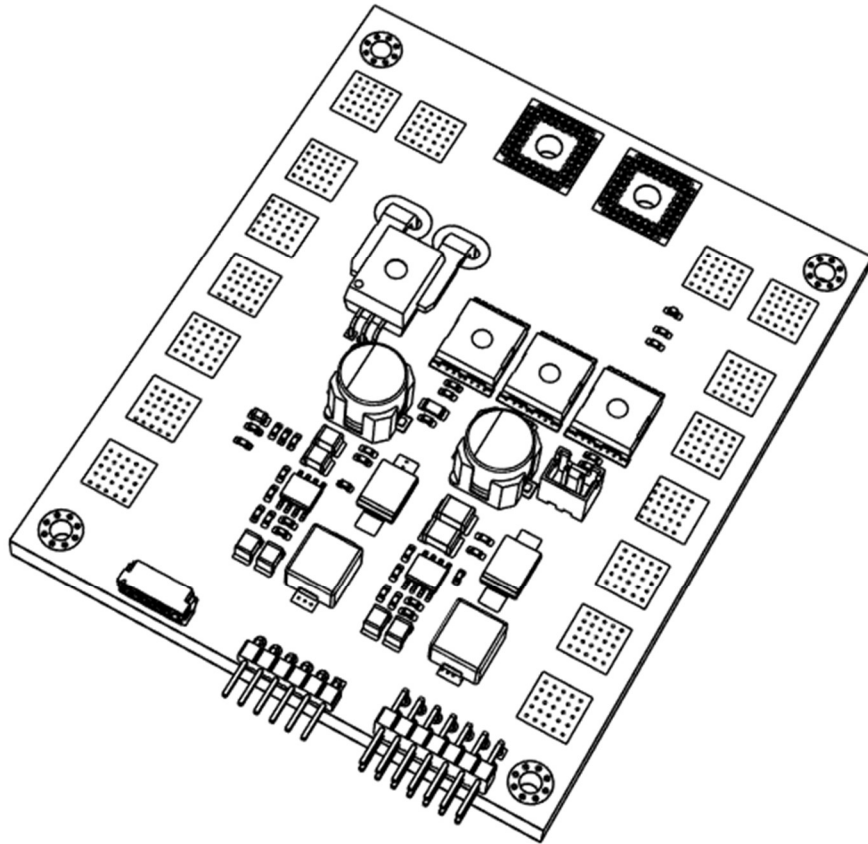


# Power Distribution Board (PDB) 400A

User Manual

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## Overview

The PDB 400A is a high-current Power Distribution Board designed to support advanced UAV platforms, industrial drone systems, and other high-power electronic applications. Built with a robust 4-layer architecture, the board is engineered to deliver stable and efficient power distribution in demanding operational environments.

Designed for multi-motor configurations, the PDB 400A enables organized and reliable power routing to critical components such as ESCs, flight controllers, and onboard systems. Its high-current handling capability and optimized copper layout help ensure electrical stability, reduced losses, and consistent performance under continuous load conditions.

