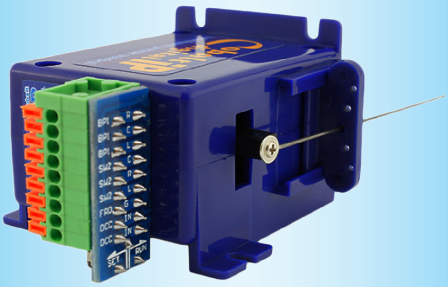
Cobalt iP digital

OWNERS MANUAL



INSTALLING the Cobalt iP Digital:

First, assemble your Cobalt iP Digital 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 it upwards through the centre hole of the fulcrum bar and then inserting the bent end of the wire into the smaller top hole on the end of the throw arm. Secure it in place with the washer head screw provided.
3. Add the pre-cut self-adhesive foam pad to the top of the motor.

Now we are ready for the installation.

As well as the self adhesive foam pad, we include the required mounting screws with every Cobalt iP Digital turnout motor so all you will need are basic tools.

You will need a screwdriver and drill, plus both a 1.5mm (for pilot holes) and a 10mm drill for the throw-wire installation (the exact drill size used is not critical so a close sized drill is OK). If the baseboard is over 20mm thick, increase drill size.

Note: We do offer a Cobalt Turnout Motor Installation Template (DCW-TMP2). This superb and easy-to-use kit contains everything you need to accurately position DCCconcepts under-board Cobalt motors on your layout.

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 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 (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 layer from the self adhesive pad & from below the baseboard, insert the throw wire into the Tie-bar hole. When sure that your Cobalt iP Digital is centralised relative to the hole and aligned properly along the turnout axis, press the 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 and blade pressure, raising it reduces throw and blade pressure.
5. After re-testing, add a small drop of PVA to the fulcrum bar to hold it in position.
6. Use the screws provided to gently fix the Cobalt permanently in its position.

Setting the address of your Cobalt iP Digital:

1. Put the switch into the SET position (this is where it learns its address).
2. Use your DCC system's instructions for changing a turnout and change it left and right. The chosen address can be between 1 and 2049 (but not 197, 198 or 199 of course).
3. Repeat this again to be sure.
4. Return the switch to the to RUN position.

That's it! The Cobalt iP Digital will now operate at the chosen address (i.e. the switch positions you used) and change the turnout reliably each and every time you ask.

Please take real care when wiring the motor.

Even though we label clearly, when you are upside down under the baseboard, it's possible to accidentally connect the power wires to the push button terminals 8 & 9. As user error, this can't be covered by your warranty. However, we know that accidents can happen so this warning label that has been fitted to your Cobalt iP Digital.

SWITCH WIRING ONLY

Please do NOT remove it until the power wiring has been added to terminals 1 & 2.

Cobalt iP Digital turnout motor.

iP stands for "Intelligent Power".

The DCCconcepts Cobalt iP Digital turnout motor includes a clever internal electronic control system that adapts itself to a wide range of power supply voltages and will only draw power as needed. Cobalt iP Digital is usable with all scales, from the tiny "T scale" to Z, N, TT, HO, OO, EM, P4, S, O, 1 & G.

Cobalt iP Digital has a versatile in-built SPDT switch with high (5A) power handling for any other switching needs you have.

Cobalt iP Digital can be powered by any voltage between 9 and 23V DCC or DC and can be changed by DCC accessory decoder commands from a DCC system or computer, momentary switches or by interaction with other devices.

Interactive power management ensures that your Cobalt iP Digital is very comfortable with larger scales with higher accessory voltage power supplies or when used with DCC control systems with higher output / track voltages.

Please read all of this manual before you wire or install Cobalt iP Digital.

Cobalt iP Digital comes with its throw-bar physically pre-centred until it is commanded for the first time.
However, it also has a built-in software structure for automatic centering that makes future installations easy.
(This process uses address 198 and 199 for activation/deactivation).

Activate Self-Centering :

1. Put the switch into the "SET" position.
2. Set the address to 199.

To do this, use your controller's instructions for changing a turnout.

3. Repeat twice to be sure.
4. Return the switch to the to RUN position.
5. Cycle the power off and on (physically disconnect an input lead).

Cobalt iP Digital will now automatically self-centre every time power is connected.

