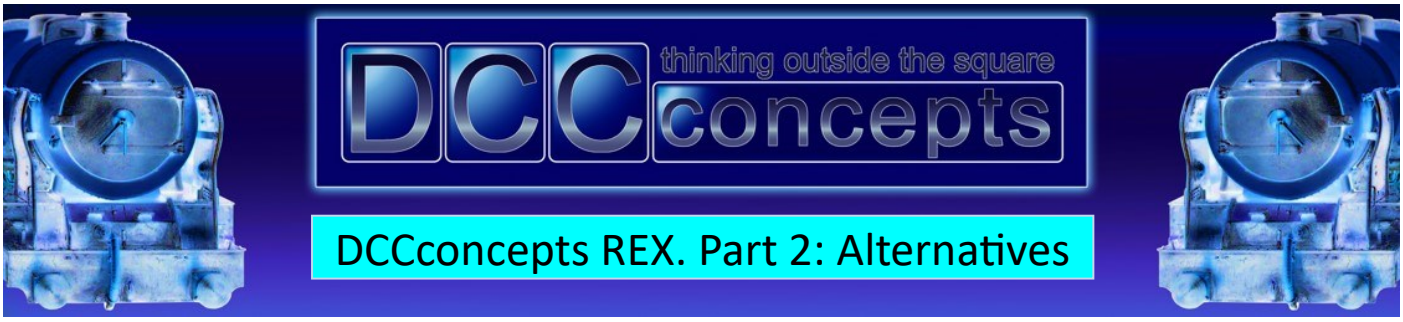


As we have already said… REX is a clever wee thing - compact, reasonable in cost and very versatile.

In this, the second newsletter about REX, we'll explore some other configuration options.

You will quickly find that the nice thing about setting REX up is the simplicity of it all, as any possible combination can be set up with only three switches!

The 3 switches are marked A, B and C in this diagram, and we'll call them A (left), B (top) and C (lower).

There are also 3 terminals for D (for control of REX). We've also added a red "position overlay" on the REX units used in the diagrams to help you get it all right first time. (We'll also recap a bit in case you missed "REX part 1")

I hope you enjoy "REX part 2" which will hopefully show you how easy it can be to do things you once thought too difficult to try, and show how versatile REX is!

Regards,

Richard Johnson

First, lets re-clarify REX's switch positions so that you can follow our descriptions easily.

Switch A: It decides if REX acts as one device or two.

When it acts as two, the top and bottom half will be able to react separately to two different commands.

The orange coloured dotted line here shows the split. The 6 terminals at the top give two SPDT outputs, the 6 terminals at the bottom will give you two more.

So, the two halves of Rex can operate separately or together, depending on the choices that you make.

Switch B and C: These decide if the outputs alongside the switch will be controlled by momentary contacts (toggle on, toggle off) OR by an on-off type contact

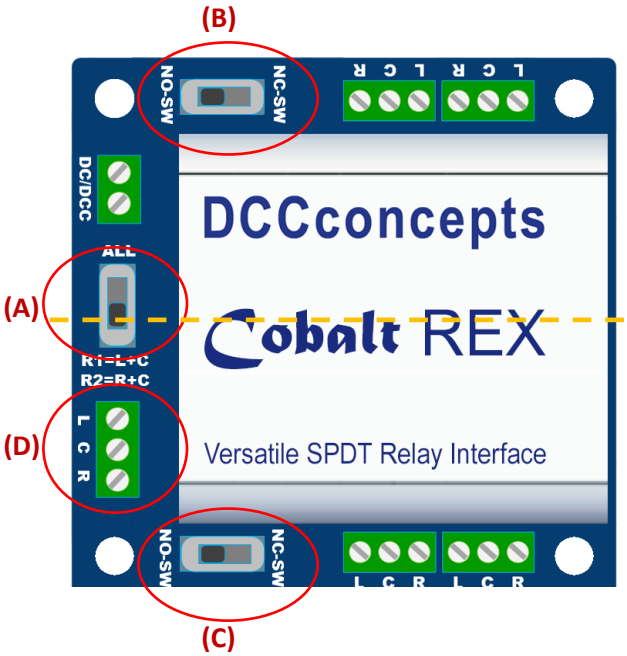
The labelling is simple. NO-SW is for a momentary switch / device and NC-SW for an on-off type switch.