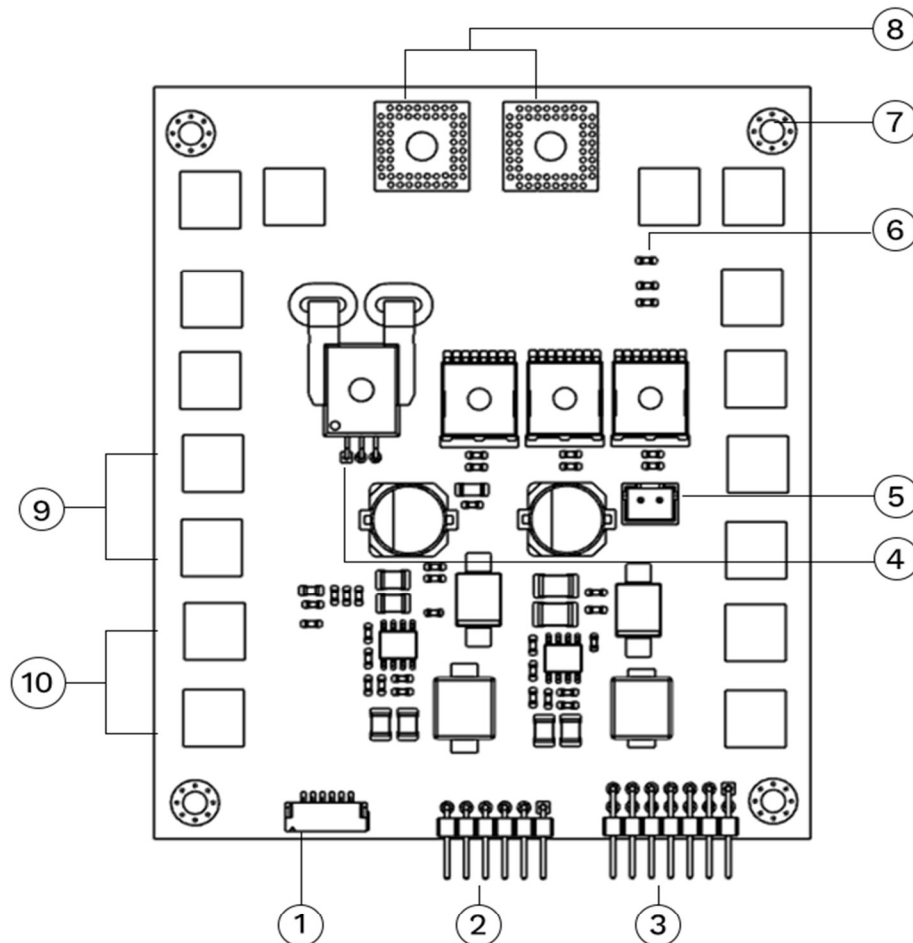
The board integrates onboard current sensing for power monitoring and system diagnostics, along with regulated voltage outputs to support auxiliary electronics. A controlled power switching mechanism enhances operational safety and protects connected components during startup and shutdown sequences.

This manual provides guidance on installation, electrical connections, safety considerations, and recommended operating practices to ensure reliable performance and long service life of the power distribution system.

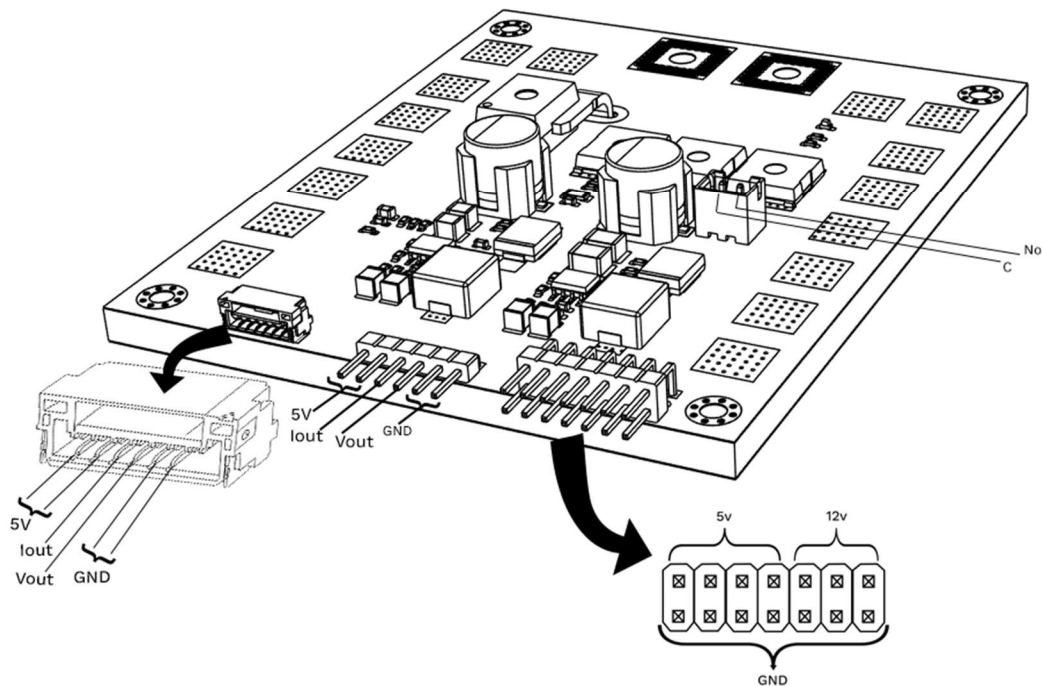
## What's in the Box

- Power Distribution Board 400A
- Capacitor 220 uF 100V

## Knowing your PDB 400A



1. JST 6 pin connector
2. Single row male headerpin
3. Double row male header pin
4. Current sensor
5. Switch
6. Power LED
7. Mounting hole
8. Battery(14v-60v)
9. ESC 2
10. ESC 1



