



## INSTRUCTION MANUAL: DCCconcepts Cobalt PSU-2 5-amp Power Supply

### The Concept:

- \* Make PSU-2+ the very best way to power Cobalt motors & DCC systems
- \* Keep the performance high & pricing at levels that represent real value.
- \* Use only top quality components & a specially designed Toroidal type transformer for stability under load.
- \* Add tight regulation and protection.
- \* Make it easy to use and to connect.

### The Product:

PSU 2+ is a totally self-contained, mains powered, stable dual output power supply that can power a layout full of Cobalt point motors at 9 volts DC AND at the same time, it can also be wired to give a stable 5 amp 18v regulated DC power supply.

A good power supply needs to be substantial PSU-2+ is only 93mm wide x 149mm long (165 overall) x 71mm high, but it is packed with heavy duty parts and weighs nearly 2kg! It has a powerful cooling fan and quality voltage regulation for stability under load. It manages high current loads well, making perfect for DCC use.

PSU-2+ is quite unusual in that it offers a 3-terminal (+) (+/-) and (-) regulated DC output.

This makes it very, simple to connect and because it can provide a reversible voltage using only a single pole double throw switch (vs the DPDT switch needed with conventional supplies) it also cuts wire use and effort by a considerable amount, making your task easier and simplifying wiring of Cobalt point motors as well.

PSU-2+ will give perfect control for up to 200 Cobalt Analog  $\Omega$  point motors or 300+ Cobalt iP motors...and it can also provide the best possible stability and power delivery for all brands of DCC system.

### Mains Wiring Overview:

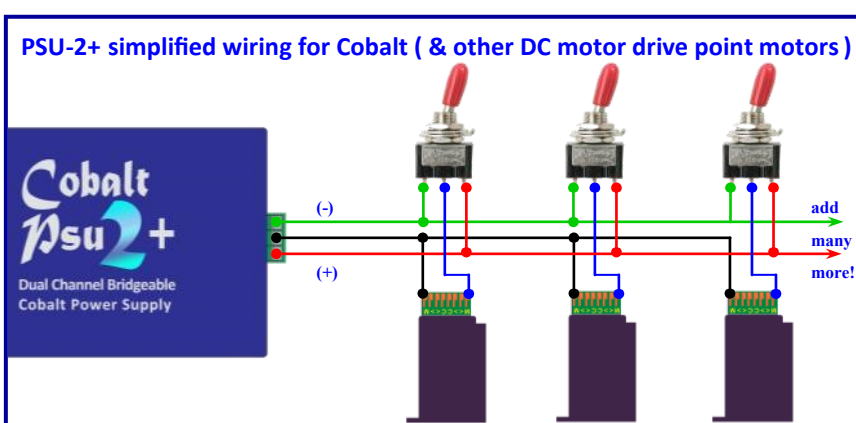
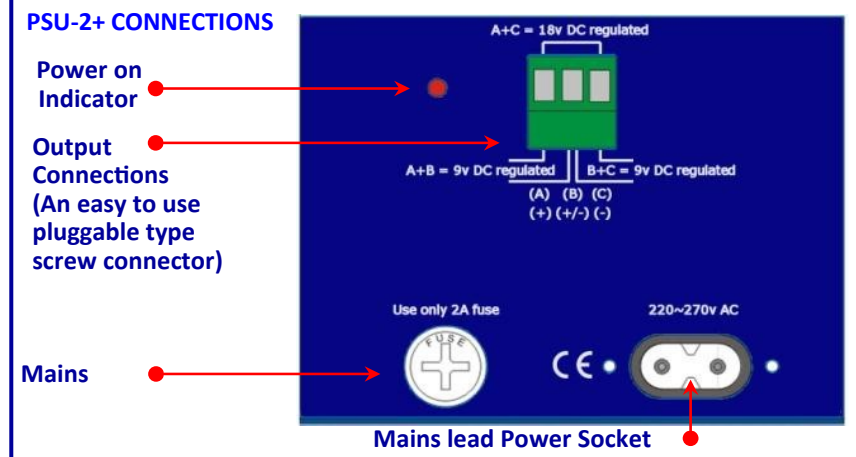
Connection couldn't be easier. PSU-2+ is standards-approved for mains power use in the UK, Europe, Australia, NZ and other countries using standard domestic 220~250v AC mains power. We chose an international standard "Figure 8" mains power lead so modellers in any country can be supplied with the correct mains connection without the need for changing plugs.

