FA-SC1 Speed Controller User Manual

The Firgelli Automations FA-SC1 Speed Controller operating at 10Khz PWM allows you to control the speed of all our **12VDC** actuators.
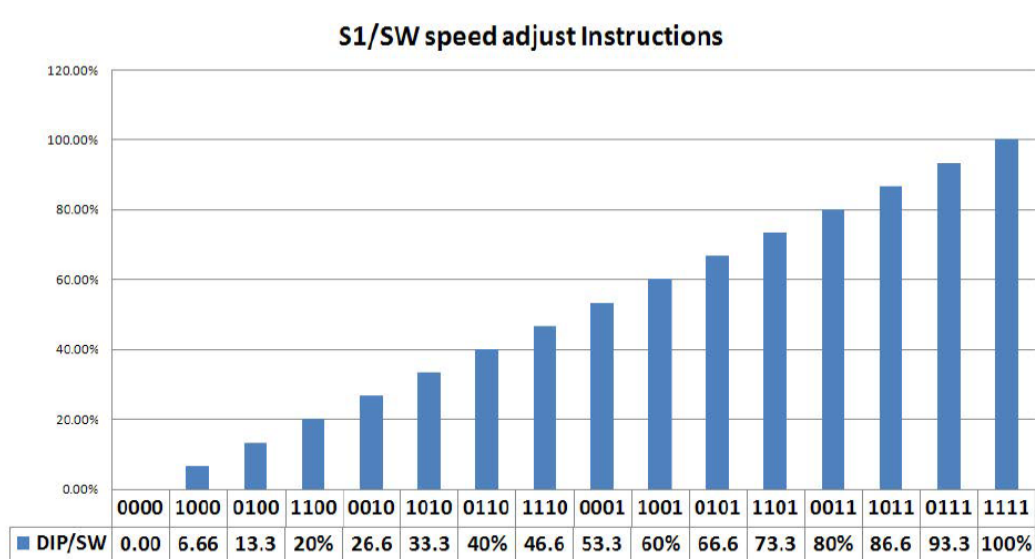
The maximum current capability of the unit is **10A.**

Designed using a motor controller and Pulse Width Modulation (PWM) you are able to control the speed of your actuator in either direction with minimal impact on the actuator force. You can reduce the speed to just under 50% with little loss of force. Force loss is determined by inertia of the actuator and could be more with higher force actuators.

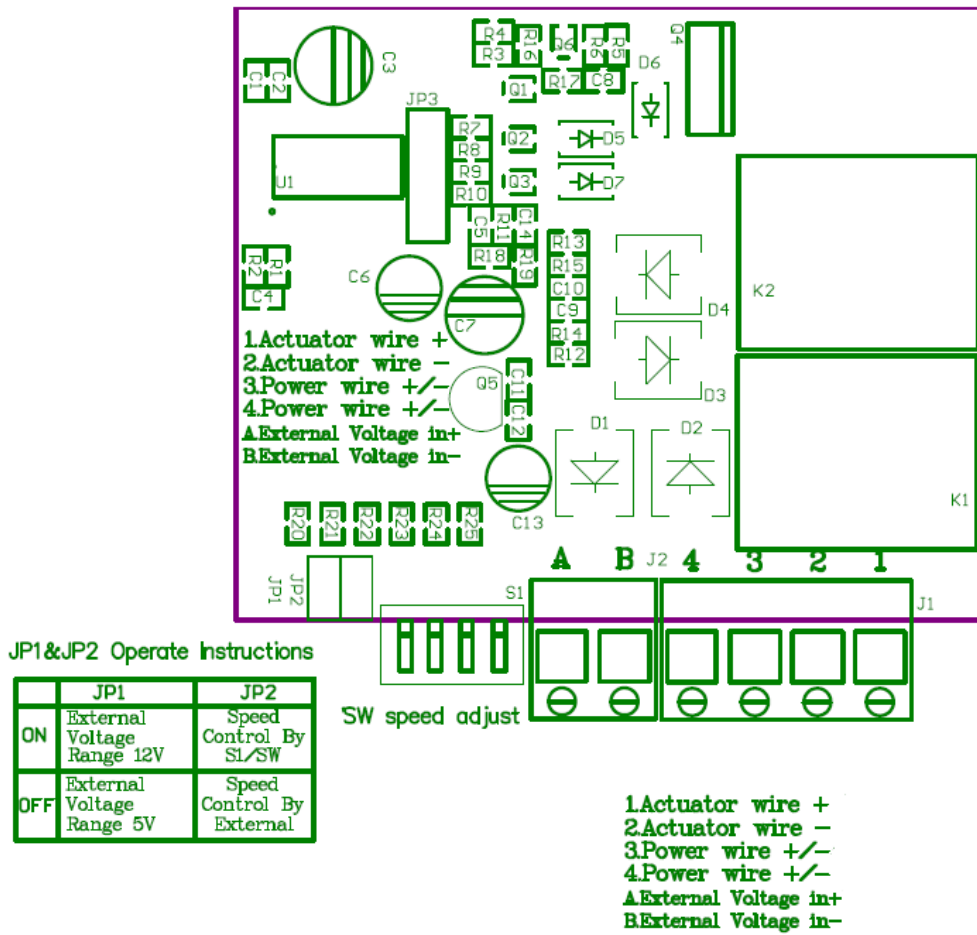The Speed Controller can be set by either a four position DIP switch or an external voltage input.

