

OSDoge

Setup handbook

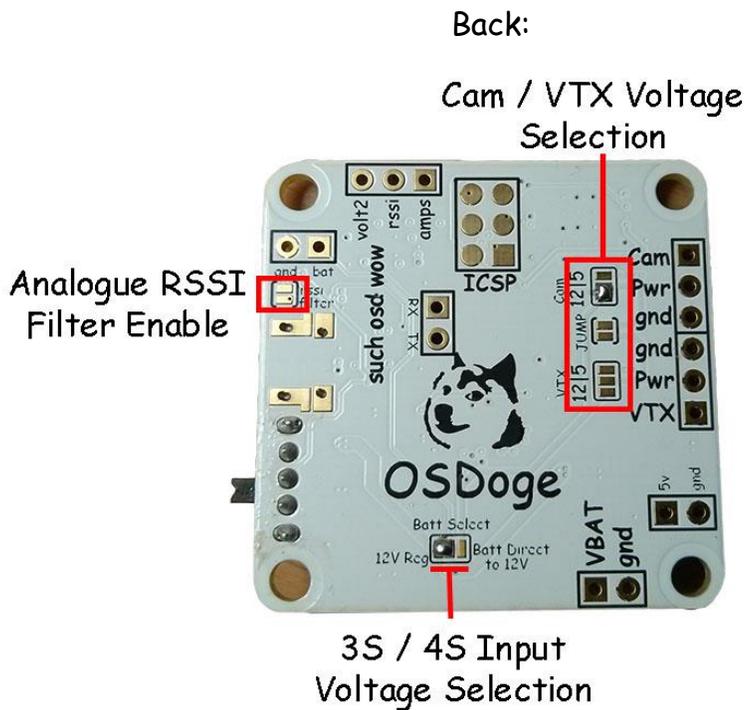
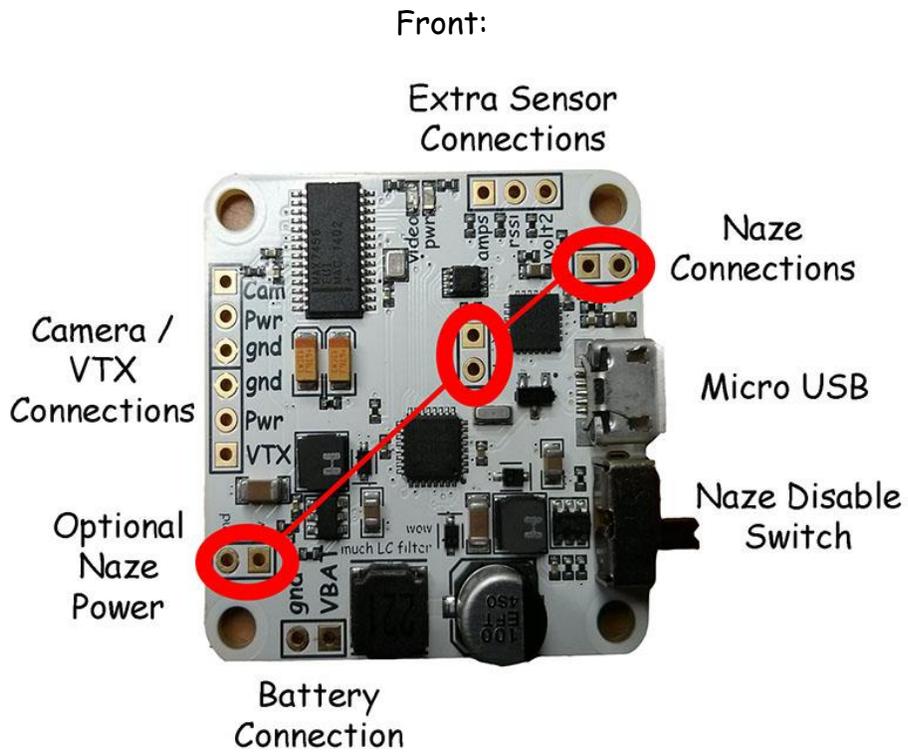


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1. Hardware Overview



2. Hardware capabilities overview

OSDoge can perform the following power supply functions:

- Supply 5V to naze, and any attached devices
 - Note: servos should not be drawing power from OSDoge.
- Supply 5V or 12V to your FPV camera (Factory default: 12V)
- Supply 5V or 12V to your video transmitter (VTX)
- Filter incoming 3S / 4S battery power (Factory default: 4S)

There are on-board 5V and 12V power supplies. When powered from a 3S battery, the 12V regulator should be bypassed. There is a solder jumper on the bottom that allows this. The voltage regulators provide clean, stable power in a step-down configuration.

