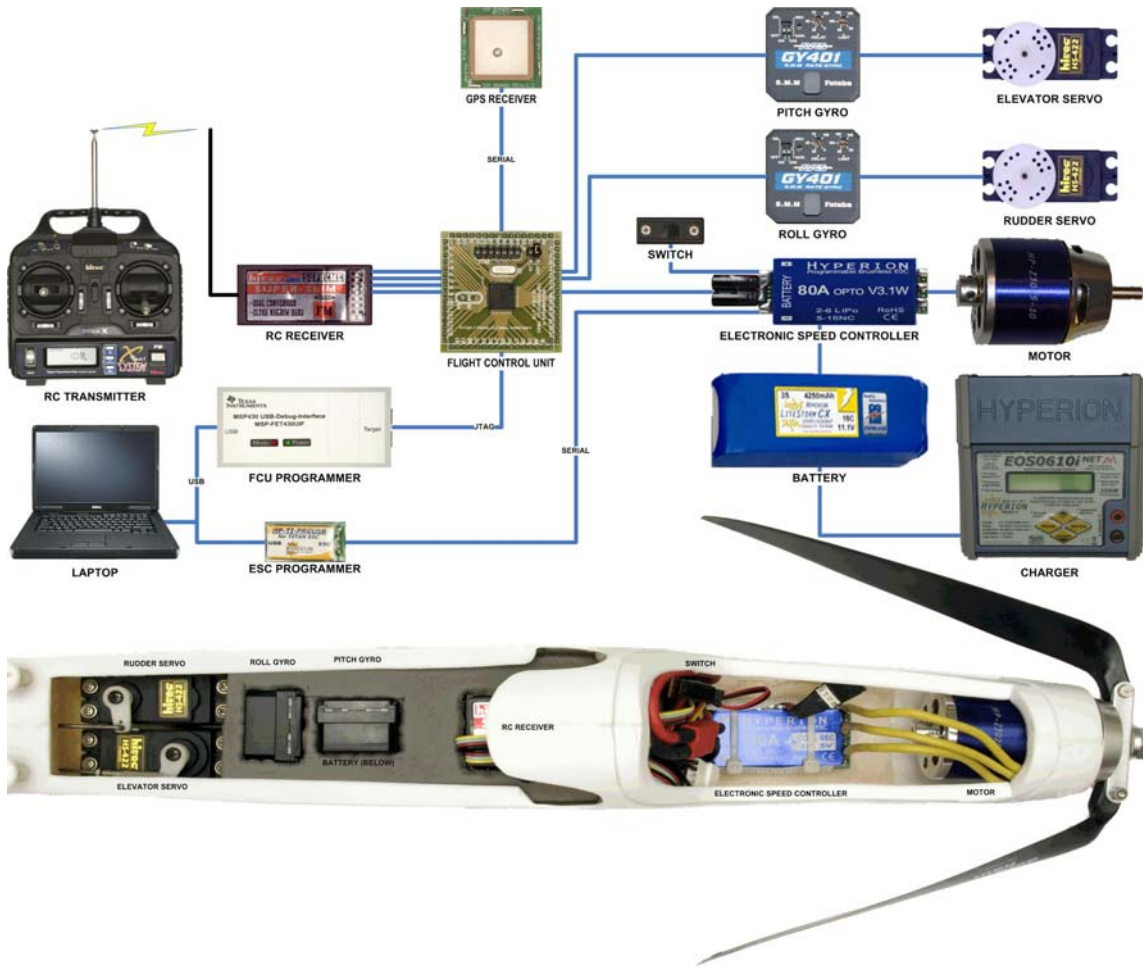


Dear Glen,

It was great to catch up with you and the others at your lunch-time meeting. I see you're still looking for a challenging project to bring people together? If you are interested in having some fun, why not try building a UAV from scratch? There are heaps of ready to fly UAV kits on the Internet, but what is the point of that? It is cheaper and more instructive to do it yourself. The aim is to start with a really easy to fly model aircraft and keep adding things until it can fly itself! You'll be amazed at the number of challenges that keep cropping up. Like trying to take off with too much weight and crashing into trees which won't get out of the way. Or, if you don't like beating the air into submission: Try a ground-mobile UAV. For some reason these don't crash as much, even when they stop moving. First see if you can make it go in straight line (it is much harder than you think), or track the perimeter of a park without being stolen; or chase after and bite dogs for no reason. I guarantee, what you loose in respect from passers by you will most certainly make up for in understanding why UAVs are still an interesting and challenging project.

Here is my own UAV project: To a standard radio controlled electric glider I have added a flight control unit of my own design, a GPS receiver and some RC gyros. It flies, more or less, in a straight line and the GPS tries to keep it on course, now and then. It still needs an air data unit to maintain accurate airspeed and altitude (which I have to do manually). I also want to try a PIR wing leveller and a 10Hz differential GPS. I had a wireless camera on it once, but had a lot of trouble with multipath fading on the downlink, not to mention the extra weight.





**Specifications
Flight Vehicle**

Electric Glider: Albatross/ROC2000
 Type: Dihedralled rib/spar wing.
 Control Surfaces: Rudder and fully moving horizontal stabilator
 Wingspan: 2m
 Length: 1m
 Wing Area: 38.1 sq.dm

Flight Pack

Servos: 96g (2) HiTec HS-422
 RC Receiver: 36g HiTec Super-Slim Dual Conversion Ultra Narrow Band FM
 Battery: 215g HP-LCX4250 2S C18 LiPo
 Prop: 48g 15x8 carbon composite, folding
 Motor: 188g HP-Z3025-6
 ESC: 65g HP TITAN 80A BEC
 FCU: TI MSP430F149
 GPS Receiver: Polstar PMB-248
 Gyros: 27g (2) Futaba GY401
 Total: 648g

Flight Control Unit:

Texas Instruments MSP430F149 on Olimex Header Board
 Ultralow-Power
 8-MIPS, 16-Bit RISC
 8-Input, 12-Bit ADC

Two 16-Bit Comparator/Timers
Two USARTs
60K EPROM, 256BFlash, 2K RAM
16-Bits Spare I/O
Hardware Multiplier
Watchdog Timer

GPS:

Model: Polstar PMB-248
Chipset: Sony CXD2951-4 L1, C/A code,
Channels: 12
Average TTFF (Time To First Fix)
Cold: 40 Sec
Warm: 33 Sec
Hot: 2 Sec
Positioning Accuracy: 2DRMS: 2m with WAAS enabled
Sensitivity
Acquisition: -139 dBm
Tracking: -152 dBm
Time Accuracy: 1 uSec or less
Data Output Rate: 1 Sec (default) 4800 bps
NMEA Sentences: GGA, GSA, GSV, RMC, (Optional GLL, VTG, ZDA)
Datum: WGS84
Power Consumption: 69 mA (Avg)
Power Supply: 3.3- 5Vdc
Indicators: LED - Red..
Dimensions: 32 x 32 x 8mm
Operating Temp: -10 to +65 Deg C
Storage Temp: -40 to +100 Deg C

Gyros:

Futaba GY401 Silicon Micro Machine (SMM) technology Gyro with and Angular Vector Control System (AVCS)
Length: 27mm
Width: 27mm
Height: 20mm
Weight: 27g
Voltage: 4.8VDC