

# Cobalt Alpha Switch packs

OWNERS  
MANUAL

## Cobalt Alpha Switches

Making control panel creation a simple process

### The Cobalt AlphaSwitch range:

There are TWO quite different types of switch pack in the range. Please make sure you have bought the right type before you start the installation.

Each pack includes 12 sophisticated pre-illuminated switches with mounting bezels and a control PCB. Connection is very simple as the switches have a plug-in harnesses. Because of this even a modeller with no experience can create a good looking, reliable, and sophisticated control panel to be proud of.

Connecting the control PCB to the devices that they will control will need a small (-) or slot-type screwdriver and the appropriate wire. For a really tidy control panel we recommend you use our wire pack DCD-RGB which contains enough red/green/black ribbon cable for even the biggest of panels!

### Cobalt AlphaSwitch-A packs with 2-wire outputs:

These switch packs are independent of train driving preferences. They can be used for the control of Accessories on AC, DC or DCC layouts.

The **A** in the part number means Analog. DCD-ASG, ASB & ASR models have a 2-wire output on the PCB and are designed to control and provide power for devices that are controlled by "reversing DC" power.

The outputs are N.C. (normally closed or ON) so you should use these switches for devices that have power always on when in use.

This includes Cobalt Omega and Cobalt IP Analog Turnout motors, Tortoise motors and some low-current European made motor-drive turnout motors.

When a switch is changed the DC output power polarity reverses. The power rating of each individual output pair is 100mA and this must not be exceeded. Each control PCB requires power from a regulated DC power supply.

The permitted voltage range is 9-15v DC to accommodate any possible variances in the voltage that may be needed to power various devices.

These switch packs are available with Green, Red or Blue LEDs.

Each 2-wire switch pack includes 12 Switches, 12 Harnesses, 12 Mounting Bezels and 1 control PCB plus comprehensive connection instructions.

### Cobalt AlphaSwitch-D packs with 3-wire outputs:

These switch packs are independent of train driving preferences. They can be used for the control of Accessories on AC, DC or DCC layouts.

The **D** in the part number means Digital. The DCD-DSG, DSB & DSR models have a 3-wire SPDT output on the PCB and are designed to control to and control all Digital devices that have 3 wire "left / Right" control needs. The outputs are N.O (normally off) or momentary so you can use these switches and computer or DCC control at the same time.

These switches are recommended for use with the Cobalt Alpha Digital Encoder, Cobalt IP Digital turnout motors, Cobalt RX relay extension board and all Cobalt fx Series "Accessory decoders" including the AD-2fx, AD-8fx, AD-S2fx, AD-8fx. This 3-wire device can also be used for ANY other brand product that needs SPDT control including accessory decoders. When a switch is changed then the appropriate left or right output is triggered.

Each control PCB requires power from a regulated DC power supply.

While the permitted voltage range is 9-15v DC the outputs do NOT need to provide power to the device directly so we do recommend that to keep it simple, you stay with a 12v regulated DC supply as this can then also be used to add power to the Cobalt Alpha Encoder bus if needed.

These switch packs are available with Green, Red or Blue LEDs.

Each 3-wire switch pack includes 12 Switches, 12 Harnesses, 12 Mounting Bezels and 1 control PCB plus comprehensive connection instructions.

### The Cobalt AlphaSwitch pack Accessory range:

The items in these packs are all available separately so you can add, maintain or extend your use of this easy to use system at any time.

DCD-ATG	Green Switches only.	Contents 12x Switch + 12x Harness
DCD-ATR	Red Switches only.	Contents 12x Switch + 12x Harness
DCD-ATB	Blue Switches only.	Contents 12x Switch + 12x Harness
DCD-APC	A Control PCB only (ASG/ASR/ASB).	Contents 1x PCB
DCD-DPC	D Control PCB only (DSG/DSR/DSB).	Contents 1x PCB
DCD-TSH	Switch harness only.	Contents 6x 200mm Harness
DCD-SY3	Y-connector adapter for AlphaSwitch Switch harnesses	
DCD-RGB	5 metres of 3-wire ribbon wire, red/green/black.	

