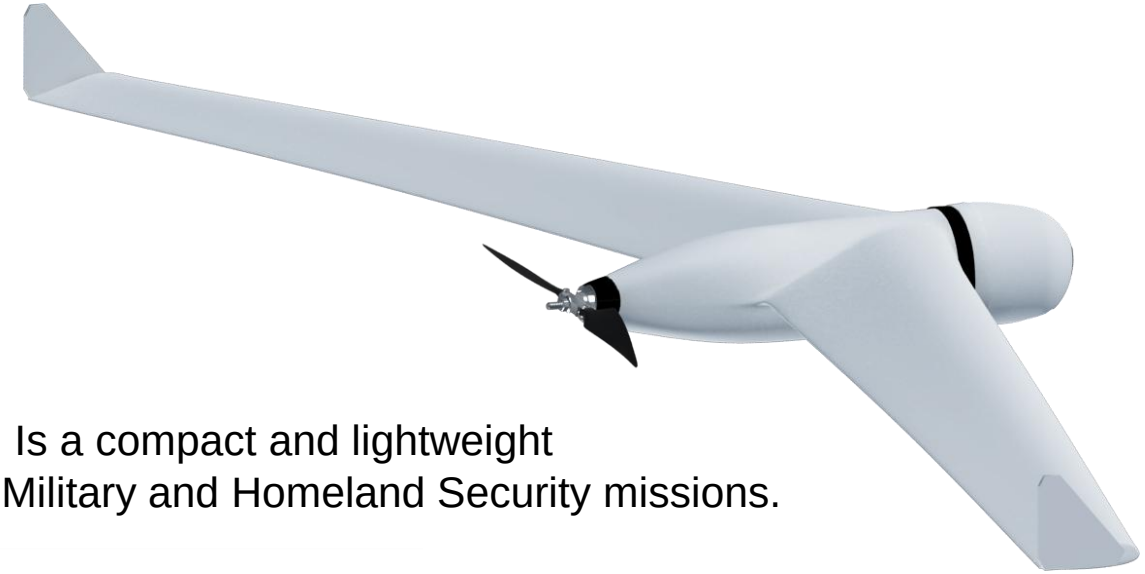
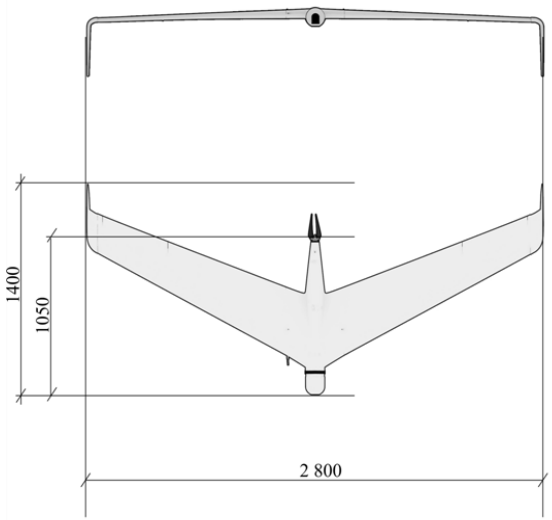
MICRO- UNMANNED AIR VEHICLE MODEL : “KS-1”

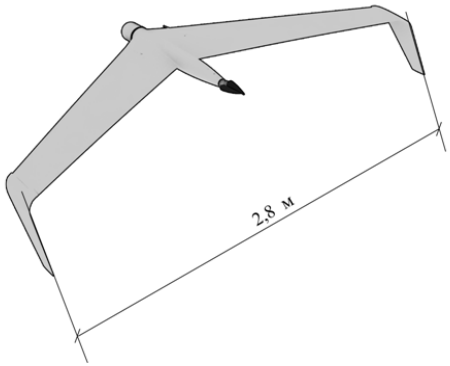
BULCOMERS KS Ltd

Technical parameters : “KS-1”



The KS-1 Mini UAV System Is a compact and lightweight system designed for use in Military and Homeland Security missions.





