

## Pocket Money Kit of the Month – November 2019

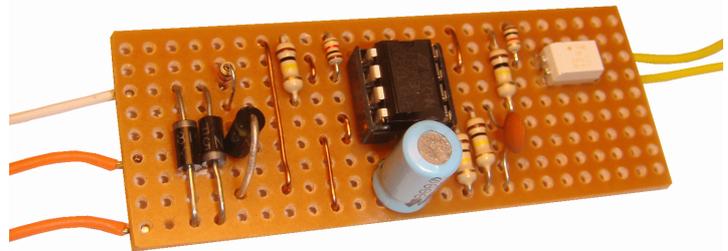
### No 7 – Train detector for DCC

Model railways can make good use of 'TOTIs', also known as Train On Track Indicators. Their uses include:

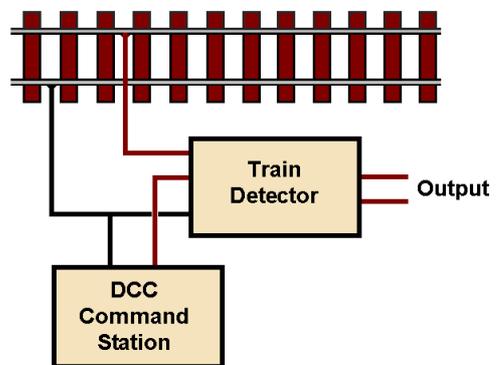
- Control panel lights to indicate which hidden sidings are occupied (specially handy where sections of track are out of sight in tunnels, etc.).
- Triggering events in other modules to produce animations or sounds.
- Automatically switching on lights in stations, goods yards, etc.

Some TOTIs operate when a light source is blocked, an infrared beam is reflected, or a laser beam is interrupted. These are 'spot' detectors, as they only operate at a specific point in the track.

This kit is for DCC users and it maintains a change of output as long as the train sits anywhere along an entire section section of track, no matter how short or long. The loco can be either moving or stationary – it still works.



The track section to be detected is isolated from the rest of the layout track, usually with plastic rail joiners at each end. The DCC power is fed to this track section as shown in the illustration. Both leads from the command station are taken to the train detector board, with one of the leads passing through the circuit on the board before being wired to the track. This allows the circuit on the board to detect any current flowing between the command station and a train on the track.



The module needs no separate power supply as its gets its power from the DCC supply.

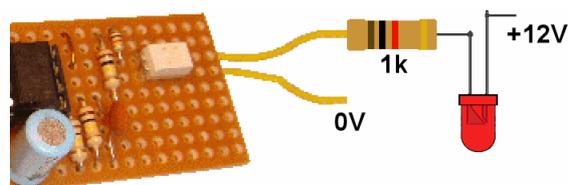
### Examples of use

#### Lighting a LED

The output wires are taken back to a control panel and used to illuminate a LED when a train occupies the track section.

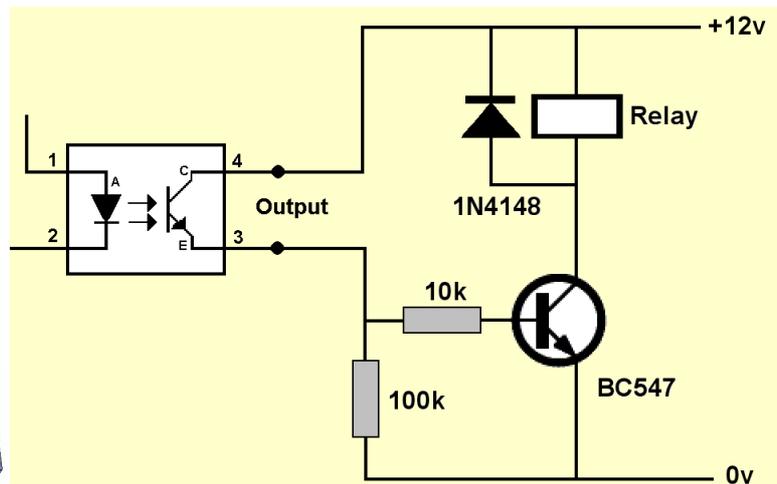
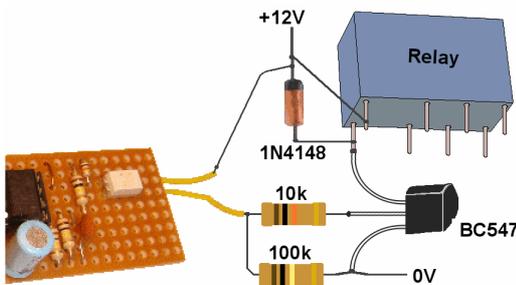
Since the module's output is isolated from the rest of the circuit, a separate power supply is needed to provide the 12v that lights the LED.

The LED need not be placed in your control panel. How about a factory's loading bay light coming on when the train pulls in; or station lights, or yard lamps.



## Switching a relay

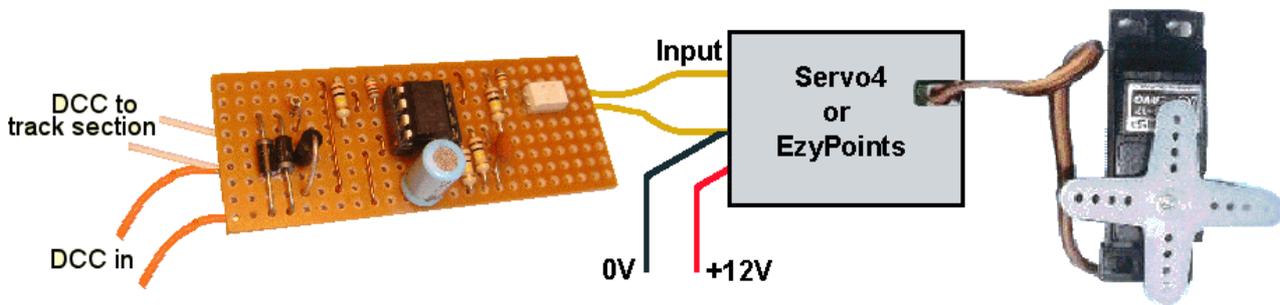
The maximum current that the KB814 can pass is 50mA. If you want the train detector board to switch a high-current device such as a motor, solenoid or high wattage lamp, you can use a relay to switch the higher currents.



The transistor can pass a maximum of 100mA which is more than sufficient for most relays..

## Operating a Servo4 or EzyPoints

If the output from the train detector is fed into a Servo4 or EzyPoints module, you can add activities that happen automatically as soon as a train enters the track section. Examples include automatic crossing gates, barrier gates, semaphore signal arms, cranes, etc.



The module has two output connections. One goes to the 0V line of the Servo4's or EzyPoints. The other connects to its input.

When the track section is entered, the loco is detected, the servo moves to the new pre-set position. When the loco leaves the section, the servo returns to its previous pre-set position.

## Switching a CBUS or EzyBus channel

A very similar approach can be adopted by members who are using the CBUS or EzyBus system. The 0V and input lines of these modules would connect to the output of the DCC module as per the above image.

The kit is available at all West of Scotland activities (for £1.30) or can be purchased from the national MERG website as PMP 7.