

Stepper Motor

Actuators / Precise steps

Identify coil pairs and wire a bipolar stepper to a STEP/DIR driver.

01 Coils & wiring

Identify

With power disconnected, measure resistance to find the two coil pairs of a 4-wire bipolar motor.

Connect

One pair to A1/A2, the other to B1/B2. Driver labels may be 1A/1B and 2A/2B.

Control

MCU STEP -> STEP; DIR -> DIR; common GND. Configure enable/sleep/reset as required.

02 STEP / DIR

Motion

Each STEP pulse advances one configured microstep. DIR selects direction.

Rate

Step frequency sets speed; ramp frequency to avoid missed steps.

Position

$\text{steps} = \text{revolutions} \times \text{full_steps_per_rev} \times \text{microstep_factor}$. A 1.8 deg motor has 200 full steps/rev.

03 Driver setup

Current limit

Set using the exact driver and sense-resistor formula before running the motor.

Supply

Use rated VMOT supply and local bulk capacitor; A4988 carriers can suffer damaging LC spikes.

Variants

5-wire 28BYJ-48 + ULN2003 uses a coil sequence, not STEP/DIR directly.

Before you power on

Never connect or disconnect motor coils while the driver is powered.

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Datasheets & further reading

Pololu A4988 carrier guide

<https://www.pololu.com/product/1182>