MANTECH
ELECTRONICS (PTY) LTD
International Components Distributor

TEL JHB : (011) 493-9307

CAPE : (021) 535-3150
KZN : (031) 309-7692
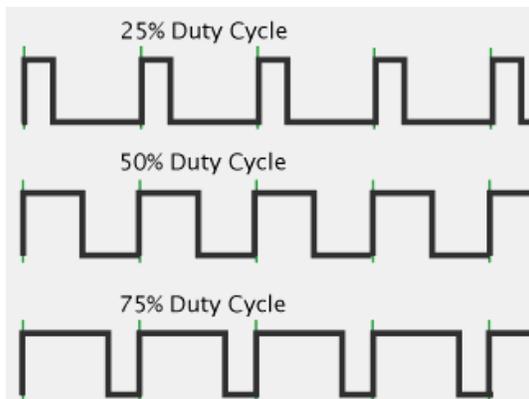
FAX : (011) 493-9319

sales@mantech.co.za

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MOTOR SPEED CONTROLLER   MEK06-002-1

The MEK06-002-1 is a DC motor speed controller or load controller kit, using PWM (pulse width modulation) to vary the amount of power delivered to the motor or load, hence allowing speed to be controlled, with reduced torque losses when compared with other voltage or current control methods.

As it can be seen in this image, PWM is basically a square wage signal, of a chosen frequency, where only the duty cycle is varied from 0% to 100%, in order to control the amount of energy delivered to a load.

This results in a kind of analogue control of the load, using digital circuitry.

This simplifies design, while also making it economic, efficient and simple to vary speed of a motor or other loads.

The MEK06-002-1 kit seen in this image, shows a number components placed on a PCB, to achieve the PWM function needed to vary DC motor speed.

The potentiometer connected to the coloured wires is used as the speed control.

On the board, there is a microcontroller that switches a FET (Field Effect power Transistor) that controls the voltage and current delivered to the motor, on and off according to the PWM percentage setting

Page 1
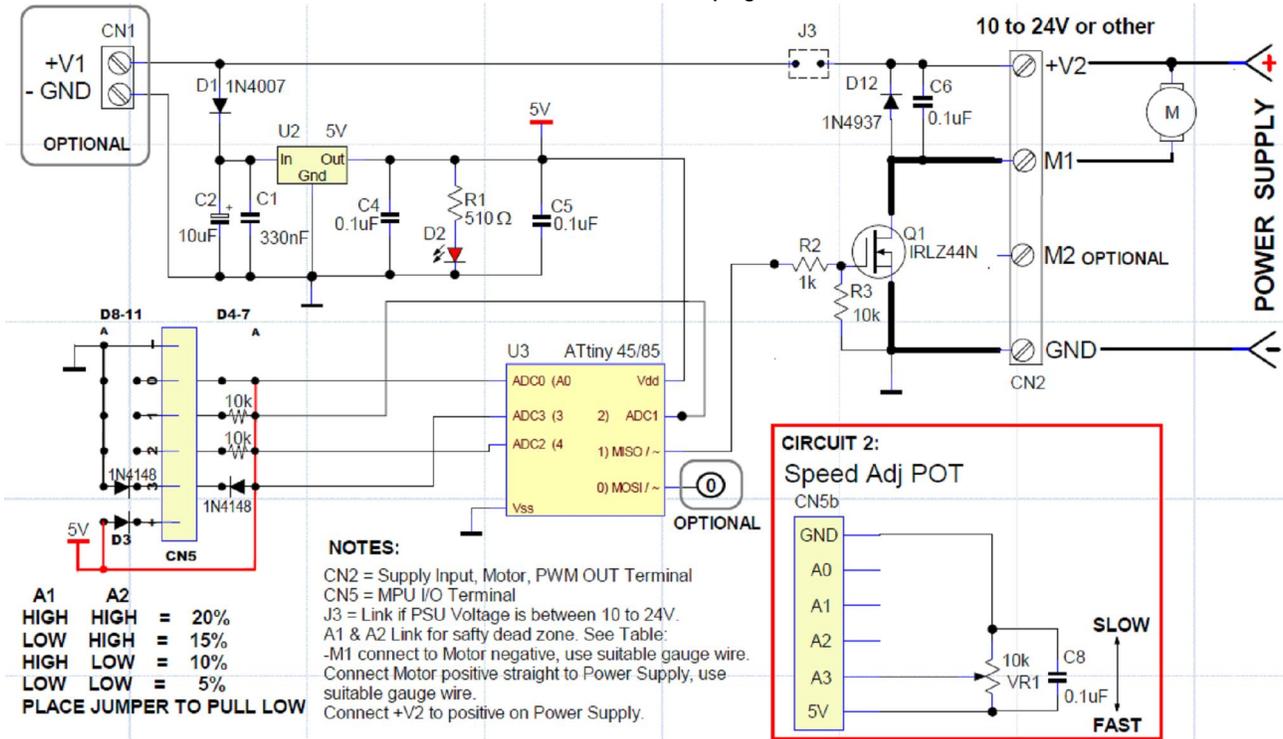
The circuit diagram above illustrates all the components and circuitry of the PWM speed controleer.
The top left-hand-side of the diagram (U2) shows the regulator that provides the 5V required to supply the microcontroller (U3) just below the regulators.

On the righ-hand-side (circuit 1) is the power MOSFET (Q1) that interfaces the low current and low voltage signal of the microcontroller to the high current, higher voltage driving the load. The terminals to the right of circuit 1:, are :

- **+ V2**　　Incoming voltage that supplies the motor and the controller (10 to 2V or other. See below)
　　　　　This is also the positive of the motor or load.
- **- M1**　　Negative terminal of the motor or load being controlled
- **- M2**　　Negative terminal of a second load (this is an option for a dual motor controller)
- **- GND**　This is the ground (negative) of the incoming supply (8 to 28V max)

Curcuit 2: illustrates the potetiometer that is used to control the load. This can also be replaced by any devive that generates a 0 to 5V signal. This all plugs into CN% with provided connector.

There are a number of jumpers on the board, intended for the selection of various options.

A1 & A2　　　　**Dead zone selection**
　　　　　　　Select the dead zone, where the motor does not operate (low torque end)
　　　　　　　This is normally on the first few degrees of the potetntiometer operation

J3　　　　　　**Voltage selection link**
　　　　　　　Link if volatge used is between 10 to 24. If higher remove link and supply 12V for the microcontrller through CN1 (optional) or change regulator U2.