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PL – Series 030 and 030/8: 2x 200A PDB

The PDB was specially designed for the Pixhawk 2.1 (aka The Cube) with integrated 2 x 200A hall sensor current measurements, Sensor Hub X2, 4-14S HYB-BEC and most important a main power switch with the capability to withstand a current of up to 400A.
The outputs are over 3.5mm bullet connectors, plus spare BEC connectors before and after the switch.

This design lets you connect the main batteries first to heat up the flight controller and get GPS lock without to power up all the rest of the equipment. When ready, then just press the power switch (optional) and fly.

Less wiring = Cleaner builds
Less weight = Longer flight time
Protect your ESC's and other equipment due to smooth power up from GND

The PDB can be also used with any other flight controller via an adapter cable.
041: DF13-6p APM / Pixhawk 1
043: JST-GH-6p Pixracer… etc.

Specifications:

- Input 2x 4-14S LiPo (max.60V). Maximum transient voltage during boot up = 62V.
- 2x 200A = 400A / 1,200A @ 25'C for 1 second.
- Internal Hub X2 can be deactivated for single main battery usage.
- 5.3V / 3A power supply for Flight Controller
- 2x 20cm 10AWG (030) **or** 2x 20cm 8AWG (030/8) silicone input wires (red/black)
- Only 75 x 49 x 27mm
- Weight = 110g without main wires and 172g with wires.

Scope of delivery:

1x PDB with soldered on input wires
1x 042: PL – FC cable for Pixhawk 2.1 (The Cube)
20x 3.5mm bullet connectors (male)
2x 26cm Red/Black shrinking tube
4x M3x15 screws
2 pairs AMASS / AS150 connector
REM: Delivery without 059: Power-Switch

Delivered in transparent PP box (145x92x40mm) / Weight: 300g

Installation:

The PDB can be screwed to the vehicle's frame. Removing the 4 bottom M3x12 screws and drill holes into the frame. Reinstall the screws though the frame. Exchange the screws to M3x15 (included) for frames thicker than 3mm.
Please reserve approx. 15mm free space in front of the bullet connectors for the output cables.

IMPORTANT:

The output connectors are 3.5mm bullet and the max. continues current per pin is 40A (50A spike). If you have any device which requires a higher current, then please consider using multiple outputs in parallel, or solder a higher gauge wire directly into the female connector.
It is possible to solder up 10AWG into the female connector and that increases the max. current per pin to 200A.-> With 12AWG it is 100A.
If you have any high current device, then please use the outputs in the middle of the PDB to ensure a balanced current flow through the PDB.

It is not recommended to use the PDB for extremely large UAV's. Hover current should be maximum 200A.

Voltage measurement range:

Select the correct voltage measurement range according to your main battery.

Solder bridge out = Up to 14S (max. 60V)
Please use the voltage divider from the final test result.

Solder bridge in = Up to 7S (max. 33V)
Please use a voltage divider of 10.0 -> The measurement will be quite accurate. However, you can measure the main battery voltage with an DVM and readjust if necessary.

External connectors:

1: Main input for hall sensor 1 (max.60V) 200A.
2: Main input for hall sensor 2 (max.60V) 200A.
3: External BEC directly connected to main battery without main switch.
4: 9x output after main switch. For up to 8x ESC's plus one external BEC.
5: Power Switch 059, or if not connected then dummy connector to deactivate X2.
6: Sensor Hub X2 relays alarm output.
7: To flight controller (+/+/I/U/-/-) with Molex Click-Mate 1.25mm / 6p

The PDB is delivered without attached shrinking tube. Please select if you want to insulate the outputs with a small piece of it, or if you first want to insert the bullets and then cover the output incl. the bullet with one piece of shrinking tube. The included tube is dual wall adhesive shrinking tube. For safety reasons, please protect unused outputs with a small piece of shrinking tube.

Important !
The top row is positive (red) and the bottom row is negative (black).

Status LED's:

During boot up the internal Sensor Hub X2 will perform an internal test:
RED -> Flashing RED -> If all OK, then GREEN for 1 second. (Both LED's)
After that, the LED status is dependent on the current flow and if the current of both main batteries is within acceptable tolerance.

Flashing GREEN (Both LED's) -> The current flow is below 3-5A per sensor and the X2 is in standby.
Solid GREEN (Both LED's) -> The current flow is above 3-5A per sensor and the X2 is monitoring the main batteries.

If either one of the two main batteries will reduce the supplied current by approx. 20% than the other battery, then the LED of this sensor (S1 or S2) will change to solid RED and the alarm relay is on.

The alarm can be canceled, by either rebooting the PDB/Sensor Hub X2 (power cycle), or reduce the current flow to below 3-5A per sensor and wait 1 minute. -> If the Sensor Hub X2 is 1 minute in standby then he will reset any existing alarm and switches off the alarm relay.

Deactivate Hub X2 for single battery usage:

If you use the optional 059: Power-Switch, then the Hub X2 can be deactivated by pressing the power switch for 3 seconds. Both LED's (S1/S2) will change to solid red to indicate that the battery monitoring is deactivated. The alarm relays will not be activated.
A power cycle will reset the X2 to normal operation.

If the Power-Switch isn't used, then please connect the dummy connector (see picture) into the switch output. This will deactivate the internal alarm and both LED's change to solid red.
The Hub X2 will be always deactivated until you remove the dummy connector.

Setup in MissionPlanner:

Please follow the procedure here: http://ardupilot.org/copter/docs/common-mauch-power-modules.html