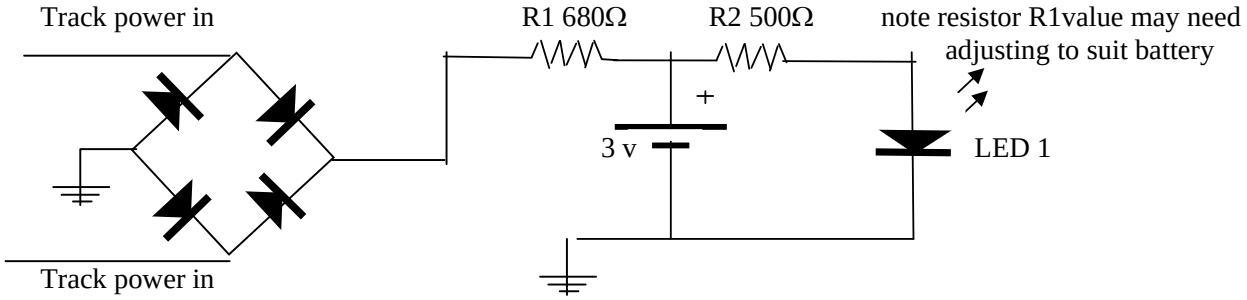
IRREGULAR FEATURE

Shake your tail feathers part 2

Carrying on from last edition (part 1) about taillights, this time the subject is constantly on lights. To power a LED (light emitting diode) requires a max of 20 mA (milliamps) at 1.7 – 2.1 volts depending on colour, to power this from an onboard supply would require new batteries at quite regular intervals and an on off switch. Even fitting the batteries in a small brake van could be a problem. A little too much trouble and expense for most people. Powering it directly from the track is a cheaper option but one still fraught with problems, the brightness would vary with the available track voltage and it would not work at all whilst stopped. There is a method using high frequency ac applied to the track, which works very well, except that every track on which you wish to run needs to wired for that system. It might be stretching the friendship to modify someone else's layout just to show them your latest pride and joy.

The method I have devised (see Diag 3) is a combination of the first two methods without all the problems. That is to pick up power from the track and use it to charge a battery then use the battery to power the LED. A very simple system much the same as uninterruptable power supplies for computers. How does it work? When power is first applied to the track it is picked up via the wheels and fed to a diode bridge (D1-D4), which rectifies it so that no matter which way the controller is set R1, always has a positive supply. As this voltage can vary from zero to around 15 volts R1 limits the voltage to protect the battery. The value of R1 may need to be adjusted to suit. When the battery voltage rises high enough the LED will conduct and will glow. R2 limits the current to the LED. If power is now interrupted ie train stopped the battery will take over and keep the LED glowing. The length of time will be dependant on battery voltage which is determined by how long it has been charging, but should be long enough for station stops, shunting etc. Current draw for the circuit shown is around 25 mA.

Diagram 3



The battery must be a rechargeable type, but you could also use a 'supercap', it must also fit inside the brake van. I used a three-volt memory backup battery from a TV. As a three mm LED scales out much too large I carefully ground it down and fitted it from inside through a hole in the rear of the brake van. Be careful here, as it's easy to damage the LED, I did on the first one! Having done all this I then discovered that Dick Smiths have in stock LEDs of the right shape, isn't it always the way? I then drilled a hole though a taillight and fixed this over the tip of the LED. You could also use fibre optic cable, I haven't tried this, but apparently it works just fine.

Using the same approach interior coach lighting can also be achieved and drawing power from the track it should show up on track detection systems that sense current draw, therefore it could provide some protection for the end of your train just as it does in the real world!

Catch you down the track...Tony Mikolaj.