- The KS-1 features are highly effective three-phase brushless engine that improves performance and velocity. Velocity is modulated by Remote Control from 0 to 100%.
- A special battery provides the engine’s power supply.
- The KS-1 can exchange a variety of propeller sizes permitting adaptation to payload and flight duration and batteries.

Technical parameters : “KS-1”

Wing span	2.80m.
Length	1.40m.
Speed:	60-130km/h
Flight distance	50/70km.
Maximum take off weight	up to 10.5кg
Time in the air	up to 3-4h
Height range	3500m
Take off	catapult, bungee or hand
Landing	autonomous,parachute (optional)
Cargo weight	up to 1.8kg.

The KS-1 Avionics:
Autopilot

- Stabilization of altitude and airspeed, GPS navigation according to predefined points;
- 1000 programmable points of the route;
- Sufficient facilities for setting commands, providing flexibility in carrying out the mission;
- Fully autonomous operation from takeoff to landing;
- Flight mode: manual, automatic and combined;
- Ability to store a significant amount of data, simplifying post-flight diagnostics and analysis;
- Warnings to reduce the battery voltage both on the land and in the air;
- Using programmable approaches to respond to failures: loss of GPS-signal, loss of radio link , engine failure, loss of connection for data transfer and low battery voltage;

The KS-1 Avionics :
Transmission of video information

- Reduced consumption
- Small size (40mm x 70mm) transmitter with a full range of functionality and more control over the RF.
- Supported bands: 1.25MHz, 2.5MHz and DVB-T
- MPEG-2 & MPEG-4 encoding
- Setting the output power RF, 50, 100mW and 1W
- Integrated AES128/256
- A wide range of frequencies is offered.

The KS-1 Avionics :
Stabilized Camera Gimbals

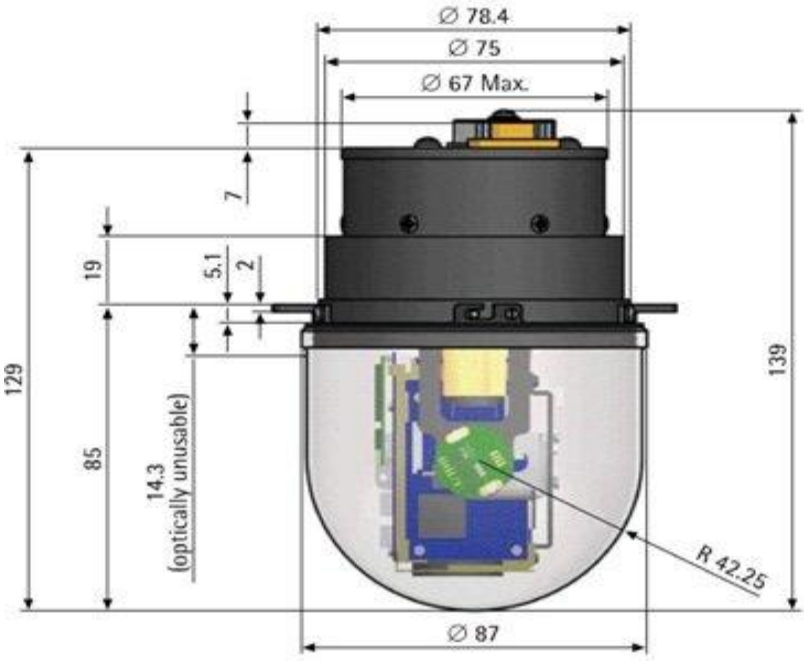
System is equipped with color daylight camera mounted on two motorized, Elevation & Azimuth gimbals. The Gimbal's motion control is closed loop servo using feedback signals from gyros and encoders to stabilized line of sight. The advanced motion control algorithms enable the operator to aim at a selected target with high accuracy.