### Output Connections

Output connection wiring is clearly indicated by the diagram above the three-terminal connector.

A+B and B+C are two separate output channels, and each individual channel is able to supply a very stable 9v DC which remains the same with any supply voltage between 200 and 270 volts. You can also A and C outputs to deliver a stable 18 volts DC @ 5 amps to make it an excellent DCC system power supply. PSU-2+ is 100% voltage compatible with ALL quality DCC systems.

**(IMPORTANT NOTE: All DCC systems that we have tested work fine with 18v DC as a power supply, however, if your DCC system has a power rating lower than 5 amps, we recommend adding a PSX type circuit breaker set to your DCC systems rated current to make sure that it is not over-loaded at any time.)**



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**Cobalt PSU-2+** is very easy to use as a DCC system power supply - This shows how it is done



C  
A

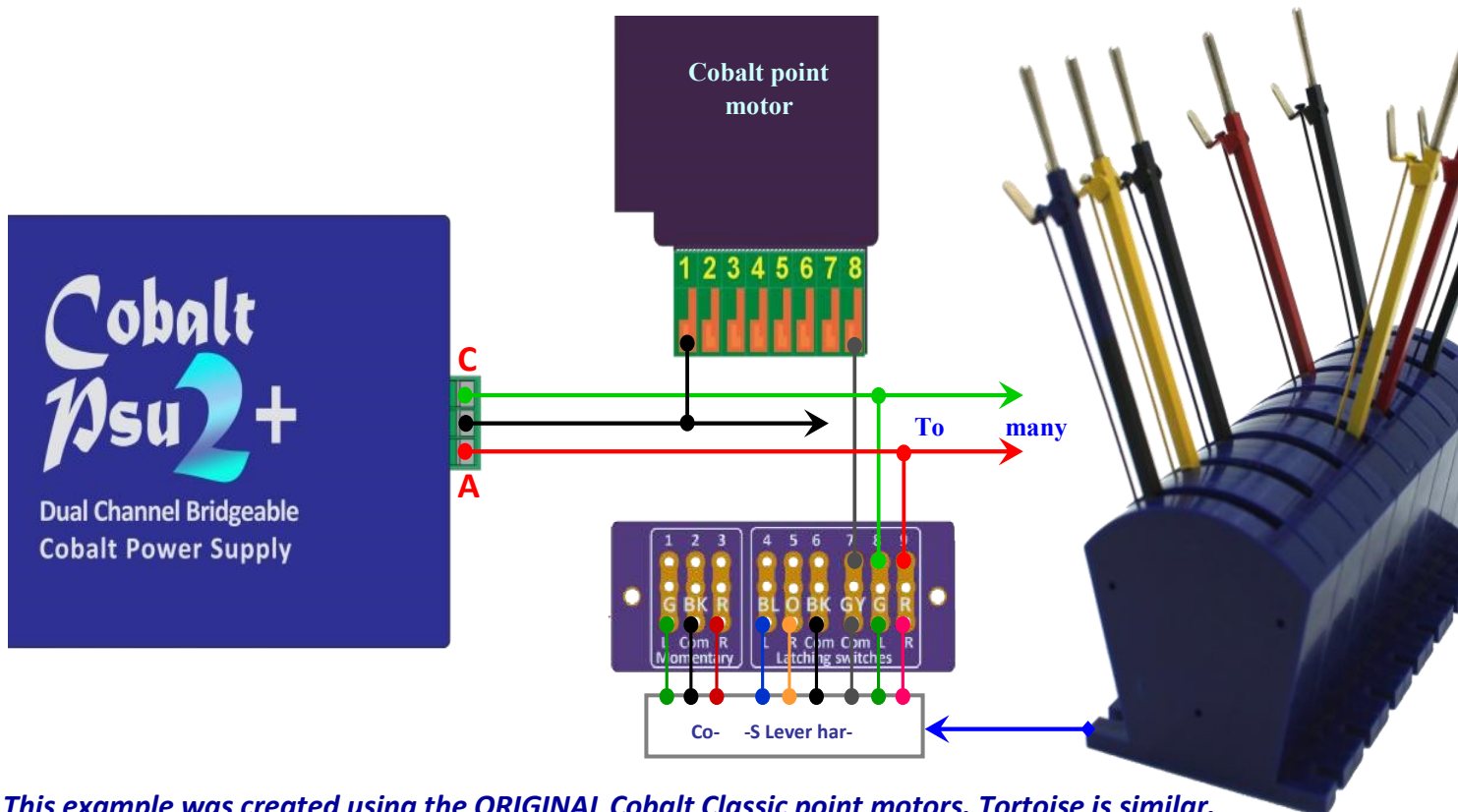
NEVER connect a wire directly  
between Terminals A and C.  
*Doing so will cause damage and  
it will invalidate your warranty*