Switch D: Please note the 3 terminals of switch (D). They are used to trigger REX.

The C terminal is common and C+L will control the top of REX, C+R will control the lower part.

Note:

When REX is set up to act as two independent devices you can use any combination of momentary, on-on switches or detector outputs to trigger it. With C+L and C+R able to be triggered by differing switch types or detectors, plus REX's ability to use all kinds of momentary or on-on switches, the sky is the limit!



DCCconcepts REX. Tiny but Very Clever

We are often asked about special accessory decoders to carry out special functions digitally, however, often they do not exist. Where they do, they can be both expensive and also narrow in function.

However there IS a way to switch most things without anything special OR great expense. Use a REX!

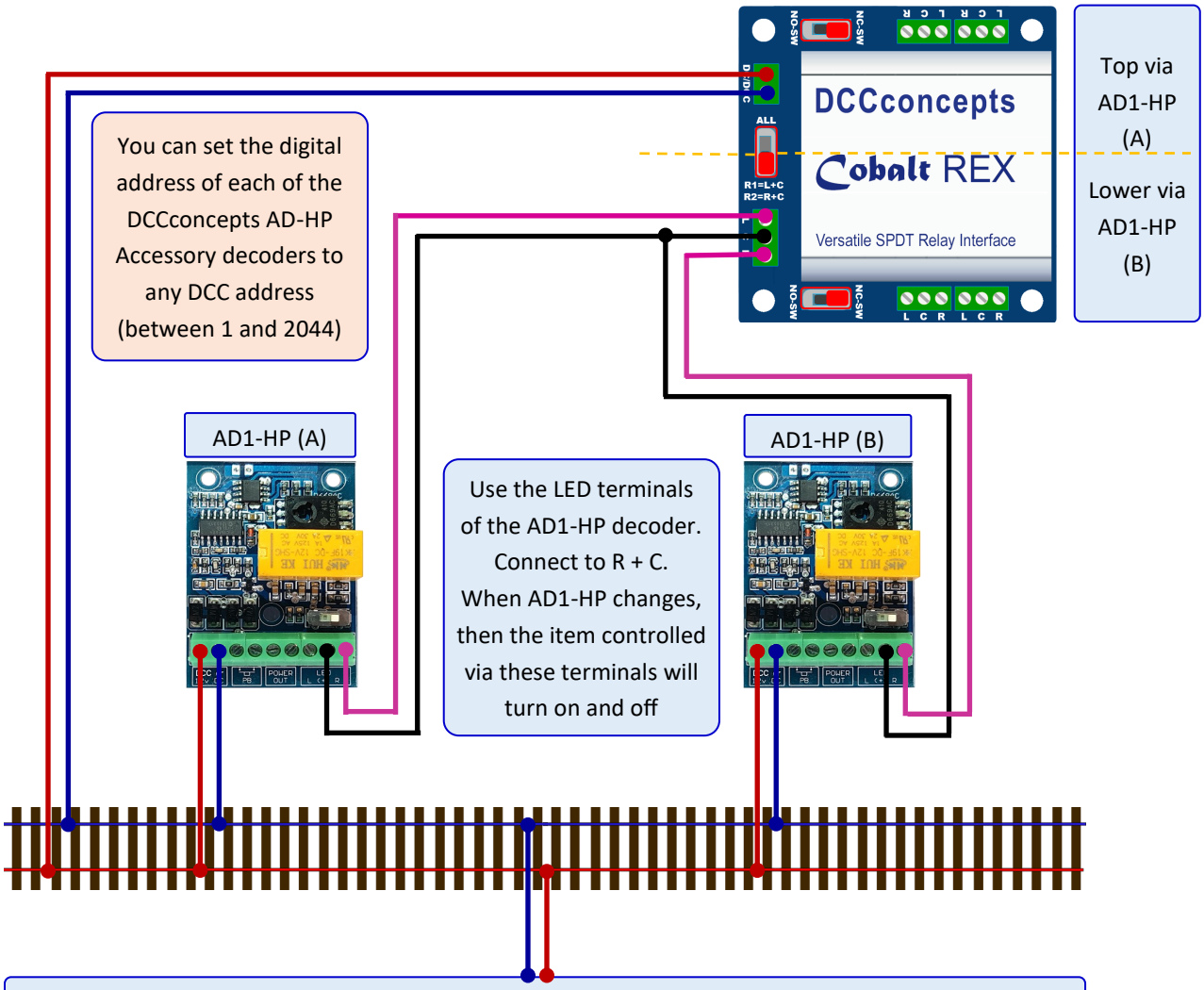
REX as a "Digitally controlled switch": In this example we will use REX + 2x DCCconcepts AD1-HP accessory decoders. Each AD1-HP controls half of REX giving 2 independent switches.

