

# Cobalt iP Analog

## OWNERS MANUAL



CB iP Analog -A-0314

### Installing the Cobalt iP Analog turnout motor

First, assemble your Cobalt iP Analog turnout motor: The throw arm is already pre-centred to make this easy for you.

- (1) Insert the fulcrum bar into the slides (The horizontal part of the bracket with the holes can be either at the top or bottom. We usually have it at the bottom).
- (2) Now add the throw wire, passing the straight end upwards through the centre hole of the adjustable fulcrum bar and then inserting the bent end of the wire into the smaller top hole on the end of the throw arm. Secure the throw wire in place with the washer head screw provided.
- (3) Add the pre-cut self adhesive foam pad to the top of the Cobalt iP Analog motor (leave the protective top on the pad until ready to install)

#### Now we are ready for the installation.

As well as the pre-cut foam pad, we include mounting screws with every Cobalt iP Analog turnout motor so all you will need are basic tools.

You will need a screwdriver and a drill, plus both 1.5mm (for screw pilot holes) and 10mm drills for the throw-wire installation. (The exact drill sizing you use is not critical so close or imperial sized drills will be OK). If the baseboard is over 20mm/0.75" thick, increase the larger drill size.

- (1) Mark the position of the hole in the turnout tie-bar with the turnout blades held at their mid-way position. This hole may be at the centre or at the end of the tie-bar.
- (2) Make a pilot hole at that mark, then drill right through the baseboard using the larger drill bit. Be sure to keep the drill vertical as you drill. (It is also good practice to use a countersink bit to clean up the hole top and bottom a little after drilling)
- (3) Remove the top protective layer from the self adhesive pad and from below the baseboard, insert the throw wire into the hole in the tie bar. When you are sure that your Cobalt iP Analog is centralised relative to the hole, and aligned properly along the turnouts axis, press it into position on your baseboard. (it can face either way). Test operation.
- (4) Adjust the fulcrum bar as needed by raising or lowering it. Lowering it increases throw & blade pressure. Raising it reduces throw & pressure.
- (5) When happy with operation, add a small drop of PVA to the case where it meets the fulcrum bar to hold it in position.
- (6) Use screws provided to screw Cobalt iP Analog permanently in position.

### Owners Manual

## Cobalt iP Analog turnout motor.

iP stands for "Intelligent power".

The DCCconcepts Cobalt iP Analog turnout motor includes a sophisticated internal electronic control system that interactively adapts itself to a wide range of power supply voltages. Cobalt iP Analog also manages its own power usage, monitoring need and only drawing power only when it is needed. Cobalt iP analog is comfortable with drive voltages from 7 to 23 volts and it is usable with all scales, from the diminutive T scale, to Z, N, TT, HO, OO, EM, P4, S, O & G.

Cobalt iP Analog is easy to install, quiet and very reliable. It has three inbuilt SPDT switches - One is directly "Diode linked" to the drive power inputs for computer IO (feedback) or other low power applications. The other SPDT switches are fully independent with higher power handling for frog power control or any other switching needs you may have. This makes DCCconcepts iP analog incredibly versatile and the answer to almost any conceivable layout wiring need!

Cobalt iP Analog can be powered by any voltage between 7 and 23v DC and it is changed by reversing the polarity of the DC power. Interactive power management ensures that your Cobalt iP Analog is also very comfortable with larger scales that have higher accessory voltage power supplies or DCC accessory decoders with higher output voltages.

Please read all of this manual before you install your Cobalt iP Analog. It contains lots of detailed information you'll need.

### Cobalt iP Analog turnout motor Specifications

- Dimensions:** Body only: 28mm x 38mm x 52mm deep  
Top overall inc Fulcrum and tabs: 40mm x 45mm  
Depth inc soldering-free connectors: 68mm
- Power:** 7~23v DC. Drive static <5mA, active average <40mA
- Connection:** 9 way spring terminals. Wire diameter up to 32x.2 or 18g. Ideal .16x.2 or 20g. Minimum 7x.2 or 24g
- Control:** Change turnout by reversing polarity of DC voltage. Use SPDT switch & DCCconcepts PSU-2, DC supply plus DPDT switches. DCCconcepts switch packs are economical and include both switches and a panel LED selection.
- DCC/Digital:** Use with our DCCconcepts ADFx-2 or ADFx8 decoders for the best overall performance. If you will use other brands pre-check their performance. (Cobalt iP Analog draws very little, but some brands are actually very weak).