### Important Information:

While we have made this system very simple to use and connect, it is also a sophisticated switching system that is managed by digital micro-controllers.

All electronics are sensitive to how you handle them and it is very important that you read all instructions before you install and connect them.

Never connect these switches directly to any high power device and do not power the switches or the control PCB directly any circuit that may include a CDU or similar device. Incorrect wiring or wrong power supply choices will lead to failure which is not covered by warranty.

- Use only "Regulated DC" power supplies with correct specifications.
- Installation and all connections must always be done with the power off.
- Recommended switch use and types of devices that can be connected to these switches are clearly stated on the packs and in these manuals. It is possible that they can control similar devices however if you are not sure please check as incorrect connection and use will invalidate the warranty.
- It will sometimes be desirable to be able to extend wires or connect more than one switch to one input. Use the DCD-SY3 for two-switch connections and if you ever DO need to cut wire, follow colour codes when you do it.

## Cobalt Alpha Switch-A

Using & connecting the TWO wire AlphaSwitch-A

### Using Cobalt AlphaSwitch-A Analog 2-wire Switches.

**What to use them with:** These 2-wire output switch packs have a reversing DC power output for Cobalt & similar "reversing DC" type turnout motors.

As with all our digital products, they can be used on AC, DC or DCC layouts as they are quite independent of train driving power or preferences.

**Please note:** These 2-wire switch packs are not suitable for the control of any digital device that needs momentary switching. (Such as Cobalt Digital turnout/point motors, all Cobalt accessory decoders or Cobalt Alpha). Please use the 3-wire Alpha switch range for that purpose.

**How are they powered?** To power these switch packs you will need to use or create a simple 3-wire common ground power supply by combining the output of two low cost regulated 12v DC wall-plug type power packs. The diagram in the lower part of this Manual page (3) shows you how to do this.

**How do they operate?** While the switches themselves are low current TACT switches that control the outputs of the control PCB, the actual Switched 2-wire power outputs are N.C. (normally closed or always ON) so you should only use these switches for devices like Cobalt Omega and Cobalt IP Analog Turnout motors or Tortoise motors.

They are also quite suitable for other devices or low-current European made motor-drive turnout motors providing current draw does not exceed 100mA. When a switch is changed the DC output power polarity reverses. The power rating of each individual output pair is 100mA and this must not be exceeded. 100mA is more than enough for simultaneous changing of several of our Analog Cobalt motors but it is NOT enough for DC solenoids of any kind.

(For any other item to be switched please be sure to check its specifications before attempting to connect and operate it with these switches. Failure because of overloaded outputs cannot be covered by warranty)

**NOTE:** The control PCB also has power-off memory, so all switches will be correct and correct for the next running session when you turn the power on!

### How hard is it to connect and install Alpha-Switch-A?

Even a novice with no experience at all can create and wire a professional looking control panel to be proud of in far less time than you may imagine.

Alpha-Switch packs contain all that you will need and the Alpha Switches are VERY easy to install because the switches and LEDs are together in one unit. Wiring is simple too because each switch has its own socket and it links to the control PCB using the harness supplied.

Their connection to the electronic control PCB is also via the harness, so the installation into your control panel AND the making of the connections needed will be very easy, extremely tidy... and it will take only minutes. (There will be NO need to cut, trim or solder wires at all - We even make a wire-connector to make it easy to parallel two switches on a crossover if needed).

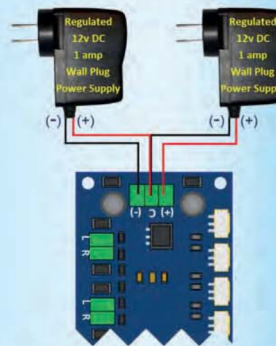
### Creating a simple 3-wire common-ground power supply

DCCconcepts offer a ready-made 3-wire supply (The part # is DCD-SPS12) however if you'd like to make your own, it is economical and simple to do.

