

# Automatic Unmanned Aerial Vehicles Systems

## UAV Payloads

GPS receiver

Data Link

FCS: autopilot with INS/GPS

Digital  
photocamera

Stabilized  
videocamera

## Tracking Station

Video  
Display

Telemetry  
Display

VCR

## Mini UAV System



**The mini-UAV System** is designated for the aerial intelligence and reconnaissance missions of areas distanced from base location. Flight planning is realized directly before take-off. After hand launched, the aircraft climbs up in automatic mode, then follows the preprogrammed route under the autopilot control. The tracking station acquires the real-time video and telemetry data. Standard range of video and telemetry transmission is up to 10 km (depending on terrain profile).

**The Flight Control System** provides safe return of UAV, approach guidance or activation of parachute system. As batteries are recharged the system is ready for the next mission.

Wing Span	1510 mm
Length	1400 mm
Take-off weight	3,750 kg
Payload weight	0,600 kg
Range	50 km
Endurance	40 min.
Cruising speed	75 km/h
Flight Altitude	50-500 m (above the surface)
Engine	Electrical

## Tactical UAV System



**Tactical UAV System** is designated for aerial monitoring, reconnaissance and surveying missions.

The route can be planned both on-site and on-the-fly. The takeoff is possible both from launching machine and by takeoff run. UAV starts passing the set waypoints in automatic mode after climbing to the desired altitude. The in-flight correction of the route is possible, as well as switch to patrolling around specific point and change of flight altitude. Video is transmitted to tracking station in real-time within radio signal reach.

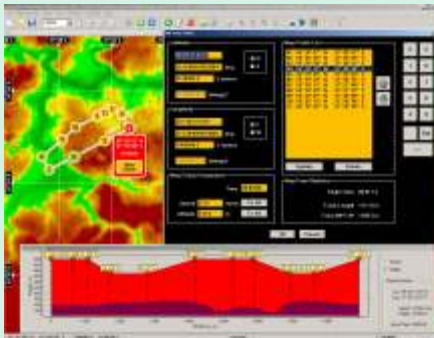
**Flight Control System** enables the photo camera trigger synchronization by time and coordinates. Special software allows to analyze flight data, download the pictures from the camera, split the pictures and make photographic plan of the area.

Wing Spread	1920 mm
Length	1650 mm
Take-off weight	7 kg
Payload weight	1,500 kg
Flight distance	100...150 km
Flight duration	1,5...2 hours.
Cruising speed	60...80 km/h
Flight altitude	50-1500 m (above surface)
Engine	Combustion

# Flight Control and Navigation System

**Automatic Flight Control and Navigation System** is the main system which enables autonomous flight of UAV distanced from base location, without contact with operator, under IMC and restricted visibility. The system is developed and manufactured by Teknol Ltd. It consists of INS, GPS receiver, autopilot module and allows the following features:

- Completely automatic flight along predesigned flight path;
- Automatic take-off and approach guidance;
- Safe flight of any type of UAV even under gusty wind;
- Stabilization of UAV attitude during flight;
- Stabilization of video camera;
- Telemetry information output (flight parameters and on-board equipment status);
- Automatic piloting out of site of view;
- Programmed control of on-board equipment;
- Minimal training requirements to the staff.



The autopilot allows up to 255 programmed waypoints (WP) storage. WP is specified by its coordinates, flight height and flight speed. WP can be set either by click at desired point at the digital map or by WP coordinates input.

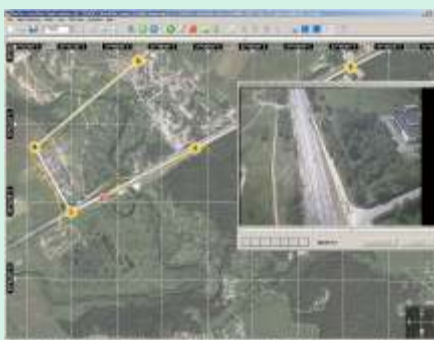
Software displays flight path development (waypoints height and speed profile), calculates track time and distance between the current WP and the initial WP.



