

1. Motor Driver Connections

These connections help the motors turn forward and backward.

- **Arduino Pin 5 → IN1 on Motor Driver (Motor 1 – Forward)**
 - **Arduino Pin 6 → IN2 on Motor Driver (Motor 1 – Reverse)**
 - **Arduino Pin 9 → IN1 on Motor Driver (Motor 2 – Forward)**
 - **Arduino Pin 10 → IN2 on Motor Driver (Motor 2 – Reverse)**
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2. PWM Speed Control for Motors

These connections control how fast the motors go by sending special signals (PWM).

- **Arduino Pin 3 → Speed Control for Motor 1 on Motor Driver**
 - **Arduino Pin 11 → Speed Control for Motor 2 on Motor Driver**
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3. Ultrasonic Sensor Connections

These connections let the Arduino measure how far away objects are.

- **Arduino Pin 12 → Trig Pin on Ultrasonic Sensor**
 - **Arduino Pin 13 → Echo Pin on Ultrasonic Sensor**
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4. Stepper Motor Connections

These connections help the stepper motor move step by step.

- **Arduino Pin 2 → IN1 on Stepper Motor**
 - **Arduino Pin 4 → IN2 on Stepper Motor**
 - **Arduino Pin 7 → IN3 on Stepper Motor**
 - **Arduino Pin 8 → IN4 on Stepper Motor**
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5. Battery Connections

The battery gives power to the Arduino and the motors.

- **Battery Positive (+) → VCC Pin on Motor Driver 12v Pin**
 - **Battery Negative (−) → GND Pin on Motor Driver GND Pin**
 - **Barrel Connector → Arduino**
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6. Summary of Connections

Here is a simple table to help you see all the parts together.

Component	Arduino Pin	What It Connects To
Motor 1 (Left Motor)	Pin 5 (IN1)	Motor Driver IN1 (Motor 1)
	Pin 6 (IN2)	Motor Driver IN2 (Motor 1)
Motor 2 (Right Motor)	Pin 9 (IN1)	Motor Driver IN1 (Motor 2)
	Pin 10 (IN2)	Motor Driver IN2 (Motor 2)
Motor Speed Control	Pin 3	Motor Driver Speed Control (Motor 1)
	Pin 11	Motor Driver Speed Control (Motor 2)
Ultrasonic Sensor	Pin 12	Trig Pin on Sensor
	Pin 13	Echo Pin on Sensor
Stepper Motor	Pin 2	IN1 on Stepper Motor
	Pin 4	IN2 on Stepper Motor
	Pin 7	IN3 on Stepper Motor
	Pin 8	IN4 on Stepper Motor
Battery	(+)	VCC Pin on Motor Driver 12v Pin
	(−)	GND Pin on Motor Driver GND Pin