Purchase two new and identical Regulated 12volt DC wall-plug power supplies. The power rating of each 12v regulated supply should ideally be 1 amp or higher.

Look carefully at the wires that come out of the power supply. One wire will usually be black and plain - this is normally the negative wire. The other wire will usually either have a white stripe or a rib along it - this one is normally the positive wire.

Cut off the plugs if fitted & strip approximately 1cm of insulation from each wire then twist the stripped ends. Interconnect them as shown. Red = (+) black = (-)



This gives you a negative, a neutral (Positive and negative) and a positive wire. These 3 wires simply connect to the AlphaSwitch control PCB in the same order that we show in this diagram. (With all split or common ground power supplies, the combined positive/negative wire is always connected to the centre terminal)

The rest of your AlphaSwitch installation will be simple, with all the switch wiring using connectors for a totally "Plug and Play" installation (see the next page).

In fact in no time at all, you will have a fully wired and operational control panel with incredibly neat and tidy wiring that you will be proud to show your friends!

## Cobalt Alpha Switch-A

Full wiring diagram for the TWO wire AlphaSwitch-A

### Wiring Cobalt AlphaSwitch-A Analog 2-wire Switches.

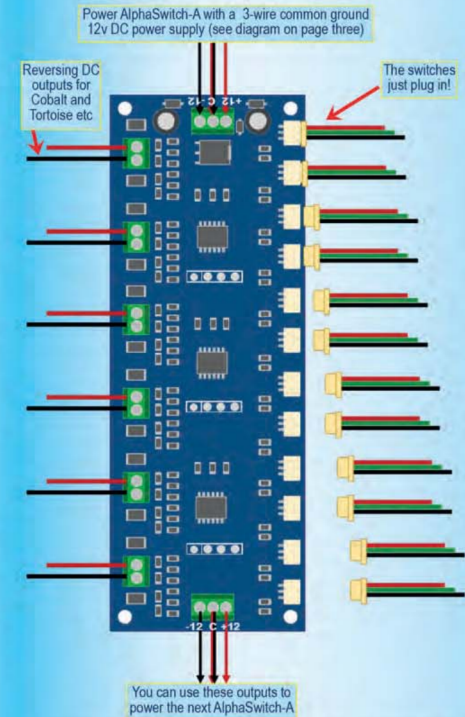
It just doesn't get any easier than this!

For this example we'll use a full diagram of AlphaSwitch A to make it clear.

The 3-wire power supply is shown on page 3. When you use more than one Cobalt Alpha Switch pack, you can just daisy-chain the power as shown.

To complete the wiring, All you will need is a small screwdriver and a wire stripper for the Wires that will connect the outputs.

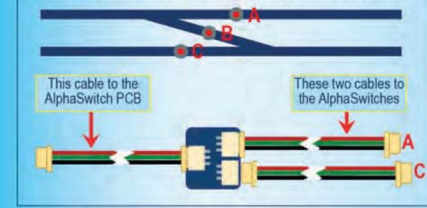
As you can see, its a very simple procedure. The only exception will be the use of two switches on a single output. This is Shown at the bottom of this page.



### Two Alpha Switches, One output

Using the DCD-SY3 Y-adapter: You may want to connect 2 AlphaSwitches to ONE PCB control input so you can create a crossover like this on your panel.

It is very easy to do if you use the Y-adapter. In the example below, we have connected AlphaSwitch A and C in parallel so they can both control the same straight route of the crossover and also provide a logical "Route illumination"



\* Need help? please email us at:  
**Sales@dccconcepts.com**  
\* Or visit our website at:  
**www.dccconcepts.com**  
\* Or call us +61 8 9437 2470 (10-5)



## Cobalt $\Omega$ Alpha Switch-D

Using & connecting the THREE wire AlphaSwitch-D

### Using Cobalt $\Omega$ AlphaSwitch-D Digital 3-wire Switches.

**How do they operate:** AlphaSwitch-D Switches have a standard SPDT common-left-right output connection structure for control of digital devices.

