This is not a toy.
It is unsuitable for anyone under 14 unless supervised.

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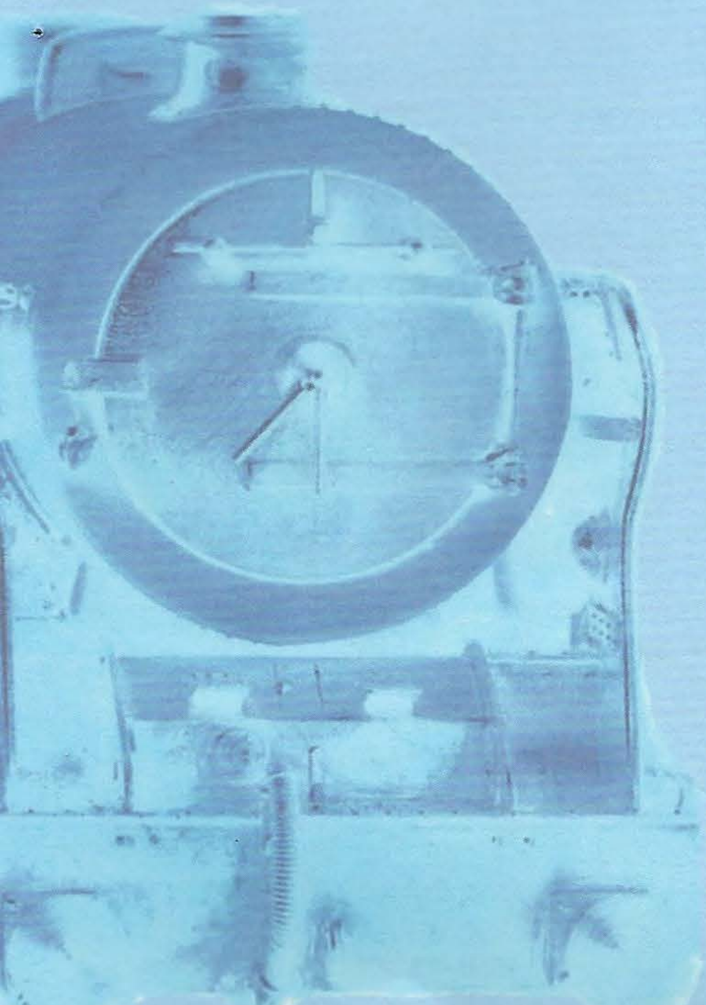
OWNERS MANUAL

Cobalt

iP-CB

Intelligent DCC Circuit Breaker



DCC concepts
Thinking outside the square
sales@dccconcepts.com www.dccconcepts.com

Overview: Cobalt iP-CB Intelligent Circuit Breaker

DCCconcepts iP-CB is incredibly versatile, has the best performance and is both simple to use and easy to understand.

Please read these instructions before you start installing your Cobalt iP-CB Circuit Breaker.

DCCconcepts iP-CB Circuit Breakers are suitable for use in all common model scales at any voltage level covered by international DCC standards.

DCCconcepts iP-CB Circuit Breakers are designed from the outset to work perfectly to protect and to enhance the performance of DCC controlled lay-outs of all sizes. They work well with all DCC control systems at all system output levels.

Most importantly, any short circuit is a high energy event and iP-CB can be set up to properly protect your DCC system irrespective of its power handling ability while completely suppressing voltage spikes and current peaks that can easily harm decoders.

All DCC systems are slightly different, so we've also made sure that DCCconcepts iP-CB can be easily tuned to properly match any DCC system's power and reaction timing, so it acts instantly to protect everything connected to the power bus perfectly.

Of course we also know that many of you just want to get on with running trains, so we added pluggable connectors for easy wiring & at its simplest, iP-CB can be up and running right out of the pack very quickly, with just the moving of one header to the correct power level for your system.

Cobalt iP-CB is incredibly versatile.

iP-CB has all the features you could wish for.

- Your iP-CB is ready to use at default settings.
- Easy to use screw terminals.
- Simple header adjustment of trip current in 7 easily set steps between 1.25 and 5 amps.
- Simple trip sensitivity adjustment.
- On-board reset warning LED.
- Extension/remote reset switch screw terminals.
- On-board manual reset button.
- Software reset via software (CV) if required.
- Extension warning LED screw terminals.
- Direct ESP feedback link screw terminals.
- Set/Run switch for addressing if required.

Where & when to use an iP-CB.

- To protect a lower power "Start Set" that has less capable on-board protection such as NCE Powercab and other lower-power sets.
- To independently protect a Main track power bus and separated Accessory power bus.
- To protect individual "Power Districts" on a medium or larger layout.

