

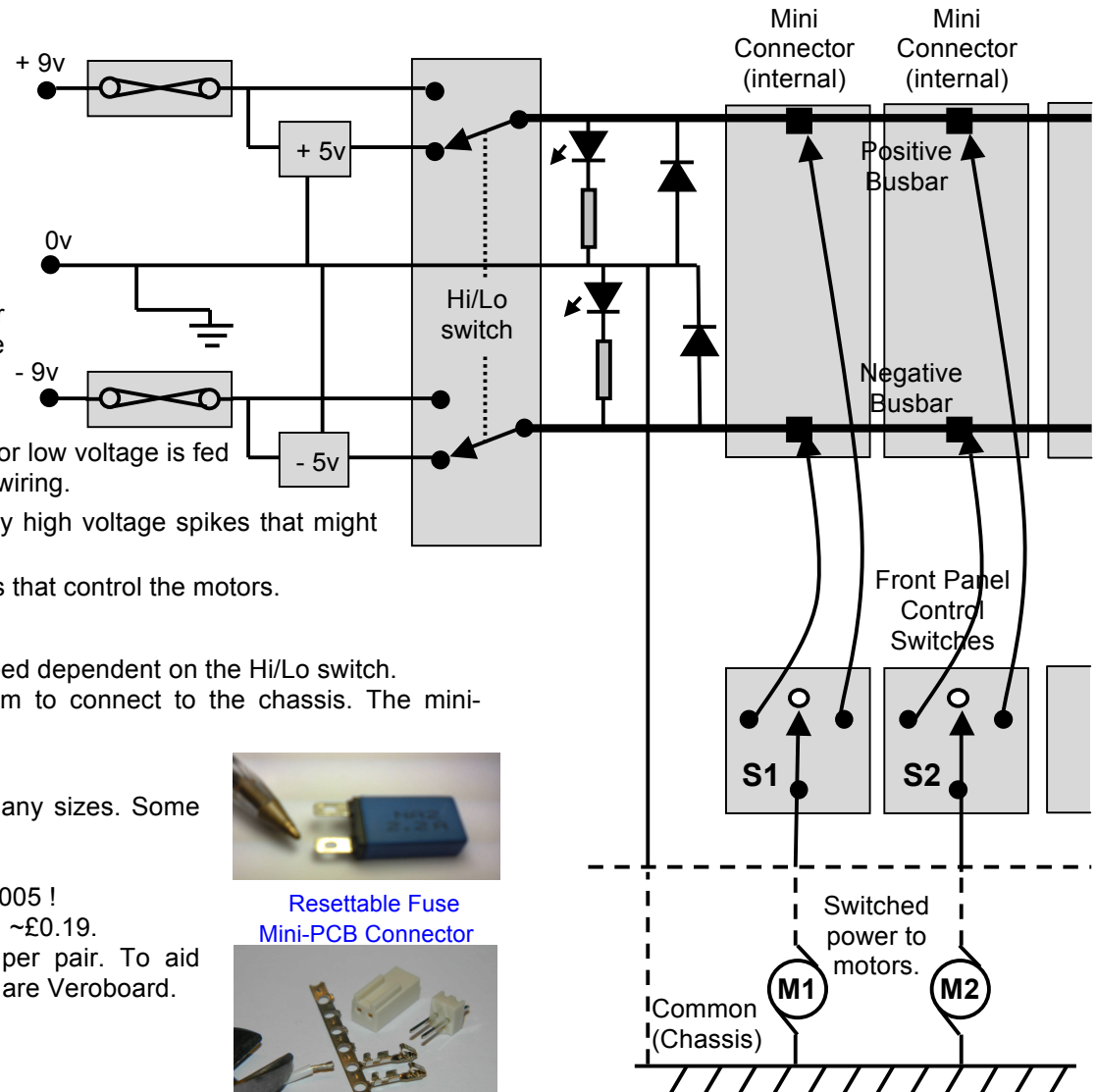
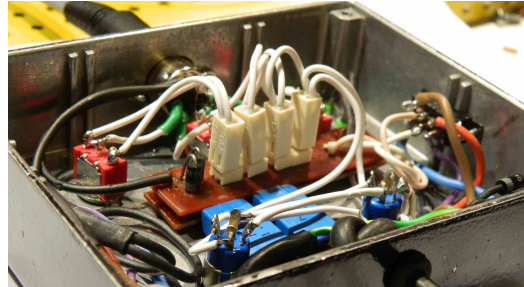
UNIVERSAL CONTROL BOX – SUITABLE FOR SPLIT RAIL DC MOTOR CONTROL

What Is Desired To Be Achieved

1. Simple forward and reverse control of low current dc motors.
2. Protection in the event of a short circuit with auto reset.
3. Logical direction of motors to be selectable.

Benefits Of This Circuit

1. The components chosen are of only modest cost.
2. Motors only need be fed by a single control wire. The return is through the chassis.
3. Motor reversing switches need only be single pole.



What Is Shown

The circuit is a basic split rail control system see MGE104 for suitable power supply (this may supply a lot of current). A number of useful extra features have been added:

1. Incoming split power eg +/-9v is brought in via DIN3 connector to fuses.
2. A regulator offers +/-5v to a changeover switch which selects whether a high or low voltage is fed to the busbars. The resettable fuses protect these regulators and low current wiring.
3. LED indicators show that power is available and snubber diodes quench any high voltage spikes that might come from the motors to damage the circuit.
4. The busbars feed mini-connectors which feed each of the front panel switches that control the motors.

Operation

1. A centre off switch is thrown to operate a motor. It will move at high or low speed dependent on the Hi/Lo switch.
2. Often when a system is built one side of each motor is chosen at random to connect to the chassis. The mini-connectors are reversible to ensure the switches operate in a logical direction.

Sources Of Components

1. **Resettable Fuses** May also be known as Circuit Breakers. Available in many sizes. Some NOT for mains. Maplin ~£1.50ea.
2. **Regulators** Standard 7805 and 7905 1.0A type ~£0.40ea
3. **Protection Diodes** Almost any >50v medium current will do eg 1N4002 ~£0.005 !
4. **Hi/Lo Switch** Almost any slide switch will do. Don't run motor when changing ~£0.19.
5. **Mini-Connectors** Four white PCB connectors are shown above ~£0.15 per pair. To aid handling of tines remove from strip AFTER soldering (see right). The busbars are Veroboard.
6. **Centre-Off Switches.** Seen red in photo above. SPCO are ~£1.16.
7. **Heat-shrink sleeving** 3mm x 1m black ~£0.56
8. **Die-cast Box.** 120x95x34mm RS Components £5.80.



Resettable Fuse
Mini-PCB Connector



Examples are for illustration only. All prices Technobots unless otherwise stated. Simples !