### 1. Battery Input

- Voltage range: 14 V to 60 V (14S max)
- Recommended 220  $\mu$ F / 100 V capacitor across battery input to suppress voltage spikes and prevent sparking

### 2. ESC Power Outputs

- Eight pairs of high-current solder pads to supply power to ESCs.

### 3. Anti-Spark Switch Interface

- Pins labeled NO (Normally Open) and C (Common) for connecting an anti-spark relay or switch
- If not using the switch, short the C and NO pins.

### 4. Regulated Output Rails & Telemetry

- Built-in DC-DC converters provide 12 V at 4 A and 5 V at 4 A for peripheral electronics.
- Header pins include four 5 V outputs and three 12V outputs and multiple ground pins, which can be used for power supply telemetry.

- Dedicated analog output of Current sensor and Voltage sensor

### **6. Current Sensor**

- Hall-effect sensor supports up to 400 A continuous current measurement; outputs analog signal for system current input.

### **8. Physical Dimensions & Weight**

- 106 mm × 87 mm × 12 mm
- Weight 55g

### **9. Maximum Current Handling**

- Rated for up to 400 A continuous at 60 V input

## Key Features & Applications

- Capable of handling high current applications (up to 400A continuous distributed load).
- Input voltage up to 14 - 60 V (14S).
- MOSFET-based soft power switching.
- 8 × 60A high-current solder output pads for ESC connections.
- Integrated Hall-effect current sensing.
- Dual regulated BEC outputs: 5V @ 4A and 12V @ 4A.
- Large-area 2oz copper planes for efficient current handling.
- LED power indicator.
- JST port for external switch connection.
- Power output for the flight controller via JST connectors

## Technical Specifications

Parameter	Value
Maximum Continuous Current	400 Amps
Peak Current	450A
Input Voltage Range	14V – 60V DC (14S max)
5V Regulated Output	5V DC @ 4A
12V Regulated Output	12V DC @ 4A
ESC/Motor Connectors	8 × Solder pads (rated 60A each)
Flight Controller Output	Dedicated regulated output
Analog Current Sensor	Up to 400A
Analog Voltage Sensor	Up to 60V
Output Headers	Standard 2.54mm (0.1") pitch
Board Dimensions	106 mm × 87 mm × 12 mm
Weight	Approx. 55g

## Installation Guide

### Step 1: Mounting

Secure the PDB using non-conductive standoffs or insulation spacers to prevent shorts.

### Step 2: Wiring

- Input Power: Solder battery leads to the input pads.  
Add a 220uF 100V capacitor to the source side of the PDB.
- ESC Connections: Connect each ESC wire to the ESC/Motor connecting solder pads (60A continuous per pad).

- Flight Controller Power (6 pin JST): Connect the flight controller to the dedicated JST power port.
- BEC Outputs: Use the regulated 5V or 12V outputs for flight controllers, cameras, air units, or other onboard electronics.
- External Switch Connection: Connect the external switch to the 2 pin JST switch port provided on the board.
- If not using the external switch, short the C and NO pins to enable power.
- Do not switch OFF or ON the anti-spark switch when a load is connected to the PDB. It is safe to turn on the switch before adding a load.

**Note:** Check polarity before soldering. Incorrect wiring can cause permanent damage.

## Safety Instructions

- Always disconnect the battery before handling the PDB.
- Do not exceed the rated voltage/current limits.
- Ensure all solder joints are clean and secure.
- Avoid contact with conductive materials when powered.
- A capacitor is required at the battery input to avoid anti-spark relay damage.
- Calibrate Iout and Vout in QGroundControl using measured values for accurate telemetry

### Calibration values

Amps per volt: 336 amps/volt

Amps Offset: 1.695 V

## Usage & Testing

- After installation, double-check all connections.
- Use a multimeter to verify voltage at each output.
- Power the unit briefly to check for heat, sparks, or unusual smell.
- Proceed with connecting other electronics once validated.

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