CAUTION: **DO NOT** reverse the polarity of the external control voltage; the unit will be damaged permanently if polarity is reversed.
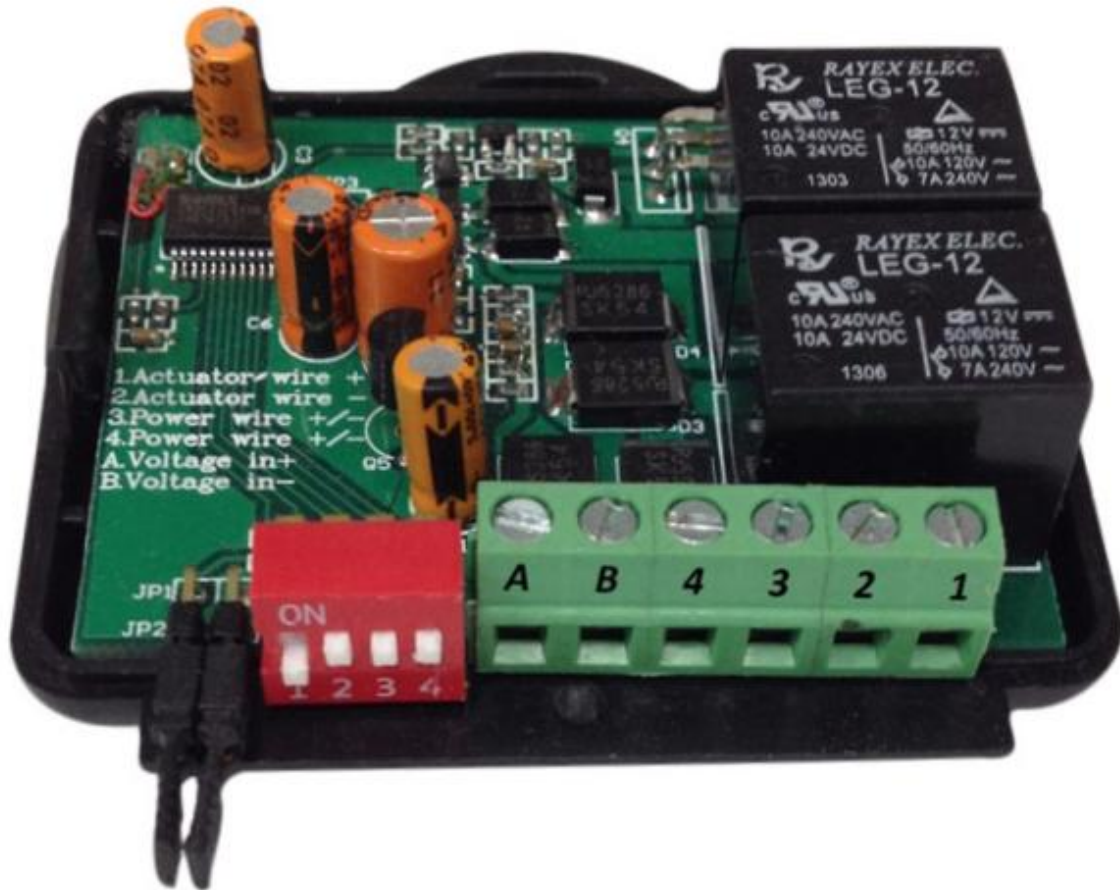
Variation in Speed with DIP SW Settings:

S1/SW speed adjust Instructions

DIP/SW	0000	1000	0100	1100	0010	1010	0110	1110	0001	1001	0101	1101	0011	1011	0111	1111
	0.00	6.66	13.3	20%	26.6	33.3	40%	46.6	53.3	60%	66.6	73.3	80%	86.6	93.3	100%

CAUTION: The FA-SC1 is intended to control the speed of one linear actuator. **DO NOT** connect two actuators to the same FA-SC1. The maximum current capability of the unit is 10A; even two small actuators connected together to the Speed Controller could draw a startup surge current exceeding 10A which will damage the unit.