When a switch is pressed, the appropriate output is triggered momentarily and the switches LED illuminates confirming that it has been operated, clearly marking route selection etc. When the opposing switch is operated, the process repeats showing the change clearly on your control panel.

The outputs are N.O. (normally open or momentary contacts) so as a bonus you can use these switches and computer or DCC control at the same time.

**NOTE:** The control PCB also has power-off memory, so all switches will be correct and correct for the next running session when you turn the power on!

**What to use them with:** AlphaSwitch-D is perfect for use with the Cobalt  $\Omega$  Alpha Digital Encoder, Cobalt iP Digital turnout motors, Cobalt REX relay extension board and all Cobalt fx accessory decoders with 2-switch connections, including AD-2fx, AD-8fx, AD-S2fx, AD-8fx. AlphaSwitch-D can also be used with any other brand device or product that needs SPDT left-right control and can be switched by push-buttons, including accessory decoders.

As with all our digital products, AlphaSwitch-D can be used on AC, DC or DCC layouts as they are quite independent of train driving power or preferences.

**IMPORTANT:** AlphaSwitch-D is not suitable for the direct control of Solenoids or any "directly power driven" device. Solenoids CAN be used with AlphaSwitch-D if they are connected via an AD-S8fx-AD-S2fx Accessory decoder.

**How are they powered?** Please power AlphaSwitch-D with a good quality Regulated 12volt DC wall-plug power supply. The power rating of this power supply should ideally be 1 amp or higher. Do not use train-set power supplies please.

Look carefully at the wires that come out of the power supply. One wire will usually be black and plain - this is usually the (-) negative wire. The other wire will either have a white stripe or a raised rib along it - this one is normally the (+) positive wire.

Cut off the plugs if fitted & strip approximately 1cm of insulation from each wire then twist the stripped ends. Connect as shown. Red = (+) black = (-). Here is a simple connection diagram to clarify the wiring description.

Because the AlphaSwitches and their LEDs are brought together in one tidy unit and their connection is via a plug & harness it will make the rest of your AlphaSwitch installation incredibly simple, with all wiring using connectors for a totally "Plug and Play" installation (see the next page).

In no time at all, you will have a fully wired and operational control panel with incredibly neat and tidy wiring that you will be proud to show your friends!

**Note #1:** While the permitted voltage range is 9-15v DC the outputs do NOT need to provide power to the device directly so we do recommend that to keep it simple, you stay with a 12v regulated wall-plug type DC supply as this can then also be used to add power to the Cobalt Alpha Encoder bus if needed.

**Note #2:** If you have not built a control panel before, we strongly recommend that you visit our website and download THIS document. Advice #10 - Control panels and levers. Just go to our website then click on "Manuals and Advice", then type "Advice #10" into the search box and it will pop up.

(You will find lots of useful control panel tips there and we'll add some more specific additional installation manuals for AlphaSwitch very soon too.)

## Cobalt $\Omega$ Alpha Switch-D

Full wiring diagram for THREE wire AlphaSwitch-D

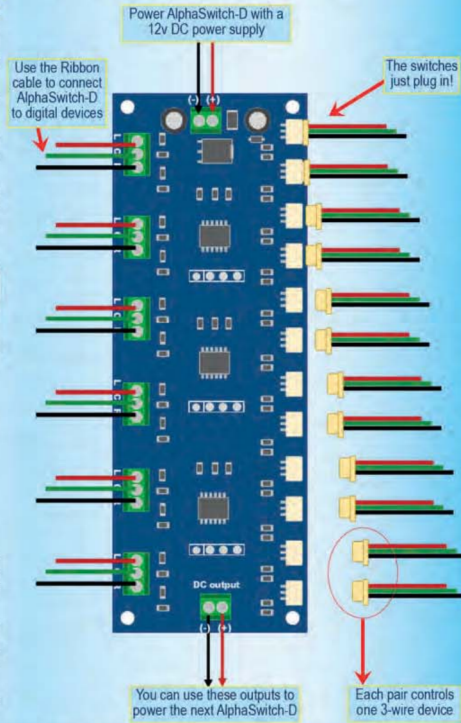
### Wiring Cobalt $\Omega$ AlphaSwitch-A Analog 3-wire Switches.

