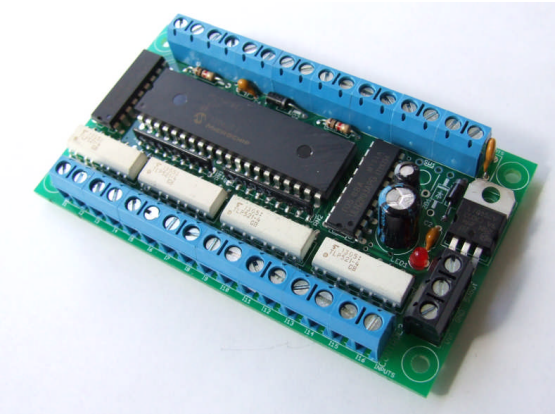
BLOCK signalling

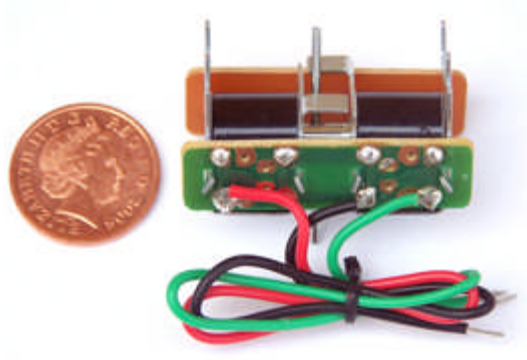
www.blocksignalling.co.uk

POINTS POSITION INDICATOR



Every model railway has points, many of which are switched remotely due to their distance from the operator or inaccessibility.

The control of a set of points is straightforward, electrical energy is converted to mechanical movement via a solenoid actuator. This device is called a Points Motor and they are generally mounted under or near each set of points in such a way that the movement sets the blades of the points for one direction or the other.



To create the movement, the simplest device is the solenoid. It is simply a coil of wire wound around a former. Within the former is an iron actuator or slug which can be pulled into the coil when the power is applied. By placing two of these coils end-to-end, a forward and reverse motion can be created.

The point-motors are usually switched by short pulses of electricity from simple spring-loaded switches, push buttons, probe and stud, etc.

Once the points have been set, it is not clear remotely which route is set.

The Points Position Indicator (PPI) monitors the brief switching voltage to either of the two coils of the points motor, and displays the last operation using coloured leds which can be mounted on a route mimic.

Operation

The PPI has 8 channels, each channel with two inputs and two outputs.

The outputs each consist of a transistor which conducts to ground. These operate in a similar way to a switch contact, with one side connected to ground. Normally, these outputs will be used to light one or more leds, with the other side of the led connected to a positive voltage via a current limiting resistor (use a 1k resistor for 12V supplies).

Each channel also has two inputs. These inputs cause the associated output transistor to conduct when the input voltage rises above around 3V. Also, at this moment the other output is switched off.

In this way, only one of the output transistors conducts at any one time, that being the one with the most recent positive input voltage pulse. This means that only one of the route leds for each channel will be lit at any one time.

Each time an input change occurs, it is stored in memory, so that when the power is switched off and on again, the led outputs are set automatically to their last recorded condition.

Connecting the Unit

Simply connect one of the PPI input terminals to the end of one points motor coil, the other input to the end of the other coil, and the common of the coils to the 0V input to the PPI.

Only one connection from a coil common to the 0V input of the PPI is required. This allows the coil voltages to be recognised by the PPI correctly against the ground reference.

The supply to the PPI can be AC or DC, and must be in the range of 9V to 16V for correct operation. If using a dc supply, take care to connect the positive and negative leads correctly. No harm will be done to the PPI if they are connected in reverse, but the PPI will not function.

If using a single led for each output, a 1k resistor is required (use 2k if the supply is above 14V), connected between the PPI positive input, and the long leg of the leds.

Only one resistor is required per channel, as both leds are never on at the same time.

If you are using an AC supply to the PPI, use a single diode in the feed to the leds (supplied).

When powering up, the led on the pcb will light for a quarter of a second, go off and then come back on steady.

Each time an input changes, the led on the PCB flashes to indicate that the updated status has been stored in memory.