De-activate Self-Centering (once installation is done):

1. Put the switch into the "SET" position.
2. Set address to 198 then use the same procedure as for "Activate".

Cobalt iP Digital also has a convenient "Swap Direction" command that will change over "normal / reverse" commands to synchronise with software.

To swap over the direction of throw:

1. Put the switch into the "SET" position.
2. Set address to 197 then use the same procedure as for "Activate".

Do this same operation to swap the direction back to where it was.

Cobalt iP Digital 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:	9~23V DCC or DC. static < 5mA, active average < 40mA
Connection:	9 way spring terminals. Wire diameter up to 32x.2 or 18g. Ideal 16x.2 or 20g (or Dropper Wire). Minimum 7x.2 or 24g
Control:	Change turnout via DCC, Cobalt S levers or with momentary switches. DCCconcepts offer an economical switch pack (DCP-CMS-D) for Cobalt Digitals and AD8-fx decoders that includes 6 switches and a wide chrome-mounted LED selection.
Addressing:	Cobalt IP Digital has a simple SET/RUN switch at the left hand side of the terminal PCB. Operate the turnout in "SET" and it rembers the address.

Cobalt iP Digital Life-time Warranty

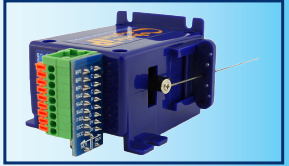
DCCconcepts' guarantees and warranties are always made in respect of the original owner of the products. While our first priority is to always be sure that users of our products are given the best possible service, we do also reserve the right to request proof of purchase so we can properly establish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

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

Simple promises only need simple words:

If your Cobalt iP Digital 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 Ltd.
salesuk@dccconcepts.com
www.dccconcepts.com



Wiring your Cobalt iP Digital turnout motor

Important : Cobalt iP Digital has a different range of connections to the original Digital, the Classic Ω and the iP Analog.

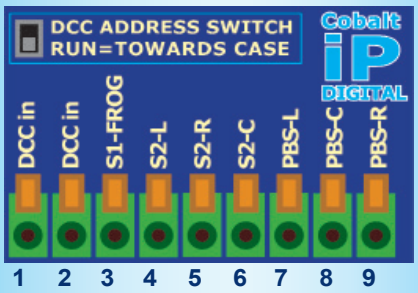
There are 9 spring terminals on the motor and these terminals will accept a wide range of wire sizes. Use the heaviest wire size possible. The wire should be stripped carefully exposing approx. 10mm of bare wire.

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 digital turnout motor. Please read it carefully before connecting.

Note: The wiring info is also printed under the connector PCB.



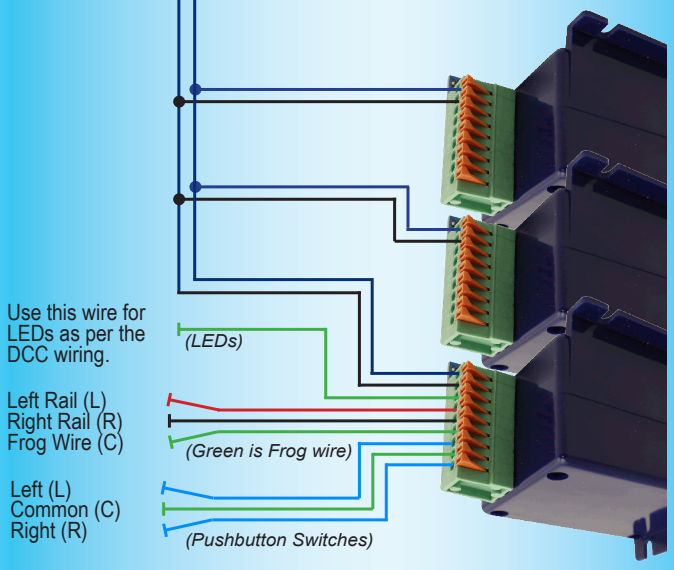
1,2 DC / DCC power input. DCC 7-23V (DC 12-23V)
3 Common for 1 & 2 (or Frog power with DCC).
4 Switch 2, Left terminal.
5 Switch 2, Right terminal.
6 Switch 2, Common terminal.
7 Left pushbutton switch.
8 Common for pushbutton switches.
9 Right pushbutton switch.