Any good quality  
DCC SYSTEM  
Which requires  
4~5 amps

### Cobalt PSU-2+ with Cobalt Classic and Cobalt-S Levers...

Using PSU-2+ greatly simplifies the wiring of your layout. Here's a simple example that shows how combining PSU-2+ & Cobalt can help you to achieve everything you have ever wanted with far less wiring complexity.

All done with very few wires leaving you **FOUR** free switches for signals, indicators on a mimic panel and any form of interlocking or conditional control that you might need!



*This example was created using the ORIGINAL Cobalt Classic point motors. Tortoise is similar.*

*However, all of the connections are different for Cobalt models released in 2014.*

*(Cobalt Omega Ω, Cobalt iP Analog & Cobalt iP Digital point motors use terminals 1 & 2 for power connection)*

*Solenoid users - If you would like the same split-rail convenience, please use CDU-2+ and not PSU-2+. The actual connection will be a little different - However it will be easier than standard wiring. (see the CDU-2+ Manual)*

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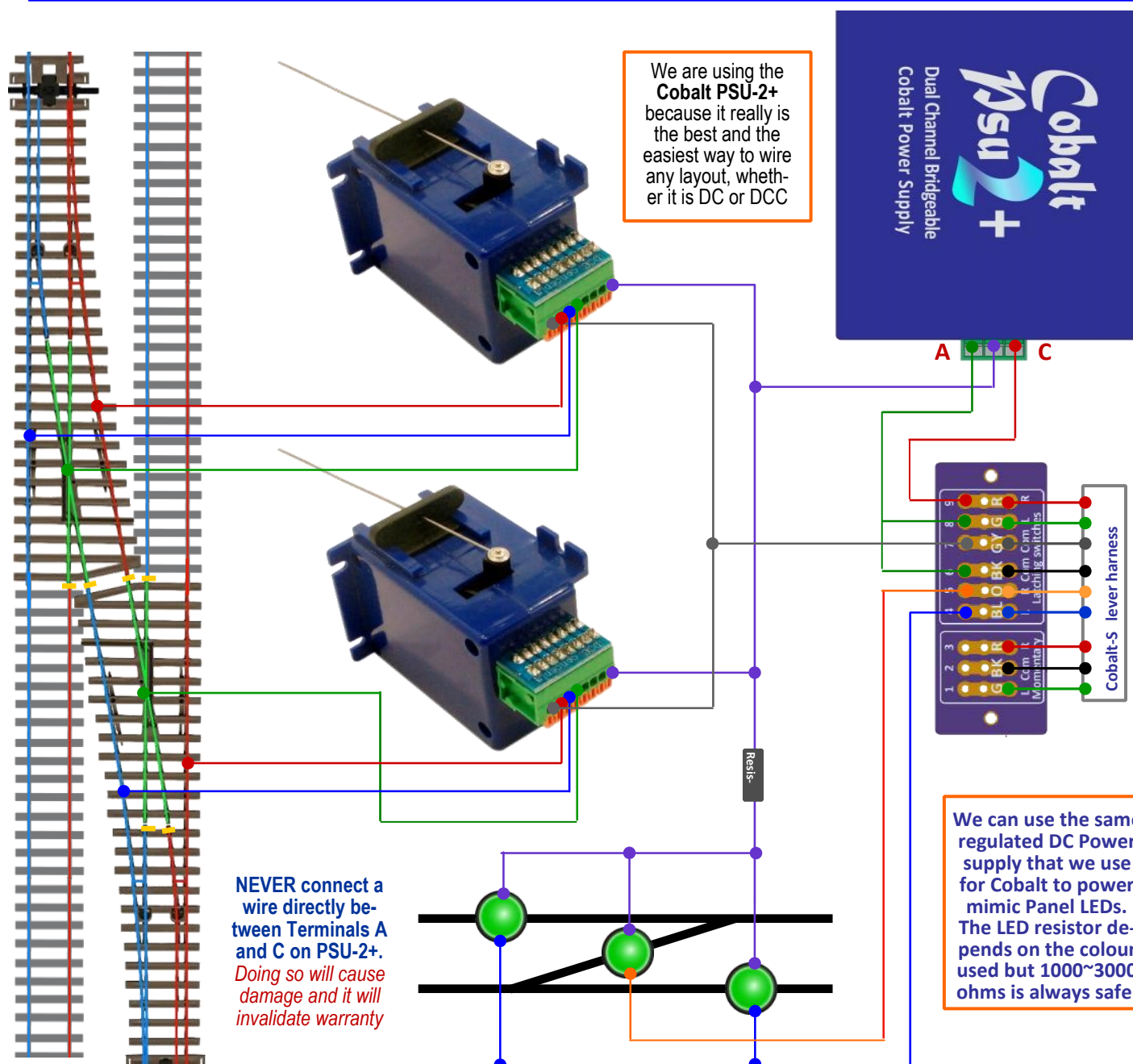
## Cobalt Psu2+ with Cobalt Classic and Cobalt-S

