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UK1133
VERSION 2.0

50A Digital DC PWM Motor Speed Controller

Control the speed of a DC motor without sacrificing torque. This Pulse-Width-Modulation (PWM) DC motor controller can provide up to a maximum continuous current of 50A to your DC motor or other DC load thanks to a digital microcontroller based (PIC) design and highly efficient High-Power 202A MOSFET for cooler operation.

An optional LCD module (LCD1133) is also available that will precisely indicate the currently set frequency and duty cycle for accurate control of the PWM signal.

The controller has two modes of operation: **Fixed** or **Variable** frequency. The fixed frequency mode of operation runs the controller at 100 Hz. In the variable frequency mode of operation, the frequency is adjustable from 244 Hz to 3.125 KHz. Duty cycle is fully adjustable from 0% to 100% in both modes.

The controller also offers built-in soft-start feature that greatly reduces the mechanical stress on the motor as well as the electrodynamic stress on the attached cables and battery therefore extending the life span of the whole system. When power is connected to the circuit, the duty cycle will start from 0% and go up to the preset value in about 1 to 1.5 seconds.

A 12V DC fan is included with the motor controller for robust reliable continued operation under heavy loads. Please note that DC fan is only designed to work with a supply voltage of up to 12V DC.

Operating Instructions

1. The controller has two modes of operation: "Fixed" and "Variable" frequency. You can select between the two modes depending on the position of the jumper "J1". Note that to change from one mode to another, you first have to disconnect the power supply.

VARIABLE FREQUENCY (244 Hz – 3.125 KHz)	FIXED FREQUENCY (100 Hz)
VAR ●●○ FIX	VAR ○●● FIX
J1	J1

2. In the "Variable" frequency mode of operation you can press "SW1" to "Lock" the current frequency settings so even if the potentiometer position is changed the frequency does not change. To "Unlock" the controller, simply press "SW1" again. LED "L2" will light up whenever the controller is "Locked".
3. Connect the controller to the power supply (9 to 24V DC) and the load as indicated on the Wiring Diagram. *Note that the fan included with the controller can only be used with a supply voltage of up to 12V DC. If a higher supply voltage is used, you need to replace the fan with a fan of the appropriate voltage.*

Cana Kit
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Manufacturer of High Quality Electronic Kits & Modules

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Important Notes

An appropriately rated fuse (rated a little higher than the maximum current you expect to draw) is required to ensure safe operation.

The controller is NOT reverse-polarity protected. Double check all connections before applying power and always turn off the power supply before making any wiring changes.

Do not connect the load's negative terminal to the power supply ground. The controller switches the load's negative terminal to the ground via the MOSFET.

Ensure that the controller's fan has an adequate space around it so it can properly flow the air and provide adequate cooling.

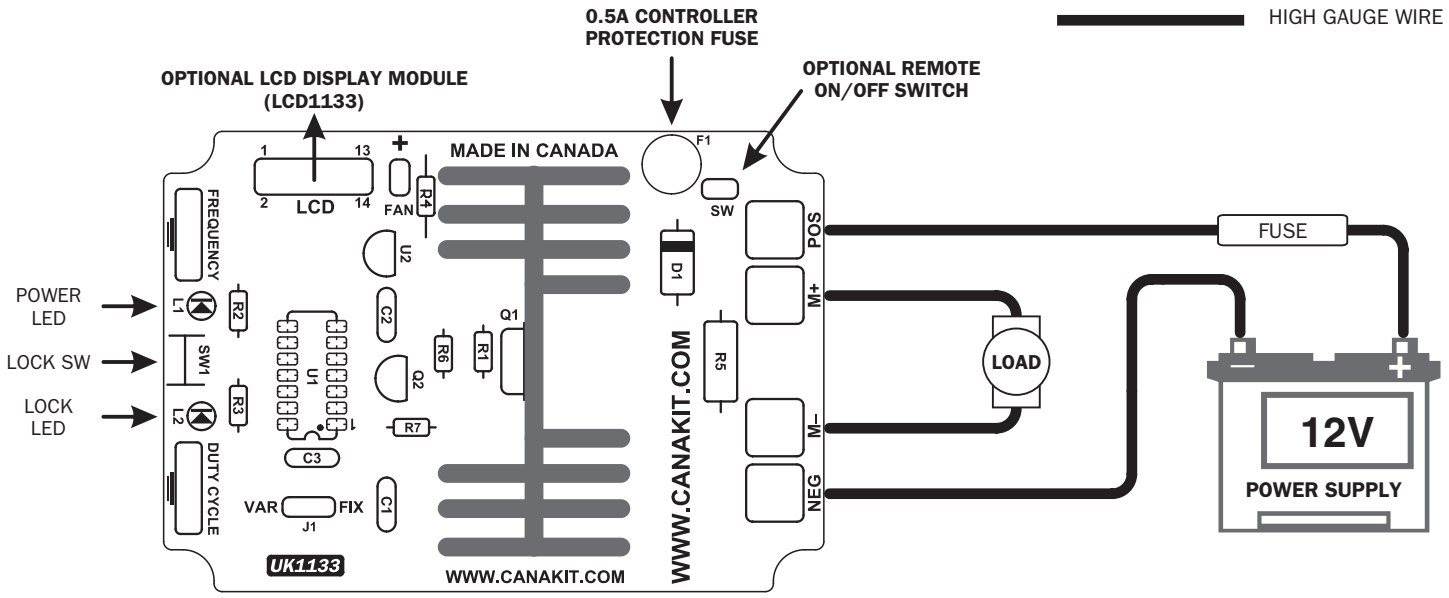
The MOSFET heat sink is electrically live and is connected to the "M–" terminal. Make sure no wires touch the heat sink.

Always use the shortest possible length for all wiring carrying high current to ensure minimal loss. The longer the wire, the higher the voltage drop across it which leads to a less efficient overall system.

Make sure all wires marked as "High Gauge" on the wiring diagram are of the appropriate AWG gauge depending on the maximum current you expect to draw.

Recommended AWG gauges are as follows:

AWG 14 : 15A	**AWG 8 : 40A**
AWG 12 : 20A	**AWG 6 : 50A**
AWG 10 : 30A	



Wiring Diagram

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Schematic Diagram

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