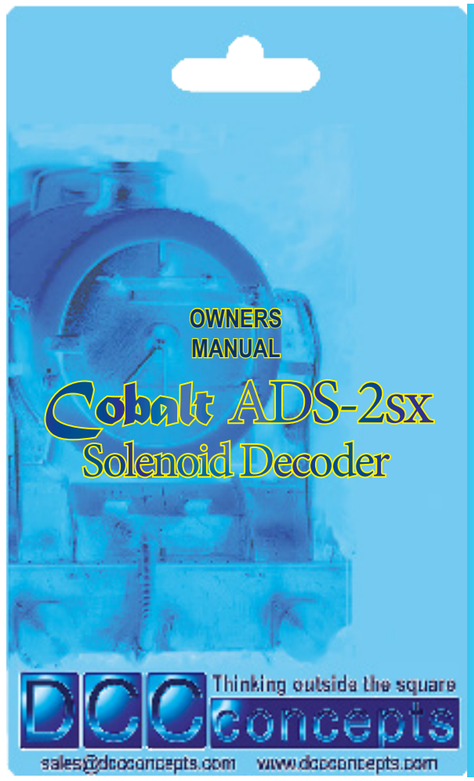


Overview: Cobalt ADS-2sx Decoders

The perfect way to change solenoids on DC or DCC layouts

Please be sure to read these instructions before installing your ADS-2sx Decoder

DCCconcepts ADS-2sx decoders have been designed from the outset to work perfectly on both DC & DCC controlled layouts and each output is able to reliably change two Peco, Seep, Hornby, or any similar solenoid point motors simultaneously if wired correctly.

ADS-2sx decoders can be connected directly to DCC track power or a DCC accessory power bus and need no added power supply or wiring if used with DCC (15~18v DC is required for DC layouts).

Unlike other accessory decoders which can just run out of energy, ADS-2sx decoders are able to reliably fire all outputs at once (for route control, diode matrix control, macro or computer control) as each individual output stores all the power it needs on-board.

ADS-2sx decoders operate without draining your DCC track power.

Power use is intelligently managed on-board, so you don't need a big power supply even when used on DC layouts - a regulated 15v to 18v DC supply that can deliver 1 or more amps should be just fine!

ADS-2sx also has some exclusive added features:

ADS-2sx has all the features that solenoid users could wish for.

* **Power-off memory for turnout, frog power and LED panel/signals**
* **Frog polarity control for live frog (electro-frog) point-work.**
* **LED outputs ready for you to add lights to your control panel.**
* **Dual momentary contact switch option so you can have both digital & manual control of your points - switching contacts are triggerable with hall, diode matrix or detectors for automation.**
* **CDU discharge switch to power-down for safe wiring at any time.**

Important: ADS-2sx has a high power CDU on each of its outputs.
*** Be careful when wiring as incorrect connection may result in immediate failure if CDU power is accidentally cross-connected.**
*** Use the CDU discharge switch, pressing it until the blue LED is totally off before changing ANY wiring on an ADS-2sx decoder.**

Overview: Cobalt ADS-2sx Connection

Careful wire selection is important for both DC or DCC layouts

DCCconcepts ADS-2sx decoders have screw terminals for all common connections to make wiring easier for you. The use of all terminals is marked clearly on the PCB. (Also see diagrams here)

Please do NOT tin the wire ends when using screw connectors - it is less reliable long term. Just strip the wires carefully and twist them tightly.

We recommend the following wire choices for ADS-2sx;

(1) Solenoid wiring: DCCconcepts 32x0.2 3-plait wire. (DCW-PW25) *(if not available, please use 32x0.2 wire if possible, 16x0.2 is OK only for short runs (Plait it too if you can. Plaited wire is very tidy - and it reduces indiction in the wiring, improving power delivery and helping to manage the harmful voltage spikes created when a solenoid is operated).*

(2) Switch, LED or IO wiring: 7x0.2 to 16x 0.2 OK (light wire is OK). *(Your choice may be different depending on where you put your ADS-2sx decoders, however 6-core alarm wire can be an excellent choice as it gives you 3 wires for switches and 3 for LEDs etc. in one tidy cable).*