### Cobalt iP Analog Life-time Warranty

DCCconcepts' guarantees and warranties are always made in respect of the original owner of the products. While our first priority is to always be sure that users of our products are given the best possible service we do also reserve the right to request proof of purchase so we can properly establish that you were the original purchaser and user of the product.

DCCconcepts use the best quality materials, thoroughly testing each and every Cobalt iP Analog motor multiple times prior to packaging them for sale and so we have no hesitation in providing you with the best warranty possible.

#### Simple promises only need simple words:

If your Cobalt iP Analog ever fails or needs service when it is being used under fair and reasonable conditions we will repair/replace it at no charge. We offer this guarantee to you for as long as you own it.

Cobalt turnout motors and the Cobalt accessory range are designed & manufactured by DCCconcepts Pty Ltd.  
Sales@DCCconcepts.com  
www.DCCconcepts.com



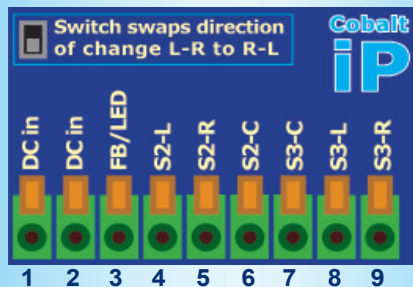
## Wiring your Cobalt iP Analog turnout motor

**Important:** Cobalt iP Analog has a different range of connections to the original "Cobalt Classic" motor

There are 9 spring terminals on the motor. The terminals will accept a wide range of wire sizes. Use the heaviest convenient wire size. The wire should be stripped carefully exposing approx 10mm of bare wire. The best method is to "ring-strip" the insulation and then twist it as it is removed, This ensures that there are no free copper strands.

**Note:** The wire will always be more secure if it is NOT tinned

This drawing shows the label that is applied to each Cobalt iP Analog turnout motor. Wiring information is also repeated on the bottom of the PCB to ensure it's never lost.



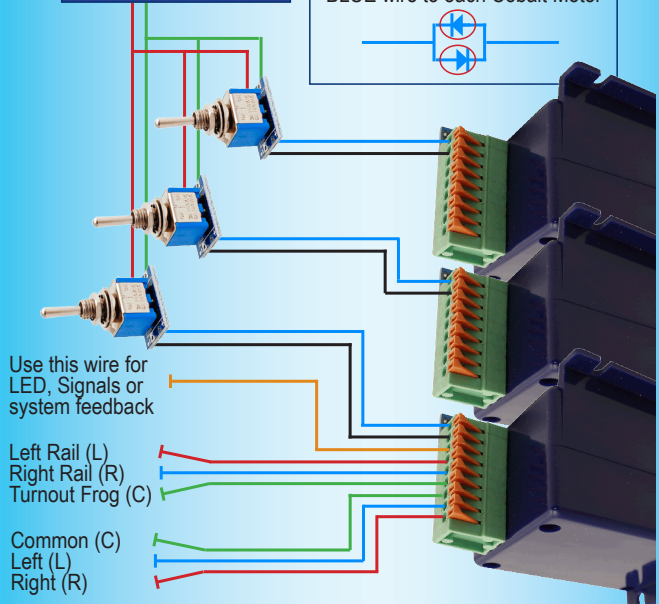
- 1,2 DC / DCC decoder power input. Range 7~23v
- 3 Common for 1 & 2. For feedback, LEDs, other
- 4 Switch 2, Left terminal
- 5 Switch 2, Right terminal
- 6 Switch 2, Common Terminal
- 7 Switch 3, Common Terminal
- 8 Switch 2, Left terminal
- 9 Switch 2, Right terminal

**Note please:**  
Switch 1 is for low power use.  
Switch 2 and 3 are both high power / max 5A

## Basic wiring diagram for analog control using a more conventional single output regulated DC power supply

Regulated DC  
(7~23v DC acceptable)

Add LEDs to your control panel by putting them in series with the BLUE wire to each Cobalt Motor