Mission planning and autopilot programming is performed in advance as well as directly on-site before the flight. Software provides flight plan check and modification. Autopilot is connected to the computer via COM port (Rs232 interface).



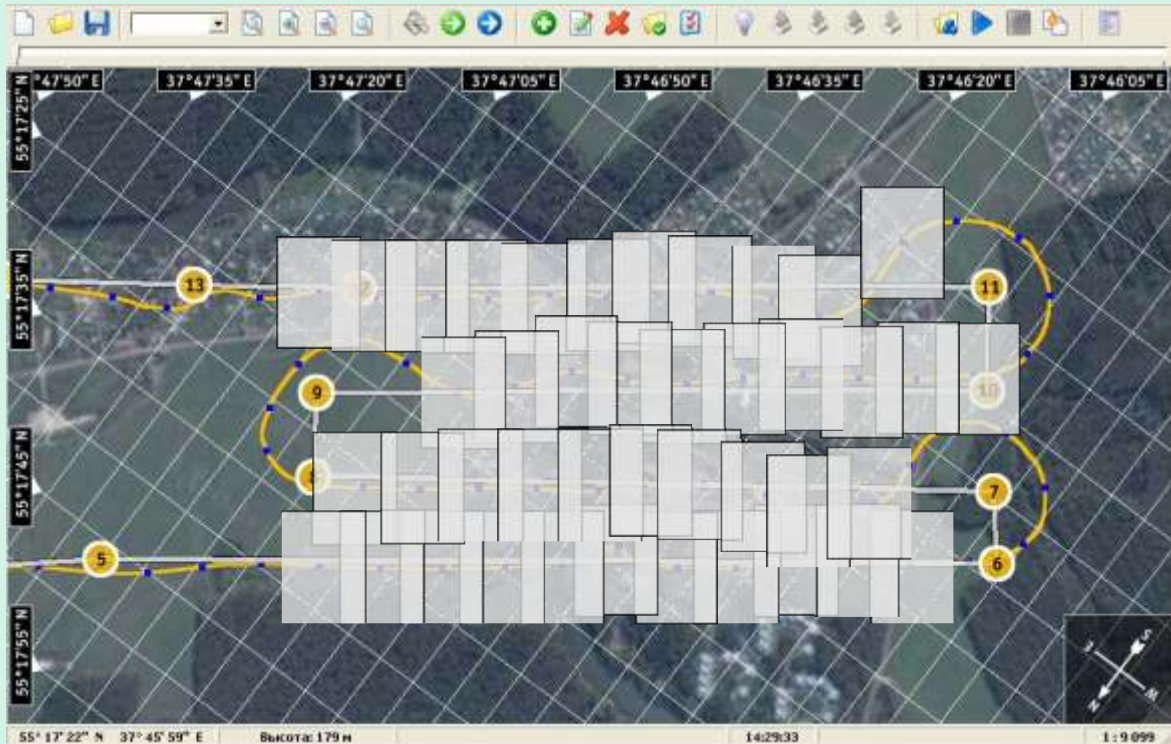
While flying, telemetry data transmitted from the system is displayed at the computer screen. Navigation data is displayed against moving map background. Flight data is visualized at standard gauges. Digital terrain map is displayed as 3D color image. If video receiver is connected, real time onboard camera video data is displayed.



Flight Data Recorder is capable to store about 30 hours of 50Hz data. The data storage data is used for:

- flight trajectory restore;
- waypoints profile display;
- Flight playback in accordance with INS data;
- flight data plotting.

# UAV Aerial Photography



The aerial photography is provided by the automatic digital photcamera, controlled by the autopilot. The photographing is carried out at the defined area with stabilization of the ground speed. The onboard Flight Data Recorder contains the time mark of each picture, synchronized with the coordinates, altitude attitude and GPS time. This makes possible the postflight pictures correction and splitting