Circuit Board Layout:

1.Actuator wire +
2.Actuator wire −
3.Power wire +/−
4.Power wire +/−
A.External Voltage in+
B.External Voltage in−

JP1&JP2 Operate Instructions

	JP1	JP2
ON	External Voltage Range 12V	Speed Control By S1/SW
OFF	External Voltage Range 5V	Speed Control By External

SW speed adjust

1.Actuator wire +
2.Actuator wire −
3.Power wire +/−
4.Power wire +/−
A.External Voltage in+
B.External Voltage in−

Terminal 1   connects to the RED wire coming from your actuator
Terminal 2   connects to the Black wire coming from your actuator.
Terminal 3   connects to the power wire from your control switch or remote
Terminal 4   connects to the other power wire from your control switch or remote
Terminal A   external speed control voltage in+ **DO NOT reverse the polarity.**
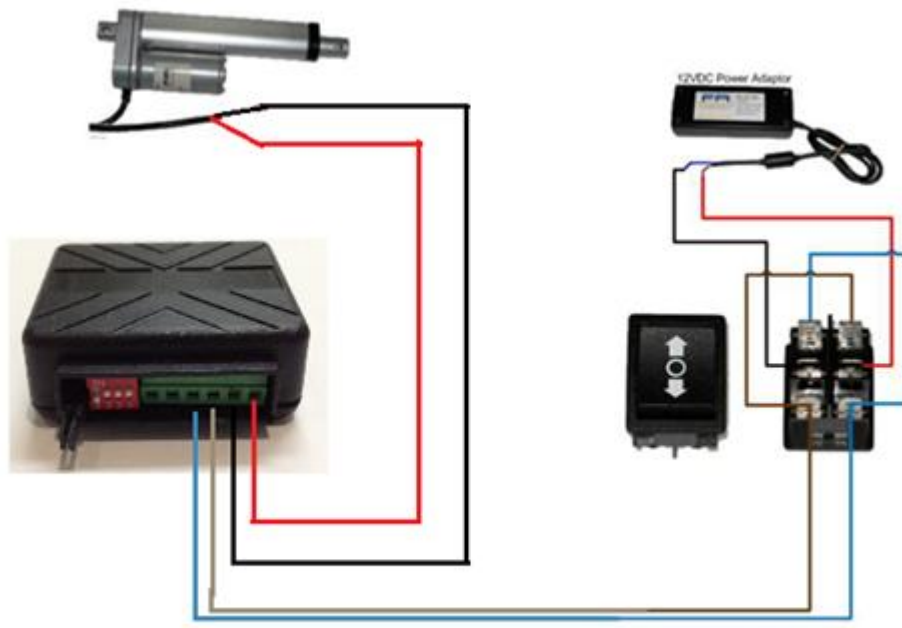Terminal B   external speed control voltage in-

The Jumper JP1 selects the option of either the DIP switch setting or external voltage input. This external voltage input can come from an external potentiometer or an analog voltage from a micro-controller like an Arduino or even a PLC.

