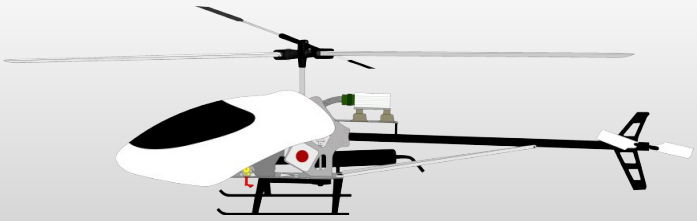
airelectronics
UAV AUTOPILOTS



Benzine Kit

We offer a complete solution for the user that wish to introduce himself in the rotary wing UAV world.

Using a standard computer, the user can plan, fly and modify the UAV mission in real time in the easiest possible way thanks to the U-Pilot flight control system and the U-See ground station software.

The operator doesn't need any previous flight experience because the system can fly 100% in automatic mode: from the take-off to the landing. In case of a communications problem the aircraft will came back home and land safely.

The helicopter used is the Vario Benzine Trainer RC hellicopter conveniently adapted to become a full featured UAV without the customer having to worry for anything. It has a two strokes gasoline engine, giving a very good reliability and the capability to load up to 3,5kg of payload with an endurance of 25 min when using the standard fuel tanks.

The brain for the UAV is the Airelectronics' U-Pilot flight control system. Being based in FPGA technology, U-Pilot's configurability and flexibility is unsurpassed and the advanced sensor mixture using extended Kalman filtering assures an optimal attitude and navigation control. It can be adapted to control any payload you want, and has camera control capabilities already built-in, including geo-reference of a camera image.

U-Pilot can fly the aircraft using waypoint navigation, even when the GPS signal has been lost by using dead-reckoning navigation. It can also hover a ground location and can fly directly towards a map clicked location.

The attitude and navigation control has been optimized to control the rotary wing UAV with very smooth and controlled transitions, hovering and navigation.

Possible Applications

Border control

Survillance in terrestrial and maritime borders

Police Usage

Demonstration control, anti-drug operations

Agriculture

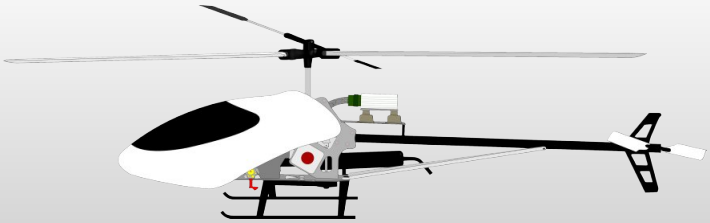
Status of crops, Forest mass control, study of soil

Fire Fighting

Monitor Active fires, avoid reactivation of controlled fires

Military

Forward observer, over the hill recon missions

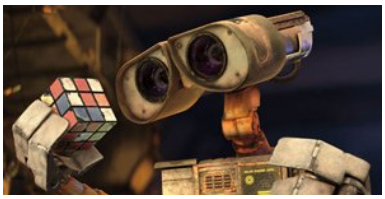


Benzine Kit

airelectronics
UAV AUTOPILOTS

Real-Time Video Feed

Using a video transmitter you can receive real-time the



Fully autonomous

No human intervention required during flight

Affordable

Unlike other solutions, the prices are reasonable

Camera geo-reference

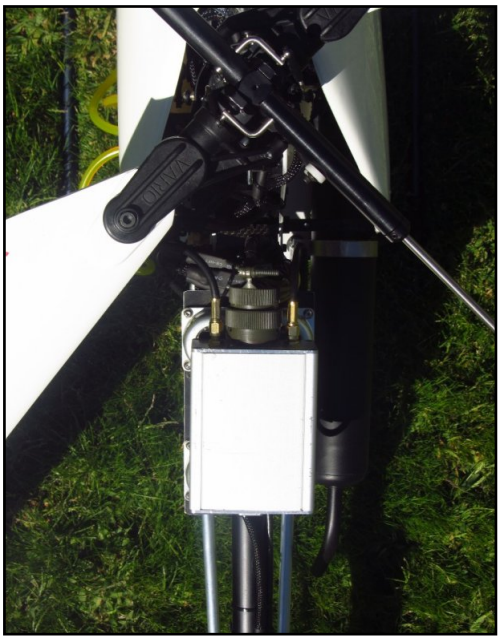
The system can give geo-referenced images

Multi-Payload

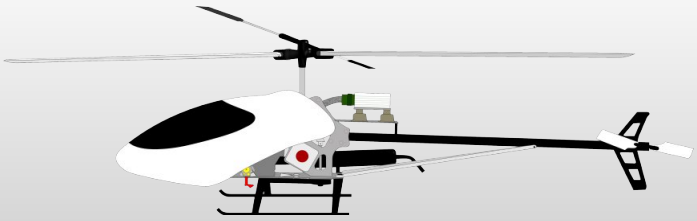
The plane can accomodate a great number of payloads

Flight-Plan

Automatic flight plan following allows to complete unattended missions



airelectronics
UAV AUTOPILOTS



Benzine Kit

Flight control Specification

Flight control

Attitude Estimation & control..... 1000Hz rate
Flight-plan..... Up to 200 way-points
Speed Control..... Auto-throttle
Take-Off & Landing..... Automatic

GPS Positioning

SBAS..... Global coverage
Differential navigation..... available on request

Interface with Payloads & Actuators

PWM & GPIO outputs.....30
PWM rate (configurable)..... Configurable
RS-232 ports..... 4 RS-232 compliant ports
RS-232 Rates..... 9600 – 115200 bps
External ADC channels.....3 channel 12bit - 0-30 V
Main Voltage supply supervisor

Telemetry

Data-Link Frequency 900MHz/1.4 Ghz/2.4GHz
Power.....1 W
Range.....100 km / 80km / 40 km
baud rate..... 115200 bps

Air Data System

Dynamic pressure sensor range.....0 – 200 km/h
Static pressure, low altitude option ..... 0-2000 m
Static pressure, high altitude option.....0-4000 m

Cammera Control

Protocols.....VISCA®, Controp & PWM
..... Other protocols upon request
Camera modes.....Geo-Pointed, Stable, Manual

Minimum Hardware for Control Computer

The recommended hardware is the MacBook Pro 13” with BootCamp and Microsoft Windows 7.

Operative System.....Linux, Windows
Processor..... Intel Core i5
RAM.....2GB
Hard drive..... 5 free Gb
Video Card.....OpenGL supported
Screen..... at least 13"
Ports .....1 RS-232 port
.....(native or through USB adaptor)

Aircraft Specification

Dimensions

Main Rotor..... 1800 mm
Length..... 1460 mm
Width..... 200 mm
Height.....520 mm

Weights

Empty Weight.....7,6 kg.
Maximum Take-Off Weight..... 11,0 kg.

Endurance

Standard Fuel Tank.....25 min.
Full Fuel Tank.....120 min.
Other fuel tanks are available to extent endurance