(3) Frog Wiring: 16x 0.2 is ideal (i.e.: Dropper wire size). *(Please keep frog power wires as short as possible. We suggest you adopt a consistent colour for frog wires - green is the usual choice).*

ADS-2sx has all wiring positions clearly marked on the PCB. Before wiring your ADS-2sx decoder please read these instructions from start to finish and then take note of the following advice:

* **Plan your wiring colour codes.** A little forethought makes it much easier to maintain your layout as time goes on.
* **Make sure your soldering iron is ESD safe.** A soldering iron with voltage or mains leakage is dangerous and WILL damage electronics.
* **Make sure the mounting or work surface is clean.** Also make sure it is clear of metal objects that can cause accidental short circuits.
* **Make sure that ADS-2sx is disconnected AND that you have fully discharged the on-board CDU's by pressing the button until the blue LED is totally "OFF" before adding any wiring to your ADS-2sx**
* **Store these instructions safely for future reference.** If you are unsure at ANY time please do email us for help rather than guessing!

Instruction and overview: Cobalt ADS-2sx features and wiring

100% Soldering-free wiring, clearly marked Screw Terminals and simple, logical connections make the DCCconcepts ADS-2sx very easy to understand and extremely simple to use.

1. **DCC Users...** can power ADS-2sx directly from the track power bus. Careful design means that ADS-2sx power management makes sure that it will NOT affect loco running when operating.

1a. **DC Users...** can choose to power ADS-2sx with DC power. The current draw is not high, so any good quality regulated DC power supply between 15 and 20 volts @ 1 amp or more will do the job fine and will power several ADS-2sx.

2. **Using more than one ADS-2sx?** Then all you will need to do is daisy-chain them together for simple, easy and very tidy wiring.

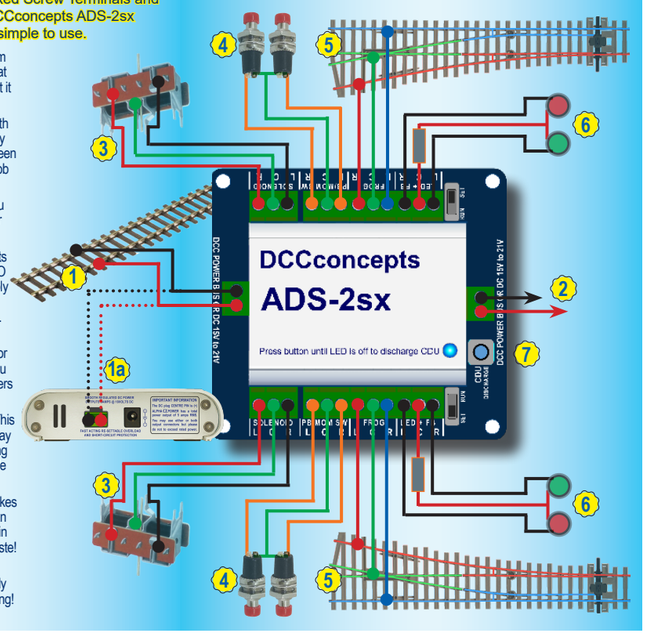
3. **Connecting Solenoids:** There are two outputs and each output can actually power up to TWO Peco motors providing the correct power supply voltage and adequate "equal" wire are used. Wiring is very simple as shown in the diagram.

4. **Control panel switches:** You can use either momentary push-button switches as shown - or use centre-off toggle switches. Even better, you can utilise the realistic Cobalt-S signal box levers for the ultimate in control realism.

5. **Adding automatic Frog power switching:** This too is quite simple. Follow the diagram (you may need to swap the blue and red wires depending on the point direction) and you will have reliable running at the slowest speeds.

6. **LED indicators for your panel:** ADS-2sx makes adding LEDs an easy task. LED brightness can vary so start with an (about) 560 ohm resistor in series with each LED. Vary to suit your own taste!

7. **BEFORE YOU WIRE ANYTHING:** Press this button until the BLUE LED on the case is totally OFF. This discharges the 2 CDUs for safe wiring!