General guidelines for setting iP-CB.

- Always set the iP-CB to a trip level that is slightly lower than the main DCC system.
- Power districts: use iP-CB to protect each power district and set them to a level slightly below the main DCC systems trip current.
- If you have a separated power bus for your DCC accessories, use the iP-CB for the accessory power bus and set it to a trip level slightly lower than the main DCC system.
- Initially leave the trip sensitivity at ex factory default (It will already be at good general level).
- If your main system still trips before iP-CB then adjust the trip sensitivity accordingly
- Plan ahead regarding the position for a remote reset (push-button or momentary) switch and its related warning LED
- If you'd like less wiring for a warning LED on a Mimic panel, give iP-CB its own address OR connect it to ESP via the on-board ESP link and an ESP transmitter will actively report iP-CB's status to an LED with far less wiring!
- If you are in doubt. Please call us for help.

Before you start iP-CB installation.

- Check the specifications of your DCC system.
- Read the iP-CB instructions from start to finish.
- Make sure the DC system power is OFF.
- Be sure the area/surface you will install your iP-CB on is clean and clear of metal objects that could cause accidental short circuits.
- Have your materials & any needed tools to hand. (wire, wire cutters, strippers, screwdriver etc.)
- Plan carefully and take one step at a time.

Important: Cobalt iP-CB is installed on the power bus, so use suitably heavy wire. Remote switches & LED's are low current so smaller wire is OK. LONG wires have high levels of induction, so twist longer wires tightly together. Always follow instructions & make connections with power off

Instruction and overview: Cobalt iP-CB features and connections

Cobalt iP-CB has solder-free wiring, separated power inputs & clearly marked screw terminals. Add simple, logical connections & it's easy for all to use!

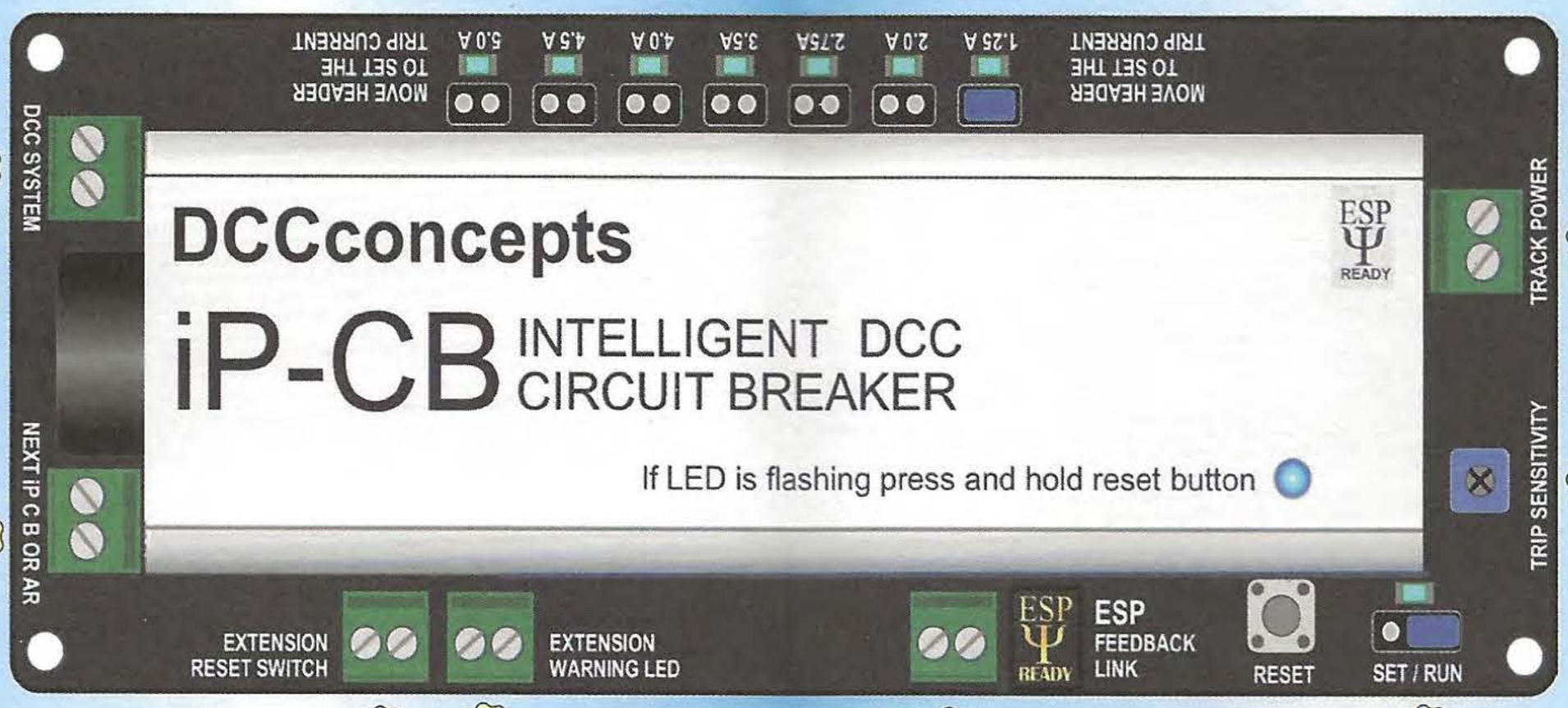
3 Trip current adjustment: move the header to change the trip current level. Always set the iP-CB trip current to be lower than the main systems maximum power output

