

# The NCE EB1 Circuit Breaker

## How to use it, how to connect it and how to set it up for best results

We do like this product, especially for higher power systems, but the EB1 manual goes into a lot of detail. Most of you will be happy to just get it installed and working to protect your layout in the simplest and most efficient manner, so we've simplified all of that into one page.

*(Of course, there will be those who wish to explore the limits - so we've included a full copy of the EB1 Circuit Breaker manual as a PDF with your EB1 circuit breaker. You will find it on a DCCconcepts branded USB memory card/stick included in the packaging)*

If you still have some questions, please do not hesitate to ask. Please call us on 01729 821 080 or us at email salesuk@dccconcepts.com

### How to set up your layout wiring to make best use of this circuit breaker

**IMPORTANT: The EB1 circuit breaker is designed for larger systems and it is NOT suitable for NCE PowerCab or ANY system under 3 amps output.**

You can of course simply connect it between the controller and anything else, but to do that will not give you the ideal result.

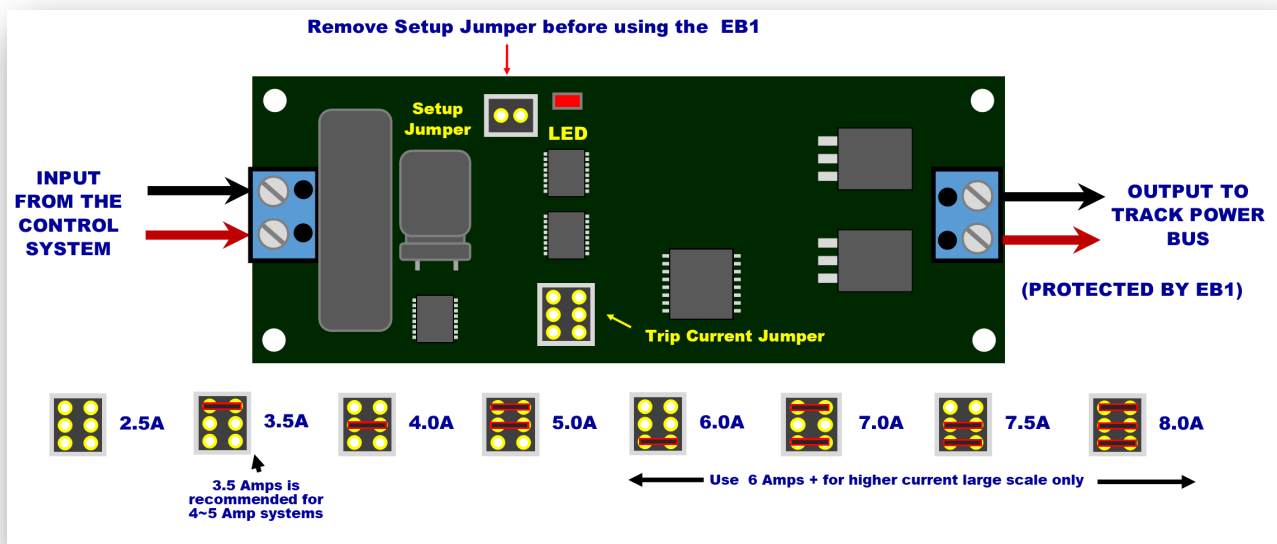
Now you have a DCC circuit breaker, it makes sense to consider separating train power and accessory power. Apart from better system protection from the most common source of short circuits or overloads (the running tracks), a circuit breaker will let you separately protect the running track and accessory bus power so that a short circuit or overload in one does not affect the operation of the other.

If you will use only ONE circuit breaker, then because the track is the most likely source of overload or accidental short circuits, it is sensible for you to connect the Accessory Power Bus directly to the control system and place the circuit breaker between the controller and the track.

**The main wiring of your EB1 Circuit Breaker is very simple to do:** (NOTE: The EB1 is only suitable for use with DCC systems.)

- (1) Take the track power output and connect it to the two LHS terminals as shown below. Please note the red/black sequence in the drawing and be consistent.
- (2) Connect the two RHS terminals to your track power bus. That is all there is to it!
- (3) Unless you are going to give the EB1 an address and fine tune it with CV changes, remove the Setup Jumper (A good trick is to let it hang off one of the pins).

Now we just need to set the trip current. **WARNING—the EB1 comes with three jumpers in place—so its default trip current is a massive 8 Amps!!**



### Setting the trip current on the EB1 Circuit Breaker:

The EB1 Circuit Breaker will add protection and buffer the control system from many voltage spikes and harmful short circuits, but it still needs to be properly set for you and your layout to obtain the best results. MOST settings are for large scale, with only THREE appropriate for N, TT, OO or HO.

As we already indicated, it is the track power that will be the source of most overloading and accidental short-circuits, so we need to set the EB1 trip current so that your EB1 circuit breaker acts BEFORE the limit of your control system is reached. That way, the system is properly protected AND if there is a short or track overload, accessories such as point-work will still be able to operate to correct things if needed via their independent Accessory Bus. The trip current is set by placing jumpers across the pins as shown.

### Here are some quite specific recommendations:

**The NCE EB1 breaker is NOT SUITABLE for: NCE PowerCab or Digitrax Zephyr - Nor is it OK for Hornby or Z21 white & Bachmann EZ Command etc.**

**This is because the lowest setting of the EB1 is 2.5 Amps. This exceeds safe levels for these lower-powered products so they'll trip before the EB1 breaker that is supposed to be protecting them! For these products, please use the PSX Circuit Breaker instead - Set it to the 1.27 Amp trip setting.**

**DCC systems with medium power limits, with small power supplies or having limited overload with protection: SET TRIP TO 2.5 Amps i.e. no jumper.** This covers Roco, Roco Z21 black, Bachmann Dynamis, ALL Hornby DCC systems, Piko, etc.

**DCC Systems with 4~6 amp power limits and good quality power supplies: SET TRIP TO 3.5 Amps i.e. one jumper between the 2 pins nearest the centre of the PCB.** This covers ESU ECoS, NCE Power Pro Systems, ZTC full system, Digitrax 5 amp systems and all other "full power output" combinations.

**Please note that "fine scale O scale layout systems" should be set to this level as modern O scale uses very little power. If you have older O scale or "tinplate" or "hi-rail" O scale, then you should experiment with higher trip currents PROVIDING they are lower than your DCC system's power output.**