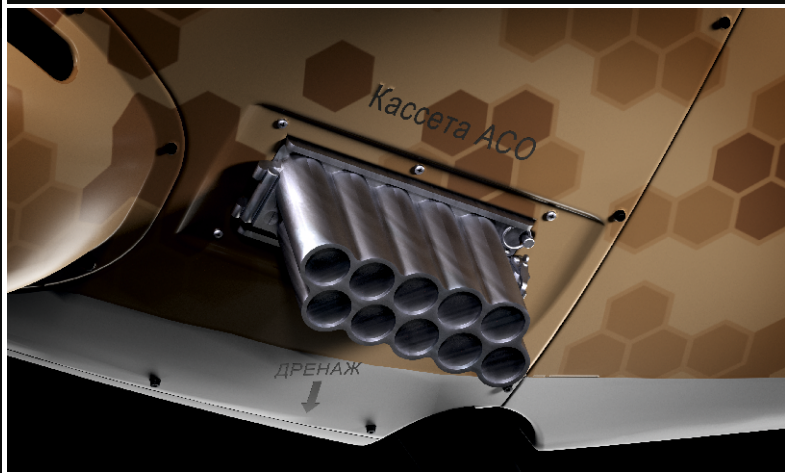
Equipped with a gyro-stabilized remote-controlled turret with a 7.62 mm machine gun with a system of uninterrupted supply of 550 rounds of ammunition.



Two UB-4 units for four S-5 missiles each are mounted on two automatically adjustable beam holders of auxiliary wings.



Under the fuselage, it is possible to install a bomb cassette BK-2.5-16 designed for round-the-clock use of 16 anti-tank aerial bombs using the geographic coordinates and an optoelectronic aiming system.



Combined ejection devices are installed, which are designed to interfere with heat-seeking missiles.

SPECIFICATIONS

Engine	Opposed
Engine capacity	2000 cc
Take-off power	197/268 kW/hp
Active Intake and Exhaust Valve Control System (Dual AVCS), valves quantity	16
Cylinders quantity	4
Engine Supercharger	Turbine with intercooler
Type of cooling	liquid
Fuel type	95
Fuel consumption at a takeoff weight 600 kg	21....27 f/h
Fuel consumption at a takeoff weight 700 kg	24....33 f/h
Main geometric characteristics	
Main rotor diameter	7000 mm
Main rotor blades quantity	3 pcs
Tail rotor diameter	1300 mm
Helicopter length with rotating propellers	8300 mm
Helicopter length without blades	6000 mm
Helicopter width without blades	1000 mm
Helicopter height	2280 mm
Wingspan	2380 mm
Landing gear track	1650 mm
Clearance	460 mm
Suspension points quantity	3 pcs
Weight data	
Maximum takeoff weight	750 kg
Weight	419 kg
Weight of the equipped UAV (without fuel and ammunition)	560 kg
Payload (including the ammunition weight)	200 kg
Standard fuel reserve	175/131 l/kg
Main flight characteristics	
Maximum flight speed	190 km/h
Cruising speed of flight near the ground	160 km/h
Maximum range speed	120 km/h
Speed of maximum flight duration	90 km/h
Static ceiling without ground proximity effect (ISA)	1500 m
Service ceiling (ISA)	3500 m
Maximum climb rate	7 m/s
Flight duration (altitude 100-500 m ISA)	up to 6 h
Maximum allowable wind speed during takeoff and landing	15 m/s

The UAV can be used day and night in simple and limited difficult weather conditions, performing automatic takeoff and landing from unprepared sites. The unprepared landing site size – 10x10 m, the prepared landing site size – 30x30 m.



SYSTEM "UAVHELI HD-300"

