ESP32 Wiring Connections

Motor Driver Connections

1. GPIO 14 $\rightarrow$ Left Motor PWM (ENA)
2. GPIO 22 $\rightarrow$ Left Motor Direction (IN1)
3. GPIO 13 $\rightarrow$ Right Motor PWM (ENB)
4. GPIO 23 $\rightarrow$ Right Motor Direction (IN2)
5. GND $\rightarrow$ Motor Driver GND (Common Ground)
6. Motor power must be from an external supply

Encoder Connections

1. Channel A $\rightarrow$ GPIO 25
2. Channel B $\rightarrow$ GPIO 26
3. VCC $\rightarrow$ 3.3V
4. GND $\rightarrow$ GND
5. Internal pull-ups enabled
6. Full quadrature decoding used

Power & Safety Notes

1. ESP32 powered via USB / 5V
2. Motor driver powered by external battery
3. Common ground is mandatory
4. Do not power motors from ESP32
5. Use shielded encoder wires if noisy