REX is not a DCC device but can be powered via DCC, so it is all connected to the DCC track bus.

Note that REX's control switches are to be set as shown. The wiring is quite simple.

How does it work? The LED outputs of the AD1-HP drive the control inputs of REX. Just give each AD decoder a DCC Accessory address and you have TWO independently switched circuits via REX.

As the REX outputs can be configured as SPDT, DPDT or simple on-off controls and are also able to handle high power if it is needed, you can control pretty well anything!



DCCconcepts REX. Tiny but Very Clever

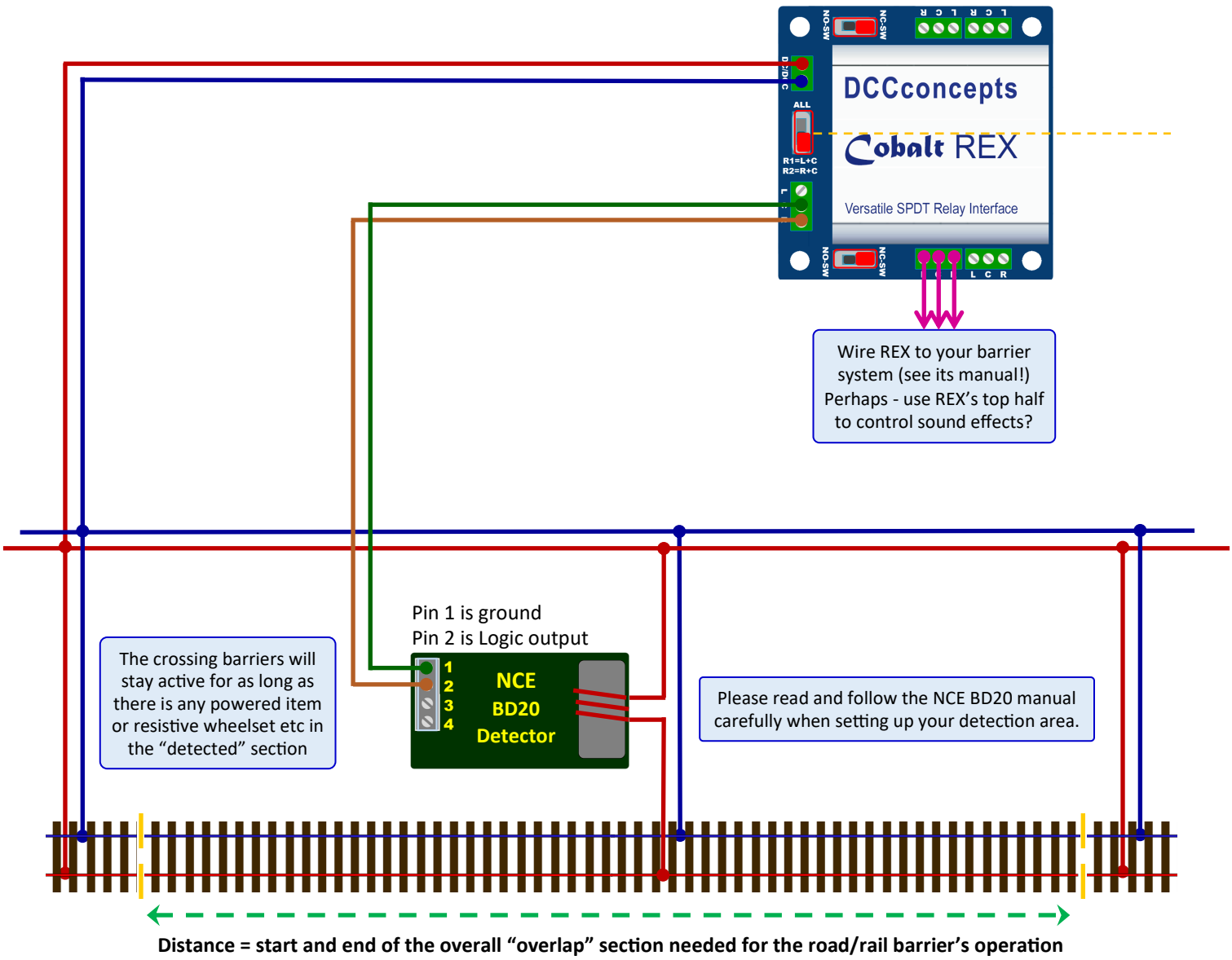
The grade crossing (Single track): The intersection between rail and road features on many layouts and we are often asked how to interface the crossing barriers so that they act as a train approaches. We will now show you TWO ways to achieve this using REX.

