Mega2560 Pro Mini-based fixed-wing drone wiring

This document shows how to wire a Mega2560-based (or other Arduino Mega) fixed wing drone with sensors on I2C and a SD card on SPI, as well as a GPS on serial. All grounds must be connected together, except for the lead between the battery and the ESC, whether they are shown connected to anything or not.

Most ESCs will not have enough BEC output to drive the entire system, and neither does the Arduino. You can choose between an external 5V power supply, upgrading the regulator on the Arduino, or splitting the power supply. You can power the servos from the BEC, and power everything else from the Arduino's onboard regulator. If you are not using 2S or 3S LiPo the battery will have too little or too much voltage to run the Arduino, and you will need another power supply.

The voltage divider resistor values here are for 3S LiPo and must be adjusted for other battery types. You can sub in a 100k trimmer pot with the two ends between VIN and GND, adjust it until the input voltage produces a 5V output on the center tap, **then** connect the tap to A0 (or another VBATPIN) and adjust VBATSCALE until voltage reads correctly.

ICSP Header for 16U2

A0-A15 Aref D32-D47

Mega2560 Pro Mini V1.0

Mini-B USB Port

Reset

D48-D53

Reset Button

ICSP

ICSP for Mega2560

TX3 14
RX3 15
TX2 16
RX2 17
TX1 18
RX1 19

SDA 20
SCL 21

Vin GND 5V 3V3

RX0 TX1

D0-D31

R1

R2

VBAT
Voltage
Divider

R1 = 33k, R2 = 51k
or
R1 = 22k, R2 = 47k
etc.

External Power In (7V-12V)

5V and 3V3 Output

+

LiPo
(2S-3S only)

Red ESC
servo lead to
servo power
rail only

Motor
Leads

VCC RX TX GND

u-blox®
NEO-7M-0-000
35500441928
1432
0400 12
© u-blox AG

GPS Antenna

SIG
+5
G   Ail Right

SIG
+5
G   Ail Left

SIG
+5
G   Rudder

SIG
+5
G   Elevator

SCL

SDA
GND

VIN

VCC
GND

I2C bus is just that. EDA and ECL are
just wired to SDA and SCL

MicroSD Card Adapter
CATALEX

CS
SCK
MOSI
MISO
VCC
GND