Using a combination of the PSU-2+, our Cobalt-S levers and Cobalt point motors allows you to work a crossover including switching frog power using just 1 x 3 wire SPDT switch on each Cobalt point motor. The Panel lights are taken care of by the Cobalt-S switch, so this still leaves you one free switch on each Cobalt motor for interlocking, computer IO (feedback) or signalling control.

*This example was created using the ORIGINAL Cobalt Classic point motors. Tortoise is similar.*

*However, all of the connections are different for Cobalt models released in 2014. Cobalt Omega Ω, Cobalt iP Analog and Cobalt iP Digital point motors use terminals 1 and 2 for power connection.*

*Solenoid users - If you would like the same level of wiring convenience, please use our CDU-2+ and not the PSU-2+. The connections will be a little different - but you will find it easier than standard wiring. (see the CDU-2+ Manual)*





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## Simple Interlocking with PSU-2+ and Two Cobalt motors.

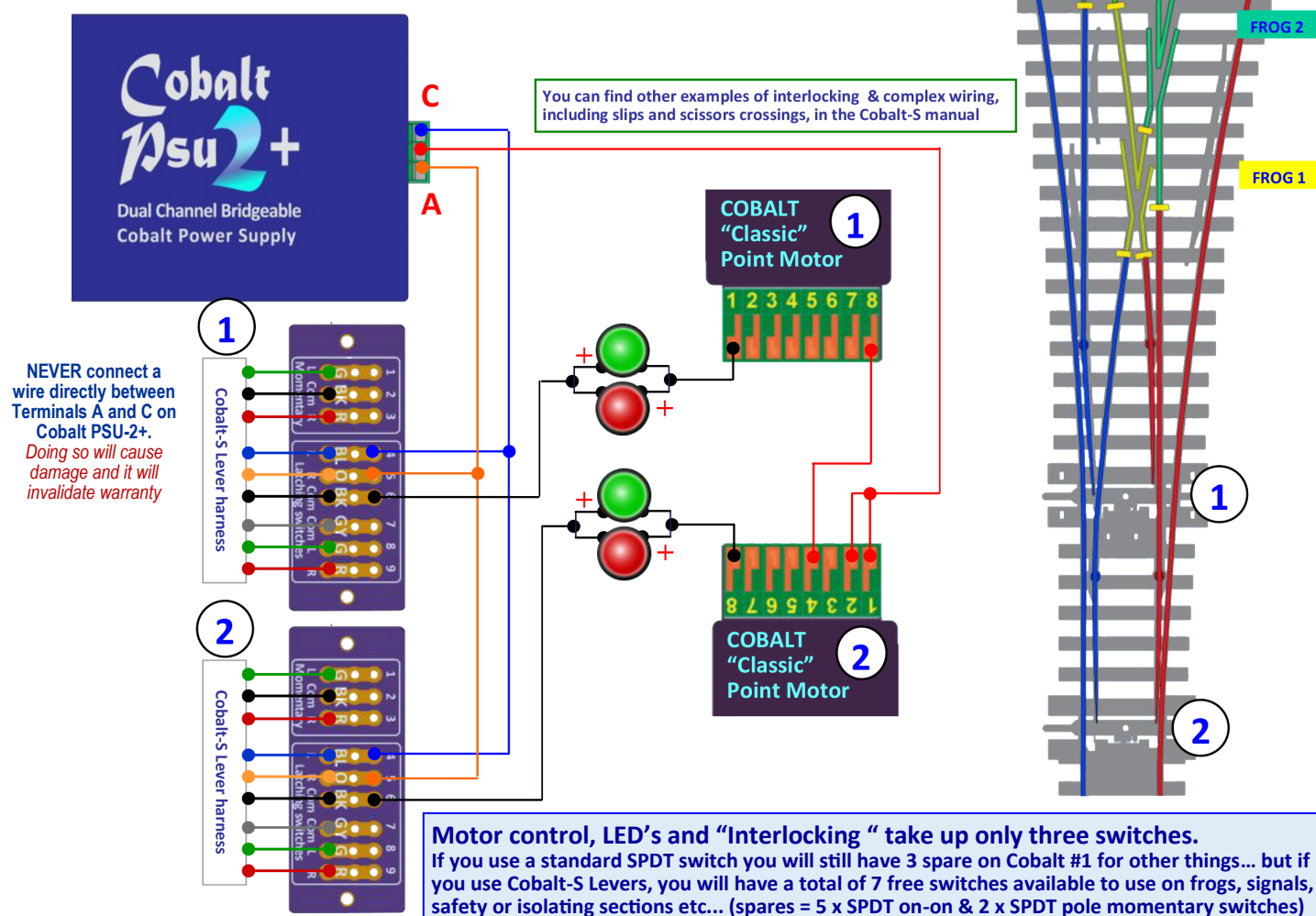
Controlling two Cobalt point motors with PSU-2+ needs very few wires and only takes up ONE switch on each Cobalt-S lever - of course if you don't have Cobalt-S the same switching approach can also be done with a simple SPDT on-on switch.

