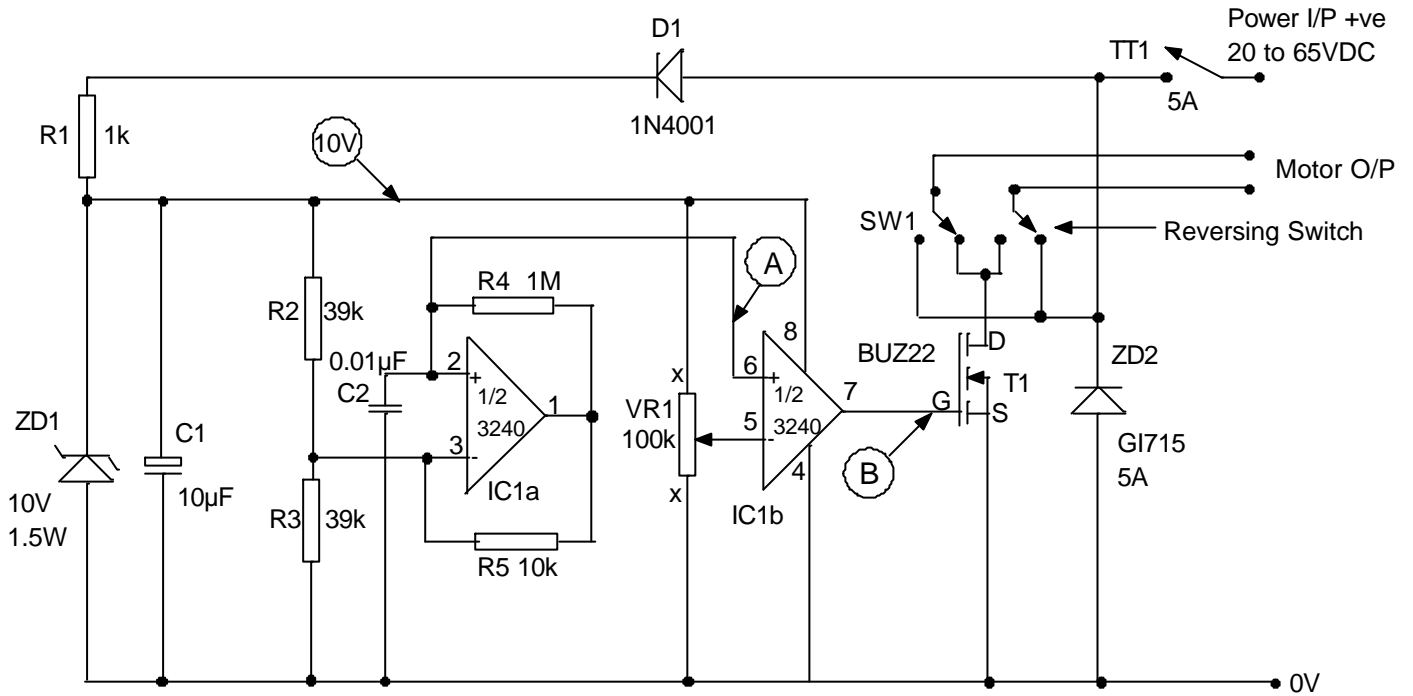


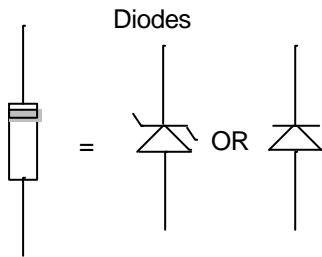
OXFORD RTP SPEED CONTROLLER

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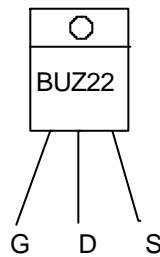
Schematic



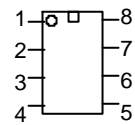
Component Pinouts



MOSFET



CA3240 Dual OP Amp



Component list

R1	1k	2.5W	C1	10µF 16V electrolytic or tantalum
R2	39k	0.25W	C2	0.01µF Polyester
R3	39k	0.25W	IC1	CA3240 Dual CMOS OP Amp
R4	1M	0.25W	T1	BUZ22 100V, 55mOhm MOSFET
R5	10k	0.25W	D1	1N4001 1 A silicon power diode
VR1	100k	0.25W	D2	GI 715 5 Amp Schottky
SW1	DPDT	Switch 3A	ZD1	10V 1.5W Zener
			TT1	Thermal Trip Farnell Stock No.106 863

Construction

Physical construction can be on strip board. The circuit should be mounted in a small plastic project box and the wires be brought out via grommets. The power input and motor output cables should be capable of carrying the maximum current without significant heating.

Components D1, ZD1 and TT1 are in circuit to protect against accidental reverse connection of the main power input. TT1 is also used to protect against overload of the output.

The MOSFET T1 requires to be handled with electrostatic protection at all times until in circuit. Assemble MOSFET into circuit last of all.

The MOSFET T1 will require a small heat sink as it tends to get hot. A few square inches of aluminium sheet approx 16SWG is sufficient. Note that the heat sink mounting area on the MOSFET is metal and is connected to the D connection on the device so it must be protected against short circuit to other parts of the circuit.

The MOSFET T1 chosen is a BUZ22 which is rated at 100V. Any superior rated MOSFET may be used instead. If using a supply that could go above 100V, it is advisable to use a device of a higher voltage rating. Also the heat sinking of the MOSFET T1 and the power rating of R1 must be up rated appropriately.

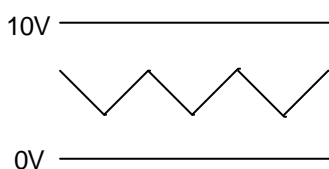
Testing

Once completed the circuit should be powered up with the minimum voltage of 20V. Check the 10V line for correct voltage.

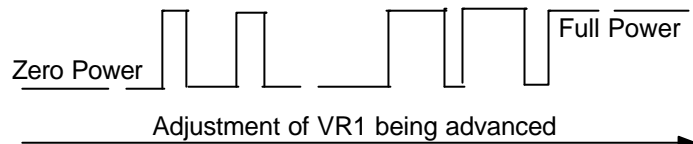
If an oscilloscope is available, check the wave form at pin 6 IC1 (A) otherwise, with a voltmeter check for a voltage between approx. 4 and 6 volts. If this is OK check the voltage pin5 IC1, the voltage should go between 0 and 10V when VR2 (the control pot) is adjusted from one limit to the other.

Trace at A should look like this

If IC1A does not oscillate then reduce the value of R3 to 33k.



Trace at B should look like this



Connect a low power electric motor to the output and check operation of the speed controller. If the power control needs to be reversed, swap connections "x" on VR1.

There may be a dead area at each end of the power control. This can be reduced by adding resistors in the circuit between connections "x" to VR1, try 10k at first or use a trimmer resistor of approximately 50k.

Safety

When dealing with levels of voltage discussed above it must be born in mind that there is a possibility of lethal electric shock and great care must be taken to ensure all necessary precautions are taken during the construction use and maintenance of this speed controller.

It is most important that all appropriate insulation is applied where necessary.

The details given are of a level to enable someone with electronics knowledge to construct the speed controller, they are not intended for the beginner.

This document is meant as a guide only and no liability can be accepted for the content herein.