

# Manual To Configure/ Calibrate Odrive Speed Controllers and Motors

Step 1: Plug USB-C into the speed controller and USB-A into the laptop

Link to configuration: <https://gui.odriverobotics.com/configuration>

The screenshot shows the ODrive configuration interface. At the top, there are tabs for Configuration, Dashboard, Inspector, Firmware Update, and Docs. The 'Configuration' tab is active. Below the tabs, there's a 'Configurations' section on the left with two entries: 'ODrive 0' (connected) and 'ODrive 1' (not connected). The main area is titled 'Configuring ODrive 0' and has a progress bar with five steps: 1. Power Source, 2. Motor, 3. Control mode, 4. Interfaces, and 5. Apply & Calibrate. The 'Power Source' step is selected. It contains a 'Power Source' section with a warning icon and text: 'Configure these settings according to the limits of your power source. [Learn more.](#)'. Below this are several input fields: 'DC bus overvoltage trip level' (42 V), 'Internal current limit' (64 A), 'DC bus undervoltage trip level' (36 V), 'DC max positive current' (10 A), 'DC max negative current' (-20 A), and 'Use brake resistor' (checked). A blue box at the bottom of the section contains a warning: 'These parameters are trip levels, not soft limits. That means the ODrive will not actively try to stay within these limits, but it will go to IDLE and report an error if the limits are exceeded.' At the bottom right, there are 'Previous' and 'Next' buttons.

Set voltage level

The screenshot shows the ODrive configuration interface, specifically the 'Motor' tab for ODrive 0. The progress bar at the top shows five steps: 1. Power Source, 2. Motor, 3. Control mode, 4. Interfaces, and 5. Apply & Calibrate. The 'Motor' step is selected. On the left, there are seven motor selection options: D5065-270KV, D6374-150KV, D5312s-330KV, M8325s-100KV, BotWheel, N3401-AMT21, and Other Motor. The 'BotWheel' option is highlighted. On the right, there's a 'View BotWheel in online shop' link. Below it are several input fields for motor parameters: 'Type' (High current), 'Pole pairs' (15), 'KV' (8.7 rpm/V), 'KT' (0.951 Nm/A), 'Current limit' (16 A), 'Current limit torque' (15.209 Nm), 'Motor calib. current' (3.333 A), 'Motor calib. voltage' (4 V), 'Lock-in spin current' (3.333 A), 'Use thermistor' (checked), 'Thermistor R25' (20000 Ω), 'Thermistor beta' (3950), and 'Max temperature' (130 °C). At the bottom, there's a text block: 'Additional variables set by this motor preset: axis0.config.motor.current\_control.bandwidth = 100, axis0.controller.config.vel\_gain = 3, axis0.controller.config.vel\_integrator\_gain = 25, axis0.controller.config.pos\_gain = 20'. At the bottom right, there are 'Previous' and 'Next' buttons.

## Manual To Configure/ Calibrate ODrive Speed Controllers and Motors

### Configuring ODrive 0

1

Power Source

2

Motor

3

Control mode

4

Interfaces

5

Apply & Calibrate

1

**Ramped Velocity Control** is recommended for initial setup and tuning in the Dashboard. The control mode and some parameters on this page can also be changed on the Dashboard.

#### Control Mode

Control Mode ⓘ

Ramped Velocity Control

↺

Ramp limit ⓘ

20

turns/s<sup>2</sup>

↺

Soft velocity limit ⓘ

10

turns/s

↺

Hard velocity limit ⓘ

12

turns/s

↺

☒ Torque limit ⓘ

4.45

Nm

↺

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Next >

### Set limits

### Configuring ODrive 0

1

Power Source

2

Motor

3

Control mode

4

Interfaces

5

Apply & Calibrate

**USB** USB communication is always enabled without additional configuration. [Learn more.](#)

**CAN Bus** ☒ Enable  
CAN Bus is the recommended way to control the ODrive. [Learn more.](#)

Bitrate ⓘ

250000

bits/s

↺

☒ Node ID ⓘ

0

↺

☒ Send heartbeat every ⓘ

100

ms

↺

Reference: [Heartbeat](#)

☒ Send feedback every ⓘ

10

ms

↺

Reference: [Get\\_Encoder\\_Estimates](#)  
[Get\\_Iq](#)  
[Get\\_Torques](#)  
[Get\\_Error](#)  
[Get\\_Temperature](#)  
[Get\\_Bus\\_Voltage\\_Current](#)

**UART** ☐ Enable  
Simple text based interface. Only recommended if CAN is not available. [Learn more.](#)

**Watchdog timer** ☒ Enable  
The watchdog disables the motor when communication is disrupted. [Learn more.](#)

Watchdog timeout ⓘ

1

seconds

↺

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Next >

Set bitrate and Can id, each speed controller needs its own can id, others cannot have matching can id.

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### Configuring ODrive 0

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Power Source

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Apply & Calibrate

This page guides you through the final setup and calibration steps. To avoid any unexpected behavior, please run all steps in the order they are presented.

1

**Erase old configuration**  
Ensures that no old configuration is on the device. This is required for the new configuration to be correct.  

Erase & Reboot

2

**Apply new configuration**  
This writes the settings onto the ODrive according to the configuration on the previous pages.  

Python commands (advanced users) ▾

Apply

3

**Save to non-volatile memory**  
Saving and rebooting the device is necessary for some changes to take effect.  

Save & Reboot

4

**Calibrate**  
This will keep your motor and spin it to calibrate the motor and encoder. **Make sure the motor can move freely.**  

Run Calibration Sequence

5

**Save to non-volatile memory**  
This ensures that the calibration persists across reboots.  

Save & Reboot

6

**What's next?**  
The ODrive is now ready to spin your motor! Head over to the **Dashboard** tab to try it out! To control and monitor the ODrive from other devices, see [here](#).

When running calibration lift wheels off ground, they will spin