From main DCC system track output

1 *(large terminal pluggable connector)*

A series link to more iP-CB or an iP-AR

2 *(large terminal pluggable connector)*



Track power connections

4 *(large terminal pluggable connector)*

5 Sensitivity adjustment

6 **Screw terminals for SPST push-button switch to manually reset your iP-CB**

7 **Screw terminals for an indicator LED on your control panel or mimic diagram**

8 **Screw terminals for connection to an ESP transmitter for wire free connection**

9 **On-board reset button**

10 **Set / Run header for addressing of iP-CB or making CV adjustments**

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1 **2** **Power IN for iP-CB: These pluggable connectors are larger types to let you use wire appropriate for for the track output of a DCC control system.**

3 **Trip current Adjustment Headers: Simply move the header to set the trip level for your iP-CB.**

You should set the trip current as low as is practical for maximum protection. Think about the day-to-day operating load in the area controlled by iP-CB and set the trip current to that level. (It should be at least one step below the power limit of your DCC system.)

4 **Track power OUT: We have used large pluggable connectors so you can use the heavier wire that is appropriate for wiring a DCC power bus.**

5 **Sensitivity Adjustment: This changes the speed at which iP-CB reacts. We have pre-set iP-CB to a high sensitivity level for best protection, but if you find that your DCC system trips before iP-CB after correctly setting iP-CB's trip current, you can use a small X type screwdriver to increase iP-CB's sensitivity.**

6 **7** **Remote RESET button and LED connections: As iP-CB should be placed close to the area it protects, it may be more convenient to have an easily accessed switch and indicator LED on the layout fascia or control panel. Connect them here.**

NOTE: Hold the RESET button for 3 seconds to reset

8 **ESP connections: DCCconcepts ESP uses wire free transmission & greatly reduces the need for long wires around the layout or linked to a control panel.**

Connect these terminals to an DCC-ESPS transmitter unit and you can create a wire-free link to an indicator LED on your control panel to let you know that Cobalt iP-CB has been tripped.

9 **Onboard RESET Button: If there is problem on your layout in the area controlled by the Cobalt iP-CB it will first try to reset automatically. After 5 attempts, it will turn off until manually reset.**

The BLUE LED will flash to indicate a problem.

So, if the BLUE LED flashes, investigate, identify and remove the cause of the problem then press and hold the button for 3 seconds to reactivate iP-CB.

10 **The SET/RUN switch & LED: This switch gives CV change abilities and allows an iP-CB address.**

(Switch and related instructions are on the next page)

Please note: while most modellers will never need to use this switch, some brands of DCC system or computer-linked DCC control systems can also utilise addressing in relation to Cobalt iP-CB.

Additionally, for those who wish to use this kind of approach, several of Cobalt iP-CB's actions can be changed using the CV settings available.

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Specifications plus using the SET/RUN Switch and making CV adjustments to a Cobalt iP-CB circuit breaker

DCC system input:
Input voltage range is 12 to 27 volts DCC
(Cobalt iP-CB cannot be used with DC input)

Trip Sensitivity (5):
Trip sensitivity is 5ms to 1000ms
(Adjusted using the potentiometer as shown)

External LED link (7):
This output is in parallel with the onboard LED

ESP transmittor link (8):
This output will go HIGH when iP-CB is tripped.

RESET button (9):
If iP-CB has tripped because of a constant short, press and hold this button for 3 seconds to reset. If reset does not happen then the short is still present.
This switch is in parallel with the remote reset output (6)

SET/RUN switch and LED (10):
This switch must be in RUN position to use iP-CB.
Move the header to SET or RUN to make adjustments to addressing or Cvs and carefully follow all instructions.
The LED will be OFF in RUN mode. In SET mode, the LED will flash at 1HZ. The LED will also quickly flash 3 times if address or CV setting changes were successful.