**Look at the RED wires.** We've routed the common ( + / - ) wire as a simple electrical "interlocking" between the two Cobalt motors. This was done very simply by routing a power wire to Cobalt #1 via a switch on Cobalt #2, so that #1 can only be activated if #2 is set to the right position (switched to give access to route A and B).

**Adding LEDs.** LEDs are simply placed in-line in the wire that runs from the switch to Cobalt. As this wire reverses its polarity, one LED will light per direction.

**Powering Frogs.** Rather than complicate the drawing, we can explain Frog wiring quite simply. **Frog 1 and 2** are always the same polarity and are switched by the 2nd switch on Cobalt Motor #2. (frog wire to T 5, Blue rail to T 7, Red rail to Terminal 6).

**Frog 3** is switched by Cobalt #1 (Frog to T 5, Blue to T 6, Red to Terminal 7).



*This example was created using the ORIGINAL Cobalt Classic point motors. Tortoise is similar.*

*However, all connections are different for new Cobalt point motor models released in 2014. Cobalt Omega Ω, Cobalt iP Analog and Cobalt iP Digital point motors always use terminals 1 and 2 for power connections.*

*Solenoid users - If you would like the same level of wiring convenience, please use our CDU-2+ and not the PSU-2+. The connections will be a little different - but you will find it easier than standard wiring. (see the CDU-2+ Manual)*