

## SPD-24250BLDC 24 Volt DC 250 Watt Brushless DC Motor Controller

Operating Voltage: 19 through 30 Volts DC (24 Volt Battery Pack)

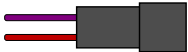
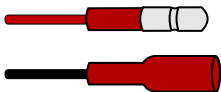
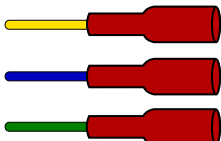
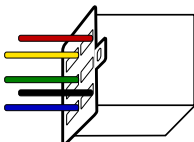
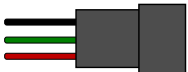
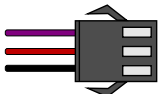
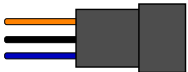
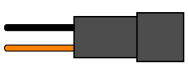
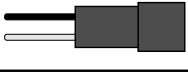
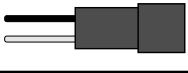
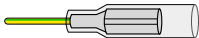

Power: 250 Watts (Compatible with 150-250 Watt Brushless DC Motors)

Current Limit: 15 Amps (15 Amps Maximum Current Output)

Low Voltage Protection: 19 Volts (Turns Motor Off When Battery Pack Is Under 19 Volts)

Works with both Sensored and Sensorless Brushless DC Motors

Compatible with 120 Degree and 60 Degree Phase Angle Motors

Power Switch Wires		Purple to Power Switch Contact Red to Power Switch Contact
Input Power Wires		Red Wire to Battery Positive + Black Wire to Battery Negative -
Motor Phase Wires		Yellow to Yellow Motor Phase U Wire Blue to Blue Motor Phase V Wire Green to Green Motor Phase W Wire
† Motor Hall Sensor Wires		Red to Red Motor Hall Wire +5V Black to Black Motor Hall Wire GND Yellow to Yellow Motor Hall U Wire Green to Green Motor Hall V Wire Blue to Blue Motor Hall W Wire
* Throttle Wires		Black Ground Green 1-4 Volt Signal Input Red +5 Volt Output
* Pedal Assist Sensor Wires		Purple Sensor Signal Input Red +5 Volt Output Black Ground
† 3 Speed Control Wires		Orange to Black for High Speed Black to No Wire for Normal Speed Blue to Black for Low Speed
† Cruise Control Wires		Black to Cruise Control Switch Contact Orange to Cruise Control Switch Contact
† E-Brake Wires		Black to Brake Switch Contact White to Brake Switch Contact
		Black to Brake Switch Contact White to Brake Switch Contact
† Speedometer Wire		Yellow/Green Wire to Speedometer
** Self Learning Wires		Connect Together for Self Learning Mode Disconnect After Self Learning Is Completed

† Optional Connections: These wires do not need to be connected for the controller to operate.

\* Either the Throttle and or Pedal Assist Sensor needs to be connected for the controller to operate.

\*\* The Self Learning Wires can be connected together to train the controller to operate with the motor that it is attached to and then disconnected after the training has been completed.

## **Controller Programming Directions**

The controller requires programming after installation otherwise the motor may not operate normally or the motor's shaft may not rotate in the direction that it needs to.

### **Programming Directions**

- 1.** Prop the drive wheel in the air or remove the chain or belt from the motor. When the Self Learning Wires are plugged together the motor will automatically spin at a reduced speed so the drive wheel of the vehicle need to be propped in the air so it can spin freely, or the chain or belt needs to be removed if propping the drive wheel in the air is not possible.
  - 2.** Turn the vehicle's power switch or key switch on.
  - 3.** Plug the Self Learning Wires together. If the motor is now spinning in the direction that you want it to then unplug the Self Learning Wires and turn off the vehicle's power switch or key switch. Programming is now complete and the vehicle is ready to use.
  - 4.** If the motor spins in the oposite direction that you want it to when the Self Learning Wires are plugged together then unplug the Self Learning Wires, wait 10 seconds, and then plug the Self Learning Wires together again. If the motor is now spinning in the direction that you want it to then unplug the Self Learning Wires and turn off the vehicle's power switch or key switch. Programming is now complete and the vehicle is ready to use.
  - 5.** If following the programming directions above does not work then turn the vehicle's power switch or key switch off, wait 10 seconds, and try again.
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## **Installation Notes**

### **E-Brake Wires**

- 1.** The E-Brake Wires are optional to connect to and the controller will operate normally with nothing connected to them.
- 2.** The E-Brake is designed to help slow the vehicle down, however, not to bring it to a full stop. Mechanical brakes must be used in conjunction with the E-Brake if the E-Brake is used.
- 3.** The E-Brake Wires connect to a normally open SPST brake switch.

### **Cruise Control and 3 Speed Control Wires**

- 1.** The Cruise Control and 3 Speed Control Wires are optional to connect to and the controller will operate normally with nothing connected to them.
- 2.** The Cruise Control Wires connect to a 2 position On-Off maintained contact SPST switch.
- 3.** The 3 Speed Control Wires connect to a 3 position On-Off-On maintained contact SPDT switch.