OSDoge can be powered from the USB port, and does not require battery power when being flashed or programmed.

The battery connection can be connected to 3S / 4S batteries and should be connected at all times. You can solder this connection directly to your power distribution board or use the supplied pin headers if you want to disconnect OSDoge to work on your copter.

Basic soldering skills are required to properly set up your OSDoge and Naze!

3. Connections overview

Before you connect OSDoge to your copter, you should decide how you will be supplying power to the various components.

How will you be powering the Naze?

- Using OSDoge?
- Using an ESC BEC?
- Using an external BEC?

How will you be powering your VTX?

- Using OSDoge to supply 12V or 5V?
- Directly to battery, if supported? (example: Boscam TS353)
- Using an external BEC?

How will you be powering your camera?

- Using OSDoge to supply 12V or 5V?
- Using your VTX's voltage output? (example: Boscam TS353)
- Using an external BEC?

For each question, only one answer can be chosen. For example, if you want to power your Naze from the OSDoge, you **MUST** disconnect all other power supplies from your Naze - remove all the red wires from your ESC leads (or use OPTO ESCs), and disconnect any external BECs from your Naze.

4. Configuring power supplies

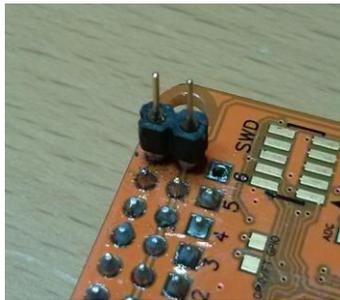
Once you have decided how to power the various components on your aircraft, you can start configuring OSDoge!

1.1. Powering Naze from OSDoge

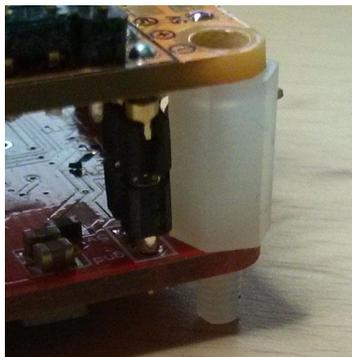
5V and Ground connections are available on OSDoge that utilize two pins of the Naze motor header. The two pins are on the "Motor 6" header, closest to the edge of the Naze.



Two female round pin headers will be used in this connection. The male pin headers will be inserted into the ground and +5V connections on the "Motor 6" connection on Naze.



When completed, the connection will look like this:



1.2. Powering Cam/VTX from OSDoge

The FPV camera and VTX connections are provided through standard 3-pin servo-style leads, in the typical Signal - Power - Ground order. If you wish to power your camera and/or VTX from OSDoge, you only need to do three things:

1. Connect battery power and ground to the battery connection on OSDoge. (But you've probably done this already!)
2. Select the proper setting for the 3S / 4S jumper. For 3S, select "Batt Direct to 12V" and for 4S select "12V Reg." Note that this jumper is set from the factory for testing to the 4S setting.
3. Select the desired voltage of your camera and VTX using the jumper for each connection. Note that the camera jumper is set from the factory to the 12V setting. Make sure to change this if necessary before connecting power!

Example: 4S battery power, 5V camera, 12V VTX

1. Connect the battery to the VBAT and GND battery connections
2. Ensure the battery selection jumper is set to "12V Reg"
3. Ensure the camera jumper is set to 5V and the VTX jumper is set to 12V

Please note the proper way to set the solder jumpers:

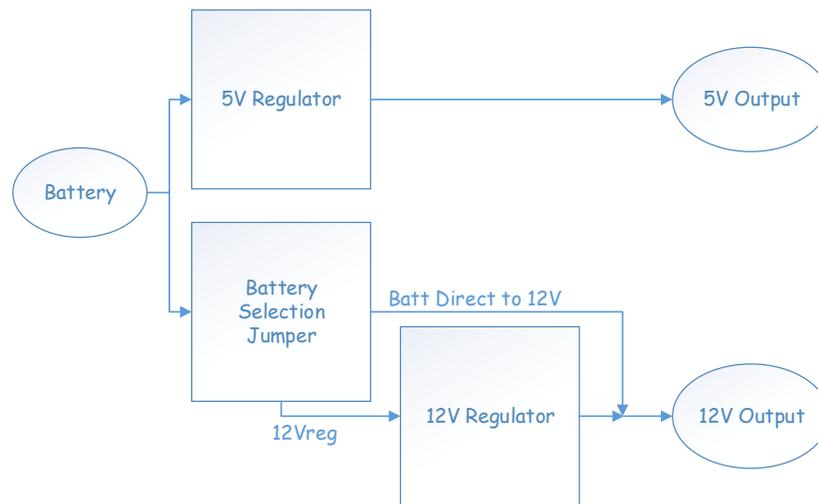


There is a healthy-sized solder blob over two pads, allowing current to flow from the center pad to the pad on the left side. The third pad (on the right) has no connection to the other two pads.