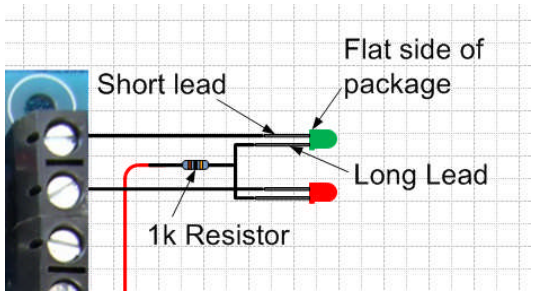
Following factory testing, sometimes more than one led will be lit. This will clear as soon as each set of points are first operated.

If your points operate from a supply above 16V, the PPI can be powered from a separate supply (12V DC recommended). Please see diagram at the end of this document.

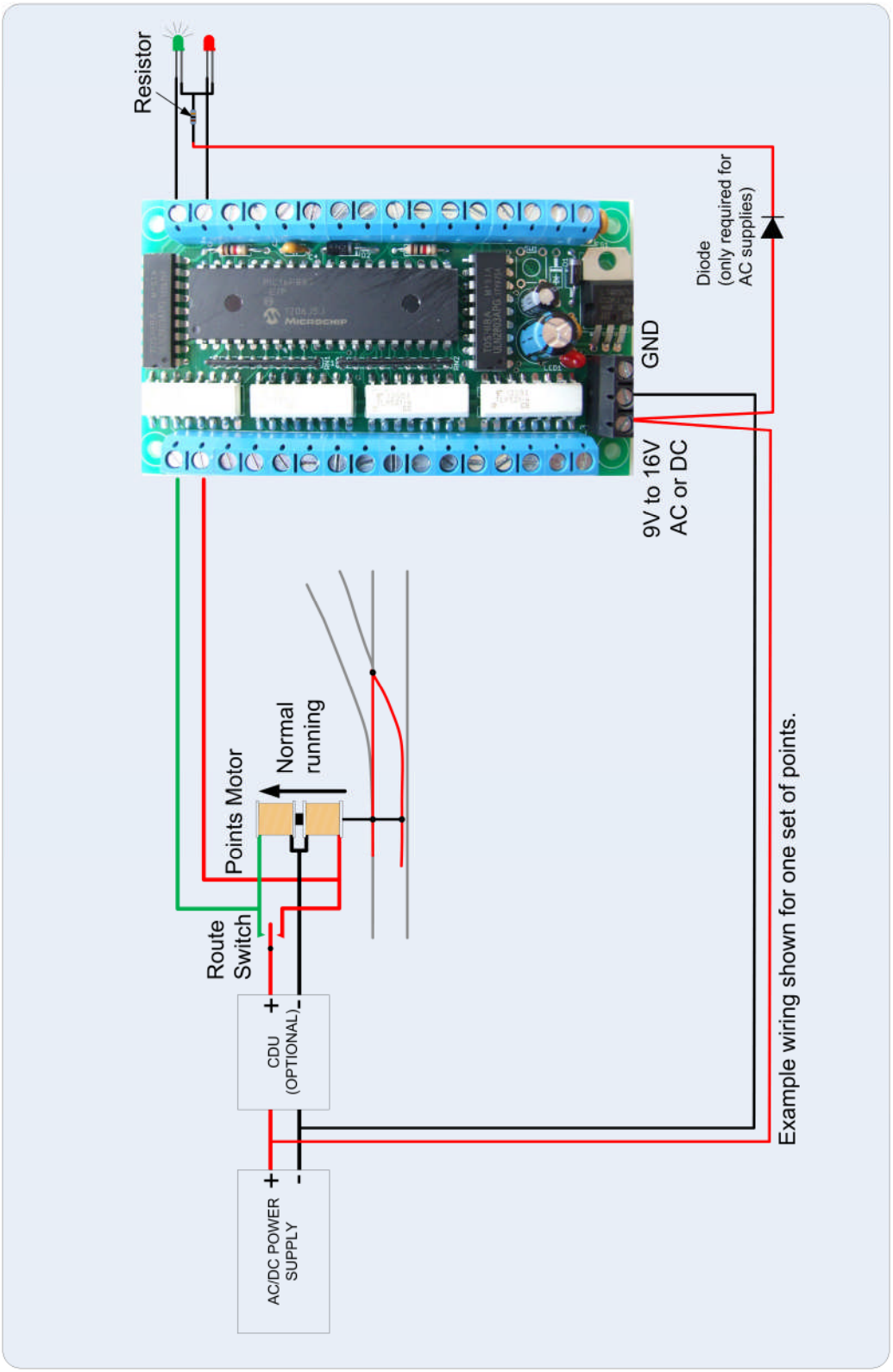
Final Notes

Please check our other listings on ebay for Capacitor Discharge Units, Level Crossing Simulators, Infra-Red Train Detectors, Traffic Light Simulators, etc.