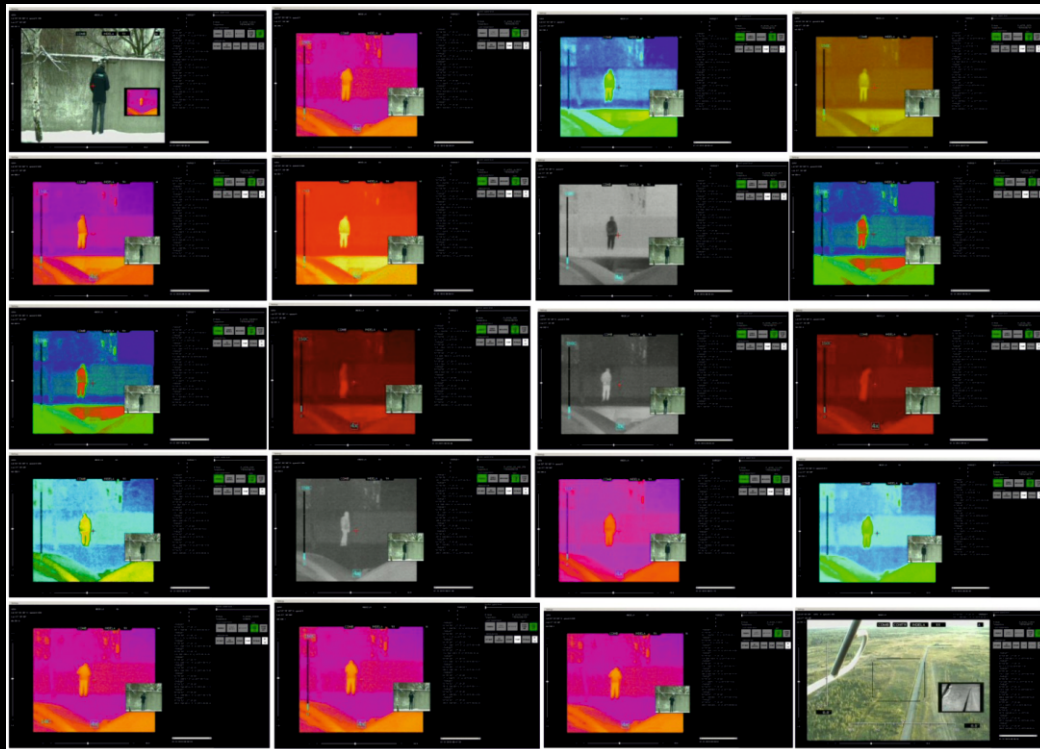
THE SYSTEM IS SPECIALLY DESIGNED FOR UAV APPLICATIONS. ITS ADVANTAGES ARE: FIVE INTEGRATED MODULES IN A SPACE-SAVING HOUSING (THERMAL IMAGER, TV-CAMERA, LASER RANGEFINDER, INERTIAL MODULE, AUTOMATIC TRACKER), RUGGED HOUSING, ACTIVE TWO-AXIS STABILIZATION, TARGET DISTANCE MEASUREMENT.

THE TWO-AXIS AND DUAL-CIRCUIT GYROSTABILIZED SUSPENSION PROVIDES A NEW LEVEL OF STABILIZATION THANKS TO SPECIALIZED BROADBAND TORQUE SENSORS, THE LATEST GYROSCOPES FROM LEADING MANUFACTURERS AND MODERN SOFTWARE ALGORITHMS.

A POWERFUL ARITHMETIC COMPUTER AND SOFTWARE IN THE COMPLEX TOGETHER FORM A SYSTEM THAT PROVIDES THE CONTINUOUS AUTOMATIC VIDEO TRACKING OF OBJECTS SELECTED BY THE OPERATOR.

THE VIDEO PROCESSOR (AUTOTRACKER) PROVIDES THE AUTOMATIC TARGET TRACKING FUNCTION AND IS CAPABLE OF PROCESSING VIDEO SIGNALS INCOMING SIMULTANEOUSLY FROM THE THERMAL IMAGER AND TV-CAMERA.

THE THERMAL IMAGER HAS 18 OPERATING MODES OR SO-CALLED PAlettes, WHERE IT DISPLAYS THE WARMEST OBJECTS IN A DIFFERENT COLOR IN EACH OF THEM.



FEATURES AND BENEFITS:

- The most advanced image processing technology;
- PIP mode for simultaneous display of multiple video streams from different sources on one screen;
- Electronic image stabilization from external sources;
- Shock-resistant construction with integrated image processing features and the minimum possible occupied area;
- Reliable Real-Time Operating System with minimal latency for mission-critical tasks.

MAIN CHARACTERISTICS

Overview TV-Camera	
Image Resolution	1920x1080
Horizontal field of view	2,3° - 63,7°
Optical Zoom	30x
High-resolution TV-Camera	
Target detection range of the "KUNG" type	Up to 10 km
Image resolution	1920x1080
Horizontal field of view	2, 4°; 4, 8°
Optical Zoom	2x
Thermal Imaging Camera	
System type	Coolable
"KUNG"-type target detection range	Up to 10 km
Image resolution	640x512 px
Spectral range	3 ÷ 5 microns
Horizontal field of view	2° ÷ 27°
Optical Zoom	12x
Stabilized gimbal	
Stabilisation	Inertial rate gyro
Line-of-sight stabilisation error	20 mkrad
Holding the shooting direction for specified coordinates	Yes
Max. pointing speed	60 °/c
Laser Rangefinder	
Measuring range	100 - 10 000 m, ±5 m
Wavelength operating range	1,53 ÷ 1,57 microns
Target lock-on & tracking	
Video tracking modes	Correlational, Centroidal, frame hold
Min. target size	8 x 8 pixels px
Tracking Window	Dynamically changeable
Aspect ratio	Up to 1:6 in all directions
Max. target speed	56 px /sec at 50 Hz
Tracking accuracy	1/10 pixel px
Min. characteristic contrast of frame hold	12,5 grayscale: 4.9%
Min. quantity of characteristic points for frame hold	5
Max. frequency of sight error correction	60 c
Diameter	250 mm
Weight	16 kg