Setting the Address of your Cobalt ADS-2sx

Setting the ADS-2sx address is just a simple "learning" process

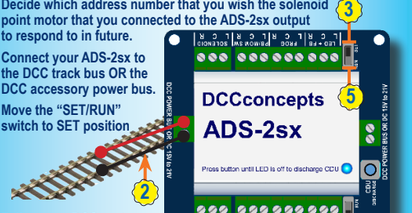
Giving your DCCconcepts ADS decoder its own address is very easy.

While the DCCconcepts ADS-2sx is made to comply with the DCC standards, there are varying approaches to the setting of DCC addresses. Because of this **please use ONLY these DCCconcepts instructions for setting the address of your ADS-2sx decoder** outputs, as your DCC controllers accessory decoder instructions may not be valid for DCCconcepts or some other brand products.

You do NOT ever need to connect ADS decoders to a programming track!

1. **Decide which address number that you wish the solenoid point motor that you connected to the ADS-2sx output to respond to in future.**
2. **Connect your ADS-2sx to the DCC track bus OR the DCC accessory power bus.**
3. **Move the "SET/RUN" switch to SET position**
4. **Follow your DCC system instructions for changing the point at the address you chose.**

   ADS-2sx, being in SET mode will hear the number, learn it, adding it to its memory for future use.
5. **Return the ADS-2sx Switch to the RUN position.** Your ADS-2sx will now operate the points/turnouts each time you operate that address.



Need help or advice? Email us at
sales@dccconcepts.com
To find out more visit our website and look in "Manuals and Advice"
www.dccconcepts.com

DCD-ADS-2sx
9 347394 000829

These guidelines will help users of many common DCC brands - but we are here to help so if you need, please email at any time!

SPECIFIC GUIDELINES FOR SOME POPULAR DCC SYSTEM BRANDS

ESU EcOS system

* Before attempting to set an address you must first create a link for the turnout in the EcOS system's memory. Refer page 24 of the EcOS manual.

Once this is done, follow the instructions on page 6 of **this** manual. (Note: for step #4 - to change a point/turnout with EcOS, use your EcOS manual)

Roco Z21 system

* Z21 can be delivered with an offset problem in accessory addressing. Please download and use Z21 maintenance software (Win 7~10) to correct if needed.
* Before attempting to set an address you must first create a link for the turnout in the Z21 system's memory. Refer to page 57 of the Z21 manual.

Once this is done, follow the instructions on page 6 of **this** manual. (Note: for step #4 - to change a turnout with Z21, refer to Z21 operating screen)

Hornby E-link system and Rail-master software.

* Before attempting to set an address in ADS-2sx, you must first create a link for the turnout in the E-link system. To do this follow E-link instructions and use the Track Design screen, adding the turnout and giving it a number - then return to the driving screen that shows the turnout in the layout plan.

Once this is done, follow the instructions on page 6 of **this** manual. (Note: For step #4 - please do NOT use the in-build drop down addressing screens - to change a point or turnout with E-link, just click on it with the mouse)

Please note: Make sure E-link is communicating properly when you're setting addresses. E-link has a somewhat messy DCC waveform that CAN cause problems if wiring isn't tidy. We strongly recommend adding a BT-2 Power Bus terminator to the ends of the DCC power bus to improve communication

Lenz system (Various full system model numbers)

* Lenz systems do not currently require entry into a database/system memory prior to operating DCC accessory decoders with their handsets.
* Simply follow the instructions on page 6 of **this** manual. For step 4 Lenz users will find the instructions for changing a point/turnout on page 37 of the LH100 v36 manual. LH90 users, please use LH90 V3.6 manual page 30/31.

To create a very simple-to-wire control panel use Cobalt Alpha as a Digital Interface. Alpha can be used with many brands, reducing switch wiring dramatically and making control panel creation easy!

SOME MORE GUIDELINES FOR POPULAR DCC SYSTEM BRANDS

NCE systems (Power Cab, Power Pro)

* NCE systems such as Power Cab and Power Pro do not require any entry into a database or system memory prior to operating accessory decoders.

All actions are carried out directly with their handsets.

* Simply follow the instructions on page 6 of **this** manual.

For step 4 (operating a turnout) For NCE Power House Pro, use instructions on page 42 of the manual. Power Cab users, page 33 of the manual.