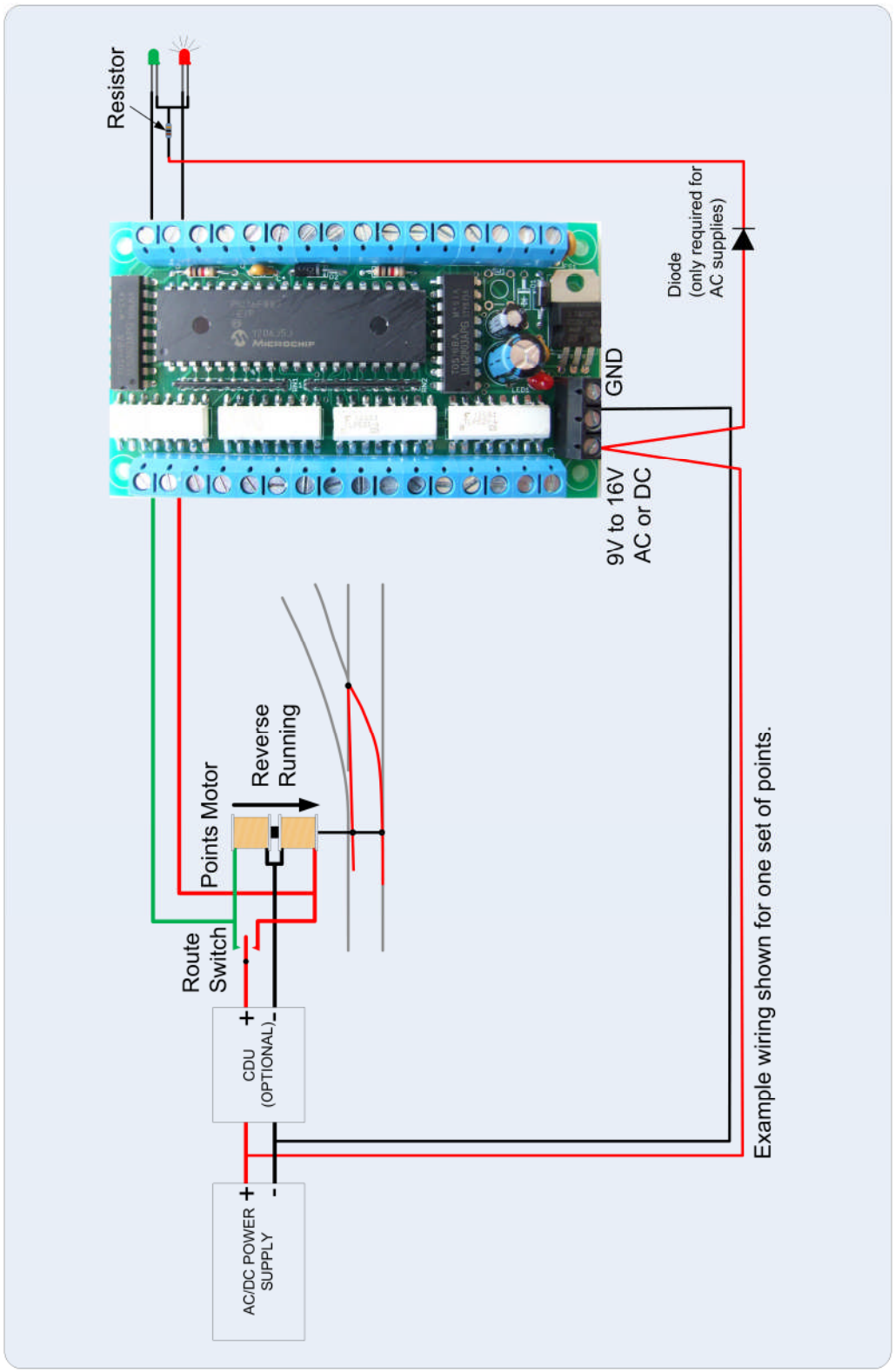
Close-up of led wiring



System Operation – Normal Running



System Operation – Reverse Running



System Operation – with separate power supplies for points and PPI.