Example A: single track, bi-directional. REX plus a single "Inductive detector" that remains active for as long as there is a locomotive or other powered vehicle within the track section.

Again the wiring is very simple: Please be sure to use the correct terminals on the detector and set the REX switches as shown in the diagram.

You will need just one REX and one detector: We recommend the NCE BD20 detector as shown.

How it works: When the detector senses the presence of a train in the section, the road barriers will act to stop road traffic. Barriers will remain active until the train leaves the detector section.



DCCconcepts REX. Tiny but Very Clever

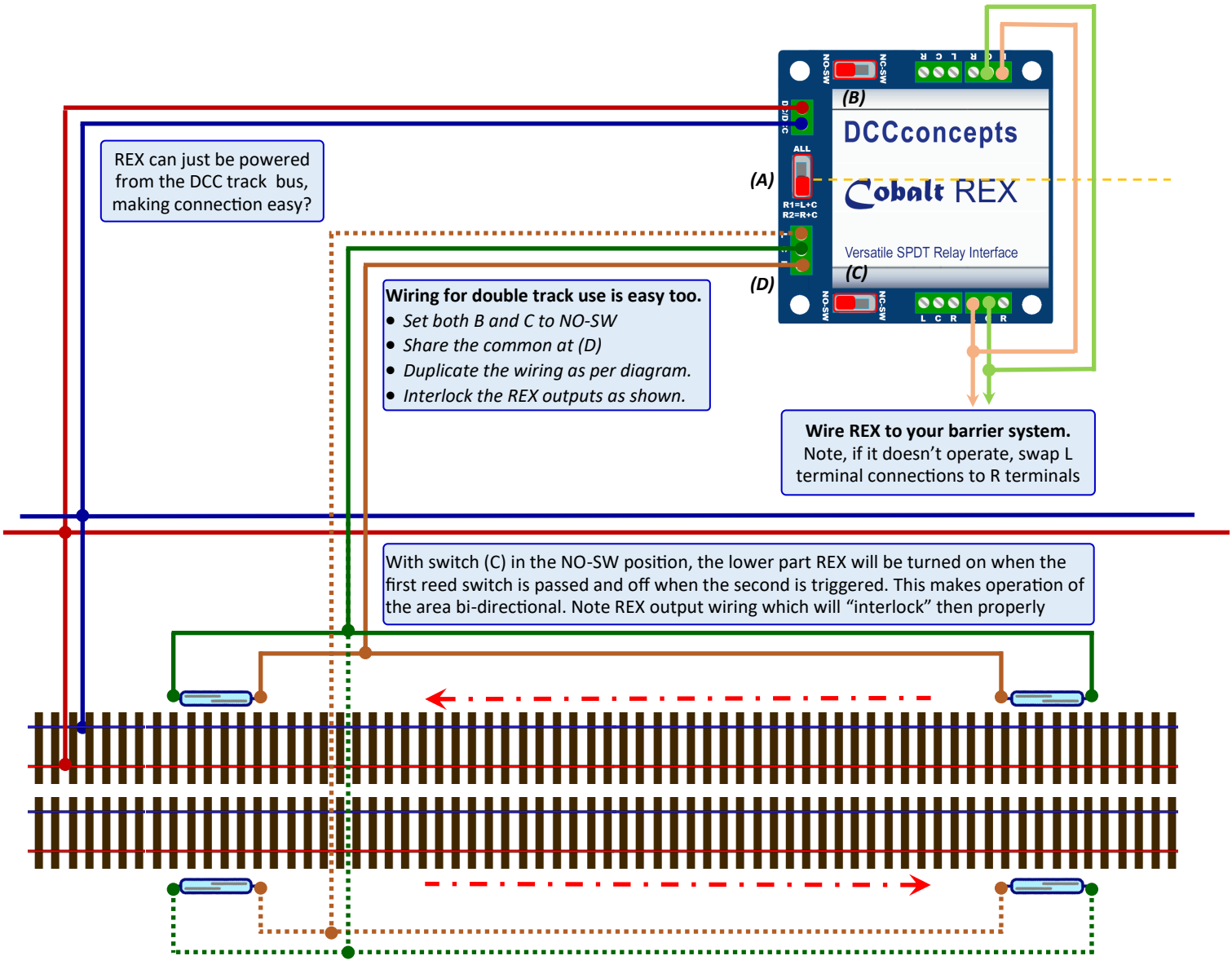
The grade crossing (double track): We can extend the use of inductive detectors by using two of them for double track… They need "interlocking" but we will still need only one REX!

Example B: Double track, Interlocked. REX plus TWO "Inductive detectors" that are active for as long as there is a loco / other powered vehicle within the track section. Interlocked so trains can pass in both directions at the same time, but only the last train to exit can release the barriers.

Again the wiring is very simple: Please be sure to use the correct terminals on the detector and set the REX switches as shown in the diagram. Please also note the OUTPUT wiring of REX.

You will need just one REX and two detectors: Here we used simple reed switches as detectors.