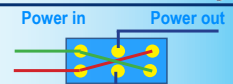


Use this wire for LED, Signals or system feedback

Left Rail (L)  
Right Rail (R)  
Turnout Frog (C)

Common (C)  
Left (L)  
Right (R)

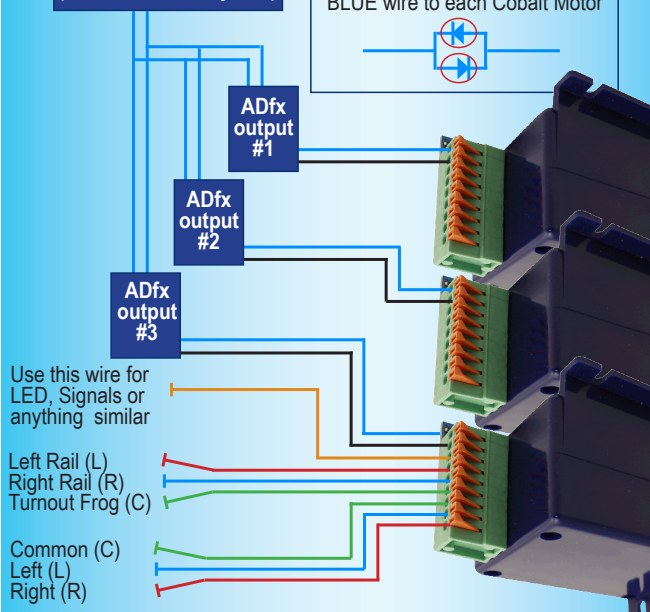
If you do not use our Switch packs, then you will need to cross-wire a DPDT switch like this example.



## Advanced wiring diagram for DIGITAL control with the versatile DCCconcepts AD2fx & AD8fx Series Decoders

DCC POWER 7~23v  
(or DCC accessory bus)

Add LEDs to your control panel by putting them in series with the BLUE wire to each Cobalt Motor



Use this wire for LED, Signals or anything similar

Left Rail (L)  
Right Rail (R)  
Turnout Frog (C)

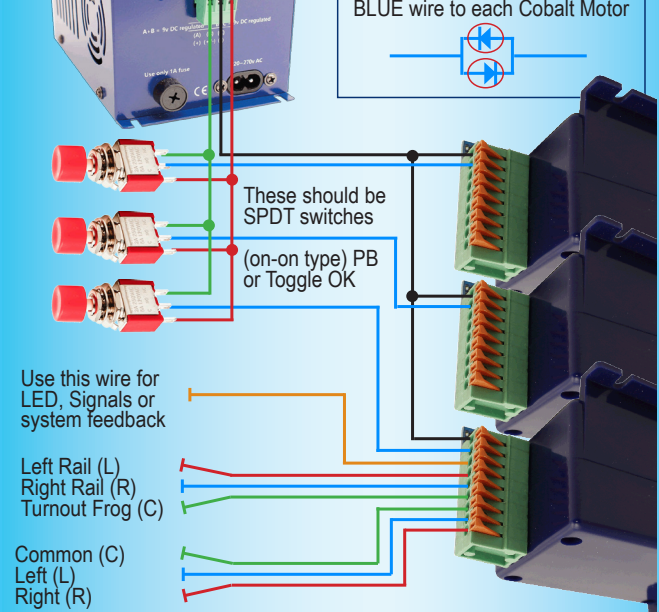
Common (C)  
Left (L)  
Right (R)

DCCconcepts AD2fx and AD8fx Decoders have enough power to change several Cobalt plus new features including optional 1 or 2 button control AND direct computer IO or feedback. They work well with DCC & DC too

## Advanced wiring diagram for analog control using the innovative DCCconcepts PSU-2 Split power supply



Add LEDs to your control panel by putting them in series with the BLUE wire to each Cobalt Motor



Use this wire for LED, Signals or system feedback

Left Rail (L)  
Right Rail (R)  
Turnout Frog (C)

Common (C)  
Left (L)  
Right (R)

These should be SPDT switches

(on-on type) PB or Toggle OK

Cobalt iP Analog has a convenient "direction change switch" right on the PCB, so if your computer or layout operations need you to reverse the direction of turnout control all you will need to do is change the switch!