Digitrax systems (Zephyr, Empire Builder, Super Chief)

* Digitrax systems such as Zephyr, Empire builder and Super Chief do not require an entry into a database or system memory prior to operating accessory decoders. All actions are carried out directly with their handsets.
* Simply follow the instructions on page 6 of **this** manual.

For step 4 (operating a turnout) For Zephyr, use instructions on page 41 or page 42 of the manual depending on version. For Empire Builder, use page 75, for Super Chief, use page 80. (Page # may vary slightly with version)

Roco and Fleischmann DCC systems (Multimaus)

* Roco systems such as the Roco 10810 Multimaus do not require an entry into a database or system memory prior to operating accessory decoders.

All actions are carried out directly with their handsets.

* Simply follow the instructions on page 6 of **this** manual.

For step 4 (operating a turnout) For Multimaus 10810, use the instructions on page 40 of the manual. (Earlier versions vary, so do check the manual).

Addressing CROSSOVERS and LOOPS:

Instead of having independent addresses needing two operations to set crossovers and loop end point-work, you will find it easier to set BOTH of the ADS-2sx outputs to the same address, changing them both at once.

To make this easy, When carrying out Step 4/page 6 addressing, just have both of the ADS-2sx outputs switched to SET mode at the same time, and they will simultaneously adopt the number you want.

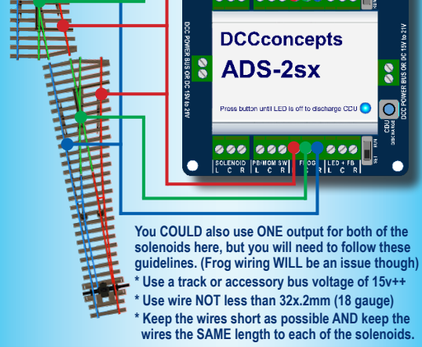
(Of course you MAY have to swap motor direction on one output. To do this just swap over the RED & Black wires. Frog wiring may need swapping too)

Instruction and overview: Cobalt ADS-2sx Special Applications

Using ADS-2sx to simultaneously control TWO live-frog points / turnouts whenthey are used to create Storage Loops and Crossovers

When two points / turnouts form a crossover, the crossings/frogs are always at opposite polarities as per this simple diagram.

Therefore you will need to use BOTH the ADS-2sx frog switches for separated frog power. This means that you need 1x ADS-2sx per crossover.



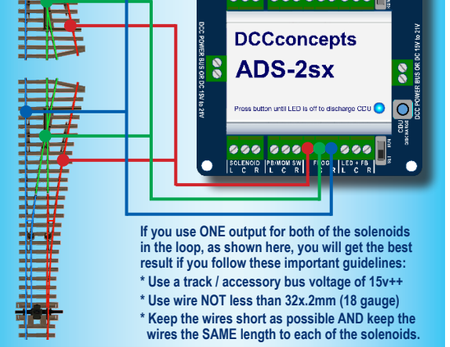
You COULD also use ONE output for both of the solenoids here, but you will need to follow these guidelines. (Frog wiring WILL be an issue though)

* **Use a track or accessory bus voltage of 15v++**
* **Use wire NOT less than 32x.2mm (18 gauge)**
* **Keep the wires short as possible AND keep the wires the SAME length to each of the solenoids.**

When two points / turnouts form a loop, the crossings/frogs are always at the same polarity as per this simple diagram.

Subject to the guidelines below you can power TWO solenoid motors from ONE ADS-2sx output.

Therefore you will be able to control TWO loops, including live frog control, from ONE ADS-2sx.



If you use ONE output for both of the solenoids in the loop, as shown here, you will get the best result if you follow these important guidelines:

* **Use a track / accessory bus voltage of 15v++**
* **Use wire NOT less than 32x.2mm (18 gauge)**
* **Keep the wires short as possible AND keep the wires the SAME length to each of the solenoids.**

When it comes to Solenoids, efficiency REALLY matters as they are generally VERY power-hungry. While there are no DCCconcepts Solenoids, we DO test them all when we make our Accessory decoders. Our conclusion: Gaugemaster PM10, PM20 surface mount or the Hattons PM-01 are the best choices.