

# ABC1 – ABC Diode track modules for use with DCC loco decoders which are ABC compatible

**CAUTION - ALWAYS SWITCH OFF POWER TO YOUR LAYOUT BEFORE CONNECTING OR DISCONNECTING ANY ACCESSORIES**

This pack contains two ABC Diode Track modules designed for use with DCC ABC Compatible decoders – please read these instructions along with your decoder instructions before installation. The modules are rated at 24 volts 3 amps maximum.

## • ABC Diode Modules

Some DCC loco decoders have technology called 'ABC' built-in which enables locomotives to gradually slow down or speed up when they come onto a section of track with an ABC diode module fitted, and these can be used on shuttle lines and other projects so that trains slow down or speed up gradually instead of abruptly stopping or starting; DCC Sound fitted locos with ABC also play the sound of braking or speeding up accordingly. The clever technology is really in the DCC decoder and there is a fairly universal circuit for the ABC diode modules which most of the chip manufacturers specify in their instructions and this Train-Tech module follows that standard – see picture right.

## • How ABC speed control technology works

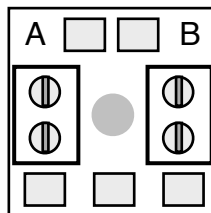
ABC stands for Asymmetrical Braking Control. All DCC loco decoders pick up both their power and digital code from the track as a series of square wave pulses which vary in width to produce different data for each loco. The amplitude of each up and down square wave of the DCC from the controller is of equal voltage, but fitting an ABC diode module in series with the DCC at a section of track makes this signal asymmetrical to the train because of the voltage drops across the uneven balance of diodes. ABC decoders sense this uneven signal and then speed up or slow down depending on how you set them up.

**Important** Note that ABC diode modules only work with DCC locos fitted with configured ABC decoders – *none-ABC chip fitted locos will not slow down or stop in isolated sections where the ABC diode modules are installed, they will just keep moving.*

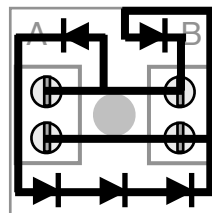
This ABC Diode module has 2 pairs of terminals A & B and these are internally connected together in parallel.

The module contains 5 diodes; 1 is across terminals one way and 4 are in series across terminals the other.

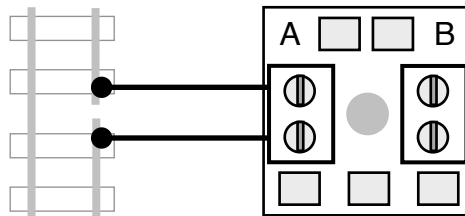
Refer to your specific DCC decoder instructions for details on how to connect diode modules and most importantly how to set the chip up to do what you want



The picture on the right shows how the 5 diodes are internally connected



Essentially you need to connect the module in series with the track power at the section of track you want the loco to slow down or speed up. Check your decoder manufacturers instructions for full details on which way round to connect the diode modules



## • Automatic Train Control – an application for ABC Braking

for more details see the RL1 Relay controller manual

Train-Tech's Sensor Signals are Automatic and work just like the real railway's Block Section signalling, normally showing green but changing to red as soon as a train goes past it and staying red until the train clears the following signal after the next section. However a red signal cannot stop the train on its own, but by making an isolated track section just before the Sensor signal and linking the signal to a Train Tech Relay Controller to control the track section, trains approaching a red signal will stop until the signal displays green and makes it safe for the model train to proceed into the next section. The use of ABC decoders and Diode modules makes the trains realistically slow down for the signal and gradually speed up.

