Title: Power Supply Options for the UAV Expansion Board (Oil Pan)
Date: 11.28.09
Revision: 1.0 Initial Release

1.0 Overview

The Oil Pan V1.0 PCB design is intended to be powered by a regulated +5V source. This is accomplished by using an ESC (Electronic Speed Control) unit connected to either the throttle control servo channel connector or the "Aux Pwr" connector on the Oil Pan board. In this configuration, the UAV's on-board power regulator will be disabled and the circuitry on both the UAV and Oil Pan boards and servos are powered directly from the ESC servo connector.

In cases where this ESC voltage regulation scheme is not desired, it is possible to change the power supply configuration on the Oil Pan expansion board.

2.0 Power Configurations

2.1 Independent Voltage Distribution

This option separates the voltage distribution (power planes) between the UAV and Oil Pan boards. The UAV power regulator is active and powers the UAV circuitry. The Oil Pan board circuitry and servos are powered directly and independently by the ESC.

To use this option, remove or trim the VCC connector pin from the UAV "Comm/RE" Debug expansion port. This isolates the UAV VCC power plane from the Oil Pan, servos, and ESC power plane connections.

2.2 Isolated Servo and Board Power Distribution

This option allows the UAV regulated power VCC output to supply power to both the UAV and Oil Pan board circuitry. The ESC power rail connection to the servos and Oil Pan's "Aux Pwr" and "External Comm" connectors will be isolated from the UAV and Oil Pan regulated supply.

To use this option, cut the Vcc power trace between R1 and JP8 Pin-2 on the rear (solder) side of the Oil Pan board as shown in Figure 1. Solder a wire from the UAV Interface connector JP22 Pin-5 to the Proto Area connector JX10 Pin 10 as shown in Figure 2.

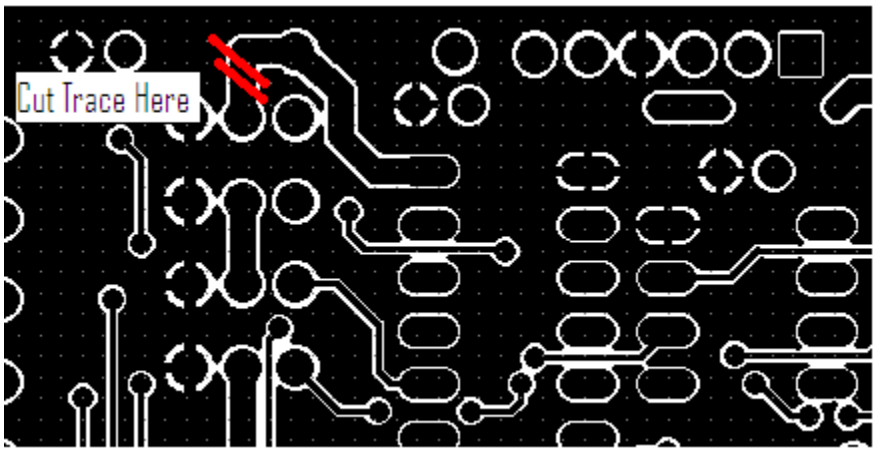

Figure 1: Cut Trace on Oil Pan rear (solder) side.

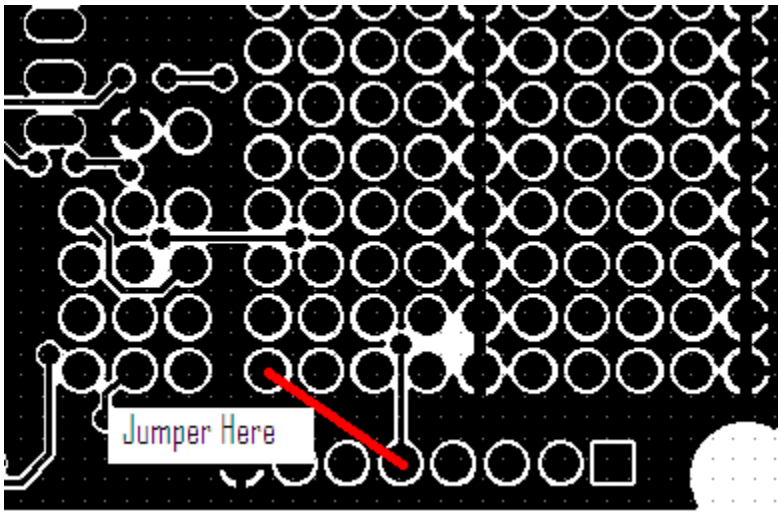

Figure 2: Add wire on Oil Pan rear (solder) side.