How it works: When either detector senses the presence of a train in the section the road barriers lower to stop road traffic. If two trains enter the section it's OK as REX's outputs are interlocked. Therefore the barriers will remain active or down until the last train leaves the detector section.



DCCconcepts REX. Tiny but Very Clever

An Automated DCC Shuttle for two trains: If you use ZEN BLACK decoders, you can easily create a fully automated shuttle train for two locomotives by also using REX to do the switching.

Whilst a single train shuttle needs only our ABC boards, we can use REX to allow more than one!

You will need: TWO DCCconcepts REX. You will also need a ZEN BLACK decoder for each loco and several of our DCCconcepts ABC control modules. Finally you'll need some "inductive detectors" that are active for as long as there is a loco / other powered vehicle within the track section.

How it works: The ZEN BLACK Decoder is in "Shuttle mode" which also allows station stops. The ABC modules are set at "Stop" at the ends of the track (stimulates a stop/wait/reverse/resume at the ends) and at "Slow" at the centre station (initiates a stop/wait/resume at the centre station).

Detectors control REX which in turn changes the turnouts etc to turn the ABC modules on and off.

Please note:

This has a bit more wiring, but it is still quite simple to do if you take it one step at a time.

DCC Loco decoders: Any ZEN BLACK Decoder will work perfectly. (While other brands may have ABC braking only DCCconcepts ZEN BLACK has the ability to manage an automatic shuttle like this).

