The wePilot4000 is a flight control system for small rotary and fixed wing unmanned aircraft systems. It consists of a single PCB which integrates an embedded computer system, a GPS receiver, accelerometers and rate gyros for all three axes, an absolute pressure sensor and a magnetometer.

The wePilot4000 combines integrated GPS/inertial navigation with robust controller design methodologies to provide attitude stabilization, motor speed, airspeed control and accurate trajectory tracking even under high wind conditions.

Various interfaces (Ethernet, CAN, RS-232/485, digital I/O, analog inputs, S-Bus inputs, PWM outputs) allow to read external sensors and to control custom payload equipment. A datalink may be added to interface with the weGCS ground control station. Due to its small form factor and low power consumption the wePilot4000 is suitable for light weight aircraft.
Specification

CPU
PXA255, 400MHz, 64MB RAM, 32MB ROM
FPGA Spartan-6

Sensors
3 gyroscopes ........................................... ±250°/s
3 accelerometers ...................................... ±8g
3-axis magnetometer ................................ 1
GPS/GLO receiver ..................................... 1
Absolute pressure sensor ......................... 1034hPa

Interfaces
RS-232 ...................................................... 5
RS-232 or RS-485 .......................................... 1
RS-232 or TTL ............................................. 2
CAN bus interface ..................................... 1
Ethernet interface ..................................... 1

PWM outputs ............................................. 8
Resolution ............................................... 100ns
S-Bus receiver interfaces ......................... 2
Digital inputs/outputs ................................. 12
Analog inputs (0-5) ................................. 8
Frequency counters (RPM sensor) .............. 2

Environment
Operating temperature ....................... -40 to +85°C

Electrical
Input voltage ................................. 7-18VDC
Supply current (@12VDC) ................. 200mA

Physical
Size (L x W x H) ......................... 84 x 53 x 20mm
Weight .............................................. 60g

Block diagram