Note:
You can use one pushbutton across terminals 7 and 9 to operate the motor left and right alternately.
Switch terminals S2-L, S2-C & S2-R can be also be used for automation.

Basic wiring diagram for analog control of Cobalt iP Digital using a DC power source

Regulated DC
(12~23v DC acceptable)

It may seem strange showing use of a DC connection for a digital motor, but because Cobalt iP Digital works just as well on DC, it is also able to offer you a very simple way to wire and install a DC layout that has live frog turnouts.



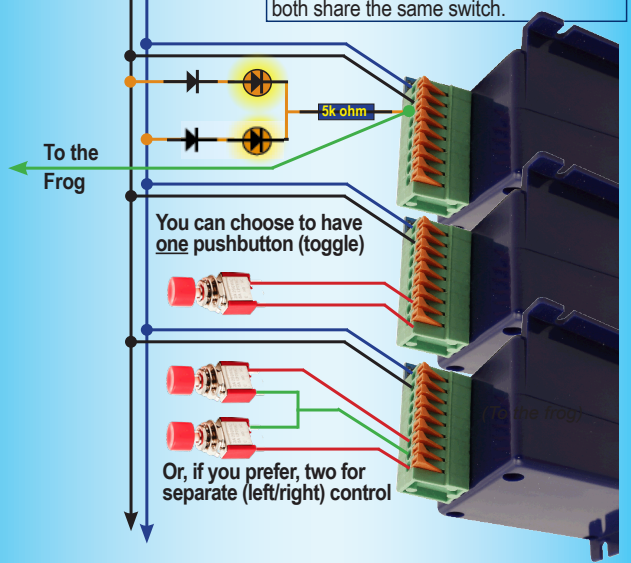
If you dislike soldering then the Cobalt iP Digital is the perfect turnout motor for you - whether you use DC or DCC.
All connections are spring loaded and the built-in switching also makes powering frogs very easy!

Basic wiring diagram for DIGITAL control of Cobalt iP Digital and adding Panel LEDs

DCC power bus
(or DCC accessory bus)

Connection for digital & analog control is very simple with the Cobalt iP Digital.

Adding LEDs & Frog power are quite simple too, as the Frog and the LEDs can both share the same switch.



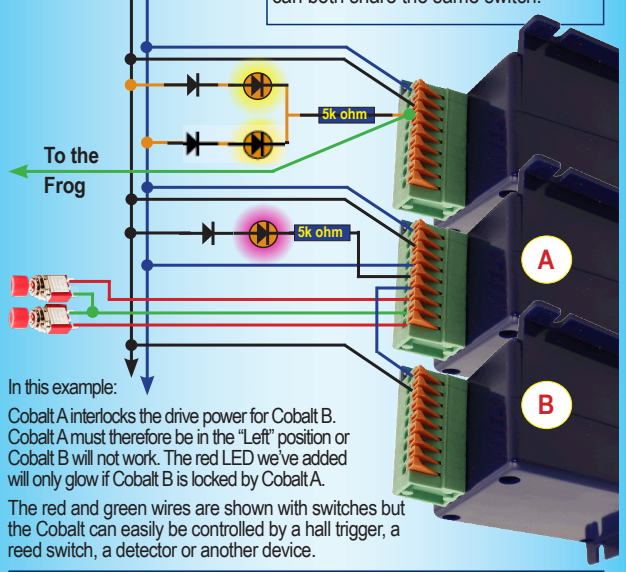
Even when LEDs or pushbutton switches have been added, you will still have one SPDT switch free and available for signals, interlocking or any other purpose that you choose.

Some ideas for interlocking Cobalt iP Digital and triggering turnout change using simple methods

DCC power bus
(or DCC accessory bus)

With its built-in onboard switching, interlocking (and similar) is easy.

Adding LEDs & Frog power are quite simple too, as the Frog and the LEDs can both share the same switch.



In this example:
Cobalt A interlocks the drive power for Cobalt B. Cobalt A must therefore be in the “Left” position or Cobalt B will not work. The red LED we've added will only glow if Cobalt B is locked by Cobalt A.

The red and green wires are shown with switches but the Cobalt can easily be controlled by a hall trigger, a reed switch, a detector or another device.

Once the ability to share switches for more than one purpose is understood, almost anything becomes possible when you use Cobalt iP Digital to control your turnouts!

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