

SG90 Servo

Actuators / Position control

Three wires, a control pulse and a power supply that can handle motion.

01 Connections

Brown / black

Ground; join servo supply and MCU grounds.

Red

External regulated supply appropriate to the servo; original SG90 nominal operation is 4.8 V.

Orange / yellow

Control signal from the MCU. Confirm colors on your unit.

02 Control pulses

Frame

Typically ~50 Hz: one pulse every ~20 ms.

Center

About 1500 μ s pulse width.

Travel

Start around 1000-2000 μ s; endpoints vary. Increase range only after checking mechanical limits.

Not motor PWM

Position depends on HIGH pulse width, not `analogWrite` duty alone.

03 Practical setup

Power

Size the external supply for stall current; add local bulk capacitance.

Motion

Use small position steps; disconnect load during initial centering.

Arduino

Servo library: `attach(signalPin); writeMicroseconds(1500)`.

Before you power on

Do not power a servo from a GPIO or the 3.3 V header. Avoid holding the mechanism against an end stop.

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Datasheets & further reading

Tower Pro SG90

<https://towerpro.com.tw/product/sg90-analog/>