Just set Decoder CV27 to a value of 4. (Please note the full DCCconcepts ZEN BLACK Manual which is available on line has clear instructions for timing adjustments or any other "Shuttle CV" settings)

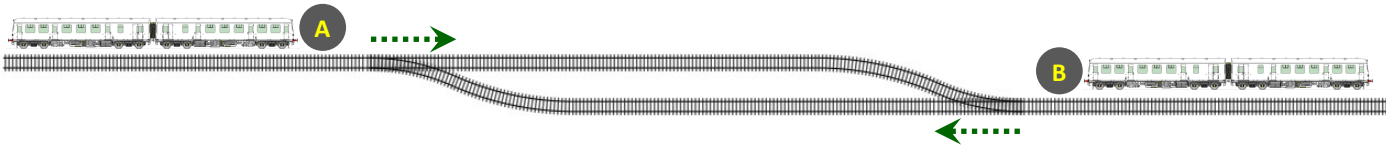
Turnout motors: These can be any brand but also need to have some form of associated onboard switching. We recommend Cobalt iP Analog or Cobalt Omega. (they are directly controlled by REX)

Detectors: Again we've used the NCE BD20 as it's readily available and simple to set up. Please be sure to use the correct terminals on the BD20 detectors. If you use others, check the outputs are appropriate before purchase as excessive voltage on detector output terminals may damage REX.

ABC modules: Wiring is simple and only one rail needs to have breaks. The wiring terminals are clearly labelled. Please look carefully at the instructions and be sure to move the red and blue headers to the correct position as shown in this diagram. If you need more advice… please ask us.

INITIATION OF THE SEQUENCE:

- Place the locos as follows after setting the decoder CV27 to 4 for DCC shuttle operation.