**The simple, elegant way to create a professional control panel!**

For this example we'll use a full diagram of AlphaSwitch-D to make it clear.

The standard 2-wire power supply is shown on page 5. If you use more than one AlphaSwitch-D you can simply daisy-chain the power as shown.

Because there are three wires needed for connection to each device making it harder to keep tidy, so made an accessory pack of 3-wire red, green and black ribbon cable so each connection you make between an AlphaSwitch-D, Cobalt Alpha or your Accessory decoder will be neat and tidy too! The part number for this 10 metre pack of ribbon cable is DCD-RGB.



## The Cobalt Collection refining, simplifying & improving the quality of layout control.

The Cobalt range is known for its unique turnout motors, but the "Cobalt Collection" has evolved to be much more than that.

The DCCconcepts Cobalt range now includes a wide range of Point Motors, Signal Levers and some extremely high-feature level Accessory Decoders... accompanied by an economical and versatile range of Accessories. The Cobalt product range continues to evolve with the addition of the very clever new Cobalt  $\Omega$  Alpha range. Equally at home on DC or DCC layouts, their primary design objective is the simplification of wiring and control of your layout.

The Cobalt Collection already makes wiring and installation of turnouts easier, improves the quality of turnout control, enables the switching of anything ever created for use on a model railway with Cobalt-S Levers and now, with the addition of the Alpha range, it reduces wiring complexity and improves its quality!

We'd like to show you some of the Cobalt collection here. For more information, plus a host of useful advice & information, please visit [www.dcccconcepts.com](http://www.dcccconcepts.com)

## Cobalt $\Omega$ Alpha

### Making control panel creation wire-free & easy

The Cobalt  $\Omega$  Alpha Encoder is the perfect companion for our 3-wire Alpha Switches

DCCconcepts Cobalt  $\Omega$  Alpha is a digital encoder that turns any form of switch into a digital control device, making it possible to create control panels with much simpler wiring... in most cases, even complex control panels need only one pair of wires to connect to the layout!

DCCconcepts Cobalt  $\Omega$  Alpha is usable by all modellers in all of the common scales, whether you drive the trains with AC, DC or DCC power. What is needed? As bought, Cobalt  $\Omega$  Alpha is directly connectable to the command bus of all NCE DCC systems with a standard RJ12 cable.

Add the Cobalt "Cobalt  $\Omega$  box" and AC or DC modellers can immediately take advantage of Cobalt Alpha to reduce their control panel complexity (DCC brands with sniffer ports can use the Alpha box too if they wish).

Add a Lenz, MRC-gaugemaster, Digitrax or other adapter and Cobalt Alpha will now connect directly to your existing DCC command bus.

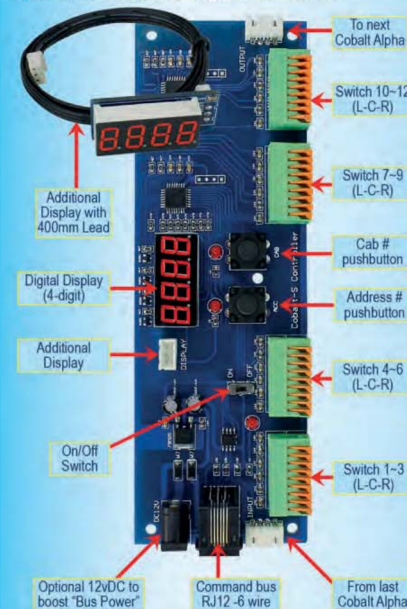
**How does it connect?** If you have a DC or AC powered layout you need NO change to controllers or locomotives at all, but you will need to add a DCC-standards based accessory decoder to each turnout or each active accessory you wish to control - and create an accessory power bus.

**DC or AC users ...** You will also need the "Alpha box" which is a low cost high power interface for Cobalt Alpha that converts command information to digital and delivers it to the power bus to operate the accessory decoders.