The technical characteristics of the television and thermal imaging channels allow the aircraft to conduct optoelectronic reconnaissance of objects and terrain in the near tactical zone of the enemy without entering the area of attack of man-portable air defence systems.

GROUND CONTROL STATION

IT IS DESIGNED TO PROVIDE REMOTE CONTROL OF THE UAV, ITS EQUIPMENT, AS WELL AS RECEIVING AND DISPLAYING INFORMATION FROM THE INSTALLED PAYLOAD ON MONITORS.

IT IS EQUIPPED WITH A TELESCOPIC ANTENNA ORIENTATION SYSTEM MAST, AN AUTOMATIC LIFTING MECHANISM OF THE WEATHER STATION AND TWO OPERATIONAL COMMUNICATION ANTENNAS.

THE INTEGRATION OF THE GROUND CONTROL STATION WITH OTHER SYSTEMS AND COMPLEXES MAKES IT POSSIBLE TO RECEIVE AND TRANSMIT INFORMATION THROUGH AGREED CHANNELS AND PROTOCOLS.

THE STATION ALLOWS TO CONTROL TWO HELICOPTERS FOR PAIRED COMBAT WORK.



GCS PROVIDES:

- Telemetry data exchange with UAV in real-time;
- Payload control;
- Information receiving, displaying, recording, storing and reproducing from the payload on monitor screens in real-time;
- Flight modes management and payload operation;
- Flight task preparation and its loading into the onboard complex;
- Targets coordinates registration;
- Technical condition control of the UAV onboard complex;
- UAV pre-flight preparation and post-flight maintenance;
- Ground and waterborne targets identification;
- Determination of weather conditions and other atmospheric parameters;
- Swivel control;
- Maintaining logs and records of task execution;
- Task simulation.



In a typical configuration, the GCS is manufactured in the shelter body (KUNG), which is an all-welded aluminum structure. The construction of special removable eyelets in the upper part of the side racks and the base makes it easy and reliable to reload, move and transport the container. The container is made without the use of combustible materials. The air extraction and inflow are regulated by the automatic filter-ventilation system. The station is equipped with autonomous heaters and air conditioning. The exhaust and air supply are regulated by an automatic filter ventilation system.



The ground control station has four automated workstations for two UAV operators and two payload operators.

Monitors quantity	17 pcs
Monitors screen size	22 inch
Weather station	1 pcs
Data link range for exchange with UAV	150 km
GCS time of deployment	10 minutes
Autonomous operation time of GCS from batteries	6 hour
Generator power	7 kW
Air conditioner power	2x2 kW
Size of the transport container (KUNG)	218x267x520 cm
Weight	1981 kg
Operating temperature	-30 to +55 °C

The automated payload operator workstation, besides its own payload control modes, including video monitoring, recording and video capture, also has access to the necessary information about the UAV's flight: flight mission planning, current statuses, etc.

Upon the request of the customer, it is possible to install a console with GCS workstations on the basis of any vehicle or stationary object, the dimensions of which allow you to place standard equipment.

GROUND FLIGHT SUPPORT STATION

GROUND FLIGHT SUPPORT STATION INCLUDES THREE COMPARTMENTS: AIRFIELD POWER SOURCE WITH GASOLINE GENERATOR, FUEL STATION WITH 800 LITERS OF GASOLINE AND MOBILE WORKSHOP, WHERE COMFORTABLE WORKPLACES FOR TWO TECHNICIANS ARE ORGANIZED. THE WORKSHOP IS EQUIPPED WITH A REFRIGERATOR, MICROWAVE AND KETTLE.



SCOUT ATTACK UNMANNED HELICOPTER "HUNTER" IS A COMPLEX AUTONOMOUS DEVICE, WHICH PERFORMS ALL TASKS AND COMMANDS OF THE UAV OPERATOR IN AUTOMATIC MODE. THE ALGORITHMS SET AND BEHAVIOR LOGIC, USED BY THE UAV DEPENDS ON ONE OF THE SELECTED MODES OF ITS OPERATION. THE UAV OPERATOR ACTIONS ARE REDUCED TO THE CHOICE OF OPERATION SPECIFIC MODE.



UAVHELI

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