If you mistakenly bridge all 3 pads at once, you'll most likely break something!!

1.3. Battery 3S / 4S Selection

The 3S / 4S battery selector jumper needs to be set properly in order to ensure proper voltage of the 12V rail.



With 3S battery power, the "Batt Direct to 12V" jumper should be set so the 12V regulator is bypassed. With 4S battery power, the "12VReg" jumper should be set so the 12V regulator is enabled. If you are using 4S battery power and enable the "Batt Direct to 12V" jumper, the 12V supply will be connected to 4S voltage! This might be a bad thing.

5. Connecting Naze to OSDoge

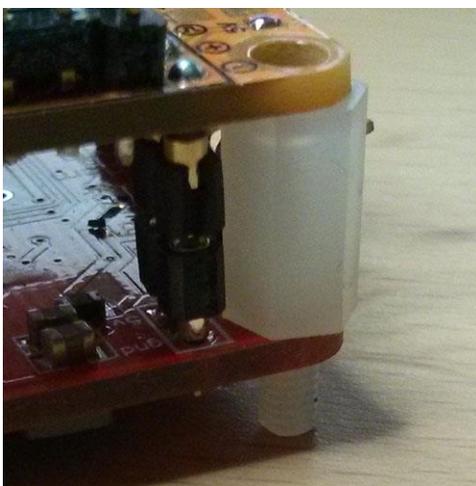
Whether or not you're powering Naze from OSDoge, you need to connect the two so they can talk about what to put on the OSD. This is done using the other two pin connections on the Naze.

The two pins in the middle of the board are the TX/RX connections. The two pins near the USB plug are the ground a battery sense lines.

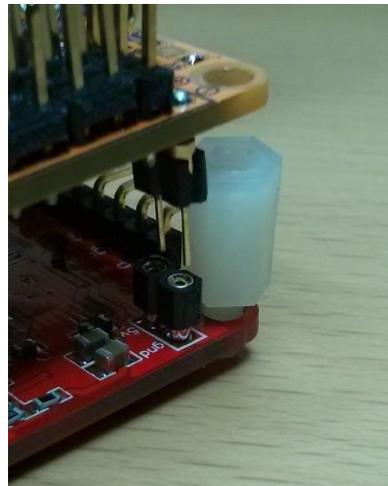
Note that the small round pins are somewhat fragile. When connecting Naze and OSDoge, make sure the pins don't bend and you plug the Naze straight into OSDoge without tilting it.

Here's a tip for soldering up those round pin headers: place the female pairs into OSDoge without soldering them, then place the male headers into the female headers. Use the 10mm nylon standoffs to align the boards, and place the Naze onto the back end of the male headers, making sure the pins are guided through the pin holes on Naze. Because you haven't soldered any pins, they are free to move in the holes and you can align them with the holes in the Naze. After bringing the two boards together, the pins are aligned in both the OSDoge holes and the Naze holes, and won't fall out. You can now solder all the connections, then pull the boards apart. The female headers stay with OSDoge, the male pins stay in Naze, and they have been perfectly aligned.

Solder the pins like this:



So they end up like this:



6. OSD configuration info

The recommended OSD software is MWOSD. It's available here:

<http://code.google.com/p/multiwii-osd/>

You don't need to apply battery power when configuring / updating OSDoge, USB power is enough.

There's an additional important feature of OSDoge that comes in handy when setting up your OSD. The serial connection between the OSD and the Naze is shared with both the USB port on Naze and the USB port on OSDoge. When both OSDoge and Naze are powered, they talk to each other using the serial connection. But when you plug in a USB connection to configure either the Naze or OSD, the USB communication conflicts with the Naze-to-OSD communication.

OSDoge adds a switch that disconnects the Naze-to-OSD communication. Move the switch towards the USB plug to disconnect the Naze and OSD, and thus allow you to connect to either USB connection. Move the switch back, away from the USB plug, to reconnect the Naze to the OSD and resume OSD updates.