**All DCC users can also use the "Alpha box" ...** as a command centre for their DCC Accessory power bus if their accessory use is separated from train driving. NCE PowerCab users can also use it to increase the power and performance of Powercab to that of a full 5 amp DCC system.

**If you have another brand of DCC system ...** you can use Cobalt Alpha with the addition of an appropriate "Command bus protocol adapter". Cobalt  $\Omega$  Alpha will then connect to your layouts "Command bus" and it will act as a controller for accessory decoders designed to work with DCC standards.

The full range of Cobalt  $\Omega$  Alpha products and related accessories can be found on our website at [www.dcccconcepts.com](http://www.dcccconcepts.com)



## Cobalt $\Omega$ (omega) Point Motor

The successor to the original Cobalt, Cobalt  $\Omega$  looks very familiar but it has been totally re-tooled inside and out to make Cobalt  $\Omega$  even better.

Cobalt may look the same as before... but Cobalt  $\Omega$  has a revised internal gear structure, is even quieter than its predecessor and now features THREE on-board SPDT switches for extreme versatility.

We have also added a simple to use voltage range-change switch giving you totally reliable performance over a very wide power supply choice (We like to operate at 9v, but really anywhere from 6-18 volts DC is just fine).

Current users of Cobalt motors will find the Cobalt  $\Omega$  operates in total harmony with their existing Cobalt motors. The only significant wiring change being the position of the connections. These are now moved to terminals 1 and 2 (same as Cobalt iP and iP Digital) to keep all "New Generation" Cobalt motors in harmony.

## Cobalt iP Analog Point Motor

While the shape is familiar, our Cobalt iP Analog has the same super-quiet operation and 3 on-board switches of Cobalt  $\Omega$  plus a simple to use "Swap direction" switch to let you synchronise the changing of direction with software / macros or route control.

We have also added something very special inside... The iP in the Cobalt iP Analog name means Intelligent power control! Cobalt iP Analog self-manages power use for the same drive speed irrespective of voltage (7-23v is OK).

When it's standing still, Cobalt iP Analog draws only enough power to listen for the next command and even when operating, it draws only 40-60mA. That is in fact less than the current draw of one super bright LED!

Cobalt iP Analog really is the best choice for larger, busy layouts!

## Cobalt iP Digital Point Motor

Cobalt iP Digital includes all of the features of iP Analog and more! To allow DCC + full manual control we've added a second set of momentary push button switch contacts for fully independent left/right "change direction" control (instead of 1-button toggled action).

Cobalt iP Digital 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. We've made use of these easy to utilise standard "Address-setting procedures" to activate or deactivate them. These new software options activate or deactivate the self centering function and also let you "flip the change direction".

This allows you to synchronise or change operating direction so that it matches perfectly with track diagrams on screen-based control systems & with any brand of layout control software, route control or similar digital control methods.

(It also makes it possible to install Cobalt iP digital facing either the Toe or Heel of the point, so installations in tight places are easier!)

To add icing to the cake, all Cobalt point motors now come pre-centred and ready to install. (Cobalt iP Digital also has a unique set of software commands to activate self-centering). We now also include our popular die-cut foam mounting pads free of charge with every Cobalt point motor.

## The Correct way to add AlphaSwitch to your control panel fascia



Create, print & laminate the track diagram, then use it as a template to create the panel face.



Use a 7mm hole punch to cut out the switch holes in the track diagram, (these are available at most good hardware stores)



Using the diagram as a template, draw round the holes to transfer them to the panel face. Drill and then clean up the holes.



Paint the panel on both sides. This is important as all glues will work better on a sealed surface.



Carefully peel off the protective layer from the switch mounting pad to make it ready to mount



Fix the switch to the panel with the mounting pad. Centre it carefully please!



Now carefully screw each switch in place (You do not need to over-tighten).



Once switches are fixed, then glue the diagram to the panel face.



Add the trim collars. Use just a little silicone or glue to do this. Press in place.



All that you now need to do is plug the switches in! (Blue switches used here)

Combine Cobalt products for turnout and layout control and nothing is impossible any more!