Features:

- Extremely small, lightweight
- Stabilized in two axes – Azimuth, Elevation
- Precision mechanical system with high accuracy and motion control
- Direct control of the camera – zoom, focus

Performance

Motion	
Axes	2 ; Azimuth, Elevation
Azimuth rotation range	395°
Elevation rotation range	150°
Max Speed	120º/sec on Azimuth and Elevation
Line of sight	Stabilized - Gyro; Additional feedback - Encoder



The KS-1 Avionics :
Day Operations

Technical Specifications

Daylight Payload	
Effective picture elements	Approx. 440,000 pixels
Image device	1/4-type Exview HAD CCD
Lens	10x zoom, f = 4.2 mm (wide) to 42 mm (tele), F1.8 to F2.9
Digital zoom	4x (40x with optical zoom)
Sutter & Iris	Manual or Automatic
Focus	Manual or Automatic

The KS-1 Avionics :
Night Operations

19 mm lens

Man: 1.8 x 0.5 m

Detection 450 m

Recognition 112 m

Identification 56 m

Object: 2.3 x 2.3 m

Detection 1,280 m

Recognition 330 m

Identification 165 m

Technical specifications:

Thermal Imager	Uncooled VOx Microbolometer
Display Formats	640 x 480 (NTSC); 640 x 512 (PAL)
Pixel Size	17µm
Spectral Band	7.5 - 13.5 µm
Full Frame Rates	30 Hz (NTSC); 25 Hz (PAL)

The KS-1 Avionics : Miniature High-Performance Shortwave Infrared Camera (Optional)

- SWIR delivers superior shortwave infrared imaging performance in both the 900 nm to 1700 nm and 700 nm to 1700 nm wavebands.
- SWIR incorporates a high-resolution (640 × 512) Indium Gallium Arsenide (InGaAs) 25-micron pixel pitch focal plane array that features variable exposure control, high frame rates (in subwindowing mode), nearly zero image lag, and high quantum efficiency.
- The camera delivers exceptional image quality in all light levels and features advance automatic gain control and nonuniformity correction.

Technical specifications:

Sensor Type	InGaAs
Resolution	640 x 480 - Analog / 640 x 512 - Digital Video
Pixel Pitch	25 microns
Optical Fill Factor	100%
Spectral Response	900 nm to 1700 nm or 700 nm to 1700 nm (see plot)
Lens	M24 lens mount

Ground equipment “KS-1”:
Ground Control Station (GCS)

- **Receiving data and video;**
- **Manual control system;**
- **Computer configuration;**
- **Control system for video and infrared cameras**

Additional antenna (optional)

Ground equipment “KS-1”:
MicroVue Receiver

- Comprehensive demodulation 8/7/6/2.5 ,1.25MHz and 625Khz (optional) Maximum ratio combining antenna diversity for fade and multipath elimination
- Lid mounted antennae
- 8.4” colour monitor in lid
- AC, DC, internal battery operation
- Batteries recharged internally
- Internal recorders available as options Comprehensive On Screen Display (OSD) diagnostics for link analysis, including spectrum analyser
- 5.5” touch screen in base for device configuration
- Headphone output
- Internal AES128 or 256 encryption
- Optional 160GB hard disk recorder with playback on lid monitor

Ground equipment “KS-1”:
Handheld receiver (Optional)

- Tactical mobile receiver
- Fully featured 8/7/6/2.5/1.25 MHz and 625 kHz demodulation
- Maximum ratio combining antenna diversity
- High resolution 4.3” display
- Easy to use touch screen for channel change
- Internal recording to SD card
- 4 hours battery life
- Optional removable battery pack with internal charger circuit
- Compact weatherproof housing

Packaging and additional equipment “KS-1”

Transport package

Spare and additional batteries with a charging device

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BULCOMERS KS Ltd

1407 Sofia, Bulgaria, 26 Rilski ezera Street, 2nd floor, ap. 4

tel .: +359 2 444 40 35, fax.: +359 2 868 39 51

e-mail: bulcomersks@gmail.com, stanislavov.k@bulcomersks.com

www.bulcomersks.com