

Tip of the month - July 2019

Idiot diodes

Ever blown up a module because you wired the power the wrong way round? If so, join the rest of us who have had the same 'experience'.

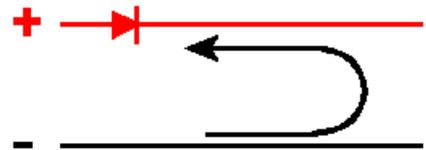
It can be an expensive mistake – and is easily prevented.

To the rescue comes the humble diode (such as the 1N4001 which costs 1p).

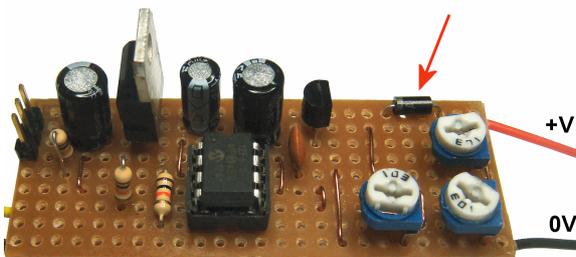
We know that a diode only passes current in one direction. So we can use that to protect our modules from voltage reversals.

Used this way, it is commonly known as an '*idiot diode*', a descriptive but not too flattering term.

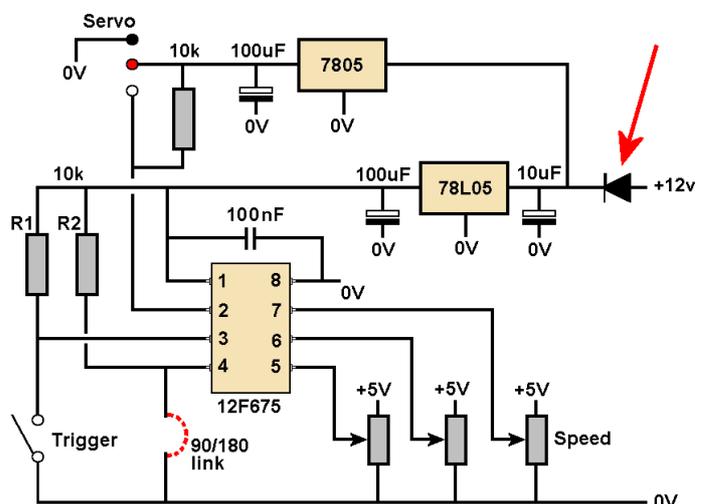
When a diode is '*forward biased*', it allows current to flow through. In this way, the power supply is able to feed the circuit.



With the diode wired the other way round, it is '*reverse biased*' and won't allow current to flow. The module won't function but it will not be harmed.



Here is an idiot diode fitted to the EzyPoints kit (PMP20), with the schematic diagram below showing it fitted where the +12V supply is connected.



Retro-fitting an idiot diode

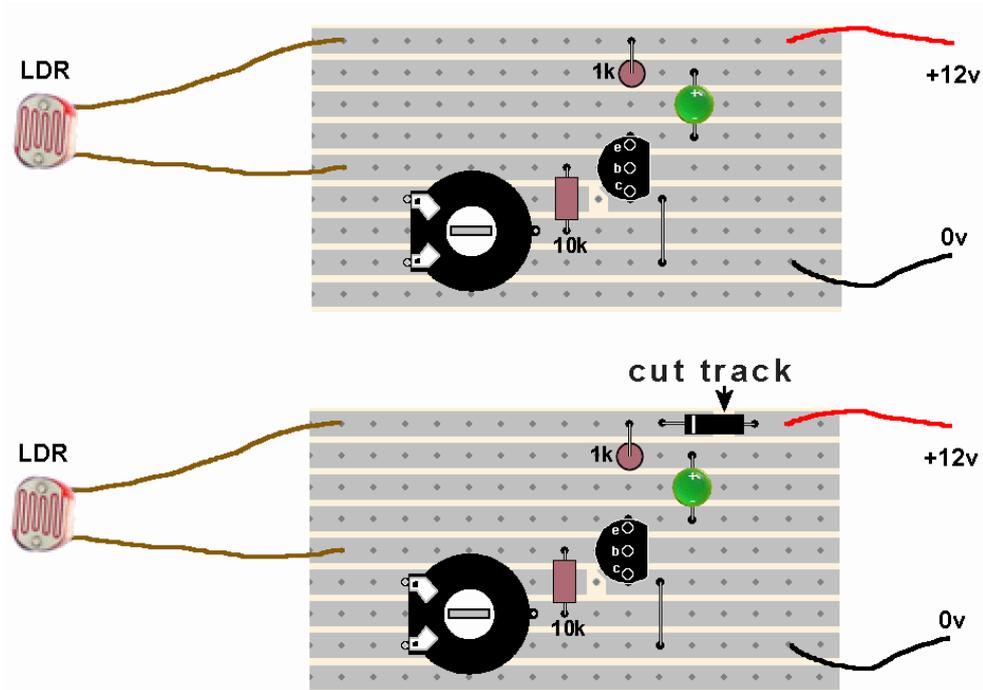
What if your kit does already have this diode fitted?

Well, you can add one yourself.

The diagrams below show the light-detecting train detector (PMP 2).

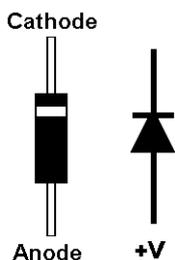
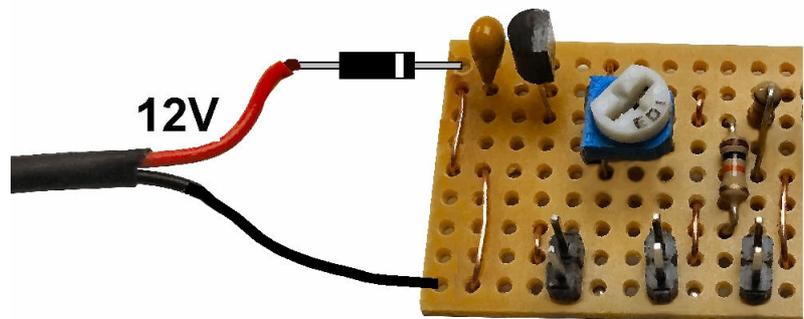
The first diagram shows the existing layout.

The second diagram shows a cut being made in the copper track with the diode bridging the gap.



If you think that there is not enough room to fit the diode on to a board, or you do not want to modify a kit, you can add the diode in the positive lead going to the board.

This example shows an idiot diode fitted to the Event Sequencer kit (PMP 26).



Note that you have to wire the diode the correct way round. Here is an image of a diode and its electronic symbol.