This feature allows you to use the SC1 Speed Controller as a motor driver for micro-controllers or PLCs too.
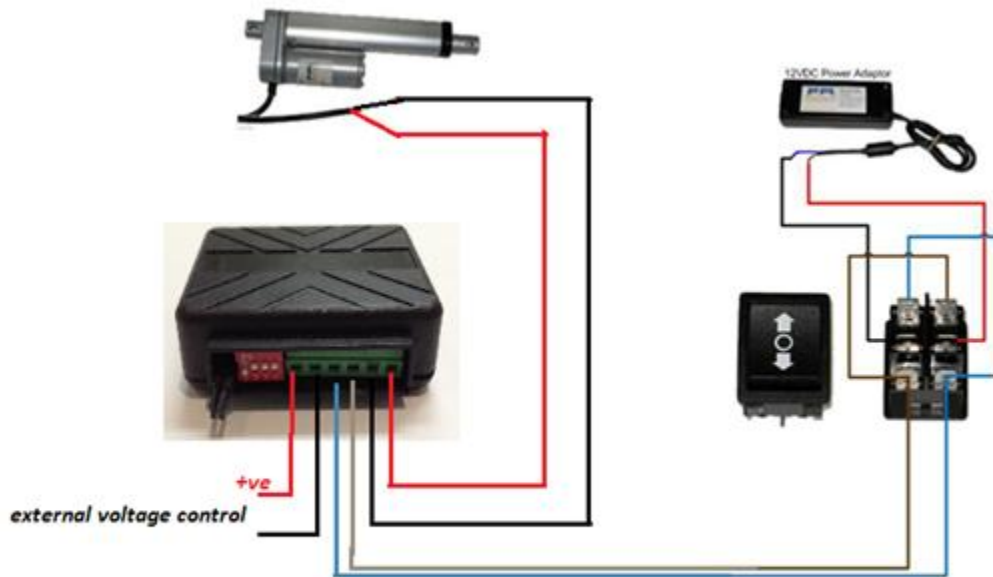
Wiring Diagrams:

Connecting FA-SC1 Speed Controller to a Rocker Switch:

Speed Control connection for DIP switch speed setting

Connecting the FA-SC1 Speed Controller with External Control Voltage:

Speed Controller Wiring with external analog control voltage

For this mode, ensure Jumper 2 (JP2) is not connected.

Select external control voltage range with Jumper 1 (JP1): 5VDC or 12VDC

The external control voltage can be generated from your micro-controller or a PLC.

CAUTION: Do not reverse the polarity of the external control voltage; the unit will be damaged permanently.

Connecting the FA-SC1 Speed Controller with External Potentiometer:

external voltage control

external potentiometer
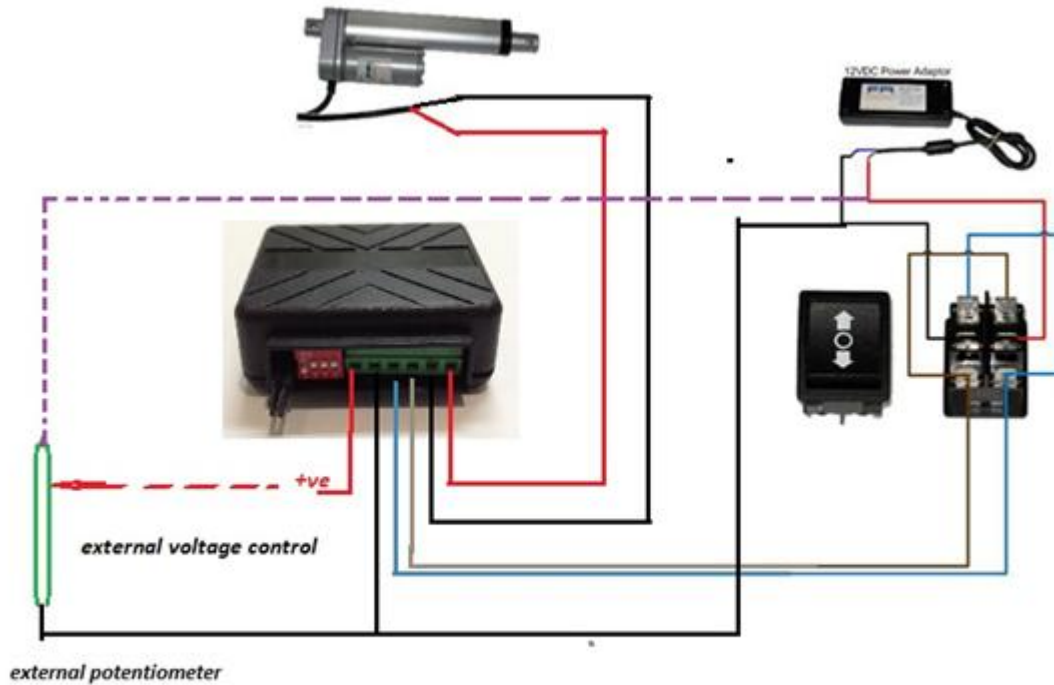
Speed Controller Wiring with external analog control voltage

Another way is to connect an external potentiometer across the 12VDC power adapter (before the switch as shown).

CAUTION: Do not reverse the polarity of the external control voltage; the unit will be damaged permanently.