The BLUE status LED:
This LED will be on if track power is on.
While Cobalt iP-CB is attempting to reset automatically, this LED will flash at 1Hz. If the short is not cleared and Cobalt iP-CB cannot reset, it will flash at 2Hz.

Positioning your Cobalt iP-CB:
Place Cobalt iP-CB as close as is practical to the track section it protects. If using screws, do not over-tighten.

As always we've done our best to explain this product clearly but we appreicate that there may still be questions related to its use on your layout that you will need help with.

You'll find more info on our website and we also invite you to call and talk to our technical team if you need more help

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SET MODE USING THE SET/RUN SWITCH (10):
Always follow the power off/on sequence when using accessing, confirming or leaving the set/run mode

SETTING AN iP-CB ADDRESS:
- Turn off power to your iP-CB
- Move the jumper to the SET position
- Restore power to your iP-CB (The set/run LED will now flash steadily at 1Hz (1 per second)
- Default address is 200. Follow your DCC system instructions for changing an accessory using the chosen address.
- If successful, the SET/RUN LED will flash 3 times
- Repeat just to be sure if necessary.
- Turn off power to your iP-CB
- Move the jumper to the RUN position
- Restore power to your iP-CB

CHANGING any iP-CB CV setting:
- Turn off power to your iP-CB
- Move the jumper to the SET position
- Restore power to your iP-CB (The set/run LED will now flash steadily at 1Hz (1 per second)
- Use "Program on the MAIN" mode (as per the instructions for your chosen DCC system)
- Enter ANY "loco" or "accessory" address that is not used anywhere else on the layout.
- Enter the CV number you wish to change (when the command is accepted, LED will flash quickly 3 times.
- Enter the value you wish to change it to (the LED will flash quickly 3 times) Then turn off power to your iP-CB
- Move the Set/Run jumper back to the RUN position.
- Restore power to your iP-CB.

WHICH CV's can be changed?
- **CV57:** This sets the the time that the automatic reset function will wait before attempting to restore power and the time between the attempts. The default is 0, which is 2 seconds. Range is 2+CV57. eg, 3=5 sec.)
- **CV63:** Factory reset. Using this CV restores iP-CB to its ex-factory settings. Use CV63 = 36.

Please note there is also a "Quick and direct" way to restore factory default settings without using CVs.

Turn off power then hold down the RESET key while you restore power then release it (the Blue LED will flash steadily). Press the RESET key again within 5 seconds to return to factory default CV settings.

This product was created and carefully crafted by DCCconcepts Ltd. Unit E,

The DCCconcepts **Cobalt Collection** - Innovative design and a creative approach to layout control that greatly improv

WHICH CV's can be changed? *(continued)*

There are more CV's that can be changed however, please think very carefully before changing them!

CV64: This CV changes the overload reset method.

CV64 = 0 = Default. Cobalt iP-CB attempts reset 5 times
CV64 = 1 = Cobalt iP-CB always needs manual reset
CV64 = 2 to 255 = Cobalt iP-CB will try that many reset attempts before turning off.

(The CV64 default setting is 5 reset attempts)

CV66: This CV controls whether Cobalt iP-CB is on or off when you first turn the layout power on.

CV66 = 0 = Always ON when the layout powers up.
CV66 = 1 = Always OFF when the layout powers up.

(iP-CB CV66 default setting is 0 or "always on")

Some more COBALT range products

While the first Cobalt product was a truly unique form of turnout motor with incredible features, the DCCconcepts Cobalt Collection" has evolved to become all you will needed for the control of your layout.

Here are just a few items in the Cobalt range.

Cobalt iP Digital Point Motor

Cobalt iP Digital includes all the features you need!

In addition to an on-board FROG power switch plus another SPDT switch for any use you might imagine, we've also added two sets of momentary push button switch contacts for independent left / right "change direction" control (instead of 1-button toggled push-button control).

This gives totally independent control panel and digital control so it is simply perfect for both DC and DCC users.

Cobalt iP Digital 100% is comfortable with 7~23v DCC track power and is super-easy to install as it's delivered self-centred and ready to go!

Cobalt iP Digital also has three simple-to-use software commands built in. These convenience features are:

* Swap direction of throw
* Self Centering ON
* Self Centering OFF

These new software options are REALLY simple to use because all you need to do is move the switch to RUN and use standard accessory commands from a DCC system.

Accessory wiring just can't get easier than this!

Cobalt Alpha Central is literally a complete, ready-to-use digital control panel for 12 points or turnouts... ready to go, in a box!

It is so simple to set-up that the instructions could read "Unpack, plug in, change points"

Alpha Central can be connected directly to any NCE system - however other DCC brands are not forgotten. Low cost adapter leads are available and Alpha central can even be used by DC modellers when combined with Alpha Box or Alpha-Sniffer which creates a low cost Digital Accessory power bus generator.

(A clever move for many DC users because "Digital Accessory Control" reduces wiring complexity & extends layout control ability)

Alpha Central also combines easily with the Alpha Box 5 Amp intelligent booster, creating an accessory bus, immediately increasing any DCC systems output power while adding the luxury of Alpha Accessory control to entry level systems such as the Gaugemaster Express and Bachmann's EZ command entry level unit.

Cobalt-S Traditional Signal Levers

Cobalt-S is something very special. For the first time, the average modeller in ANY scale can have a signal-box lever that looks and operates just like the real thing.

Even better, Cobalt-S lever really is the most versatile control device ever offered by anyone, as it can literally control everything ever made... by any brand, in any scale.

Every Cobalt-S has a momentary contact S.P.D.T. changeover switch for solenoids and two on-on S.P.D.T. switches for Accessory control or motor driven turnout motors or any other thing you can imagine.

Of course, it has the ability to work with AC, DC or DCC control and as a result it is literally capable of operating every item ever designed for use with a model railway.

140mm or 5-1/2" high, it is a substantial item. The lever is solid brass and all contacts can cope with 5 amps.

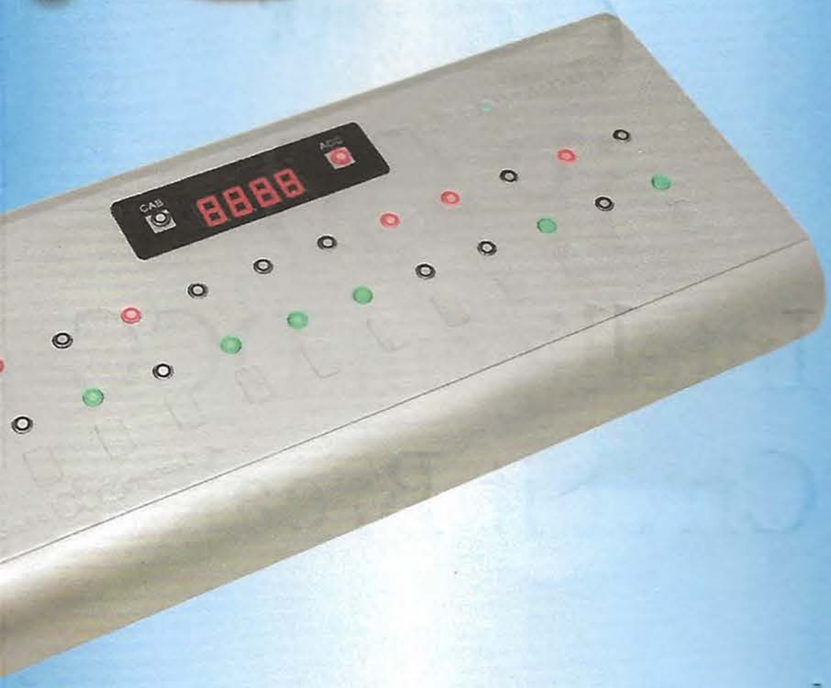
Cobalt-S oozes quality & as a result it is guaranteed for life!

The Sidings, Settle, BD24 9RP, UK * Phone +44 (0) 01729 821 080 * www.dccco

ESP READY

es performance while simplifying installation and wiring.

l-Central



Cobalt iP Analog Point Motor

While the shape is familiar, our Cobalt iP Analog has the same quiet operation & 3 on-board switches of Cobalt Omega & a simple to use "Swap direction" switch to let you synchronise the changing of direction as needed in your own particular application.

We have also added something very special inside...

The "iP" in the Cobalt iP Analog name stands for Intelligent power control.

Cobalt iP cleverly manages its own power use for the same motor drive speed irrespective of input level & works with 7v~23v DC.

Between turnout changes Cobalt iP Analog will only draw enough power to let it listen for the next change request (about 5mA). Even when it is operating, Cobalt iP Analog draws only 40~60mA for a few seconds. That's less than the current draw of one super bright LED!

Want to add digital control? Our new AD-iA decoder just slips into the recess in the side of Cobalt iP Analog for the neatest installation ever, giving truly incredible control and super versatile on-board switching, making it the most versatile turnout control installation ever!

ncepts.com * sales@dccconcepts.com