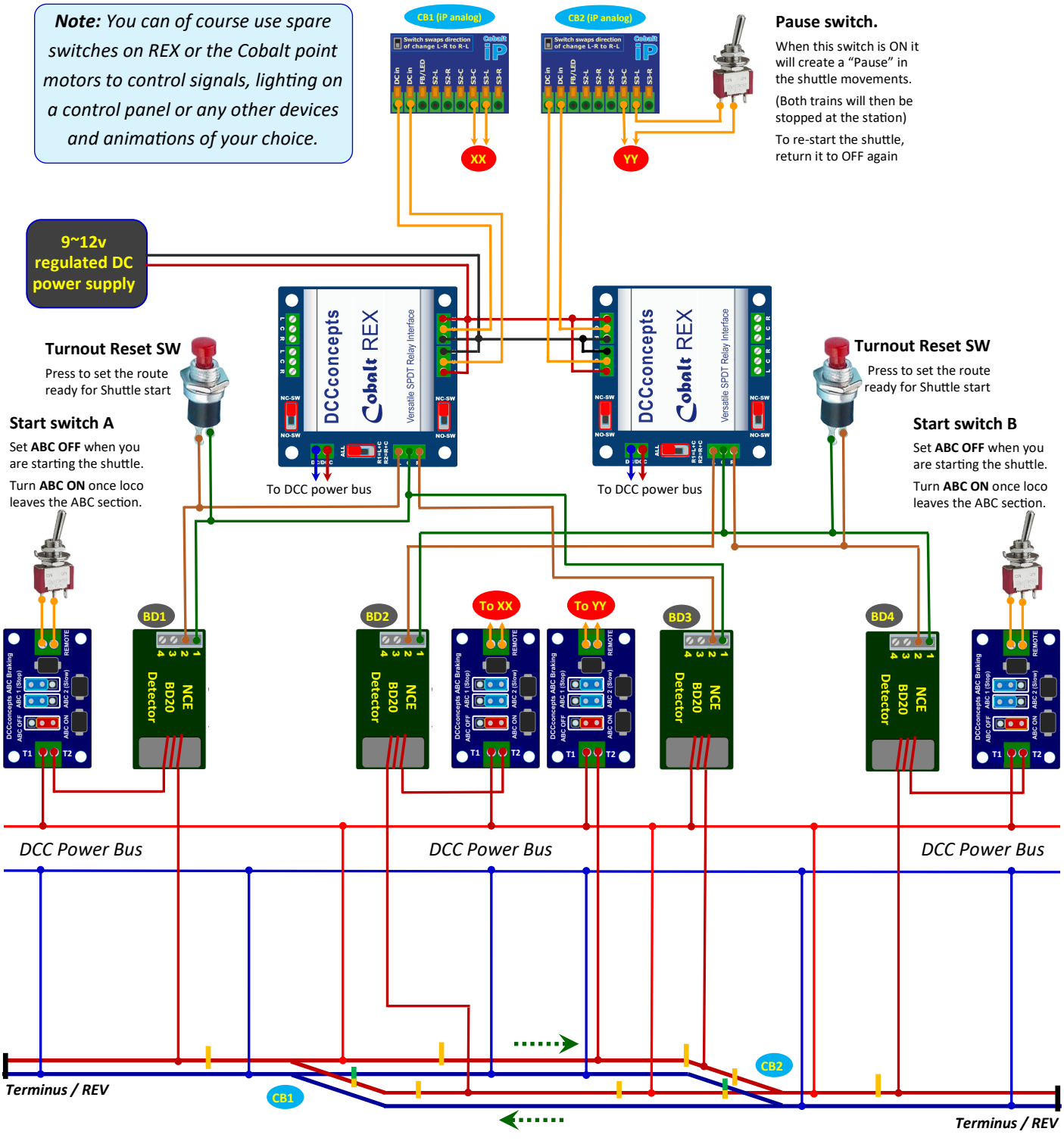


- Set both turnouts to the direction shown with the GREEN Arrows above. (If OK leave them. If they need changing, just use the **Turnout Reset Switches** to set them to the correct position)
- Use **Start Switch A** & **Start Switch B** to turn off the ABC at both ends of the shuttle track
- Start Train A first, then, when it has left the ABC section, **turn ABC on with Start switch A**. (No need to hurry - Train A will now wait at the loop until Train B arrives).
- Start Train B now. When it has left the ABC section, **turn ABC on again using Start switch B**. (When train B arrives at the station, it releases Train A and shuttle operation is underway).
- That is it… Your automated DCC Shuttle will now be in operation. If you wish, you can pause the trains with the PAUSE Switch or stop them at any time with your DCC system…
- To drive trains normally in this area, just turn off ALL ABC modules (Switch ABC boards to off)

DCCconcepts REX. Tiny but Very Clever

In this example, REX changes both point motors consequently toggling the centre ABC boards on & off to stop or start the shuttle train at the centre station. (OK as REX switches are high power)
(Use diagram with Cobalt iP Analog, Cobalt Omega or other motors that need a reversed DC polarity to change. REX manages the needed motor polarity changes when commanded by the detectors).

Note: *You can of course use spare switches on REX or the Cobalt point motors to control signals, lighting on a control panel or any other devices and animations of your choice.*



Points to consider when wiring the above diagram

General information:

- *All wiring should be to proper "best practice" for DCC layout wiring.*
- *The loop is set up for UK left hand running. This is retained as the train movement also re-sets the turnouts.*
- *Thicker Red & Blue lines represent the rails (track is simplified for clarity).*
- *Thinner Red & Blue lines represent the track power bus. (see the shuttle diagram)*
- *Look at the wire colours and make sure that the wiring is exactly as we show in this diagram. (of course you can chose your own wire colour code to match your own preferred wiring practice)*
- *As you can see only <u>one</u> rail needs a gap to create the track sections to be detected by BD20 or used with ABC.*
- *All of the critical Shuttle/ABC related rail gaps are shown with <u>orange</u> lines.*
- *We also left a <u>green</u> line at the turnout frogs to remind you to isolate properly for electro (live) frog turnouts.*

Re the ABC and BD1 wiring:

- *The ABC control boards should all have terminal 1 wired directly to the power bus. Terminal 2 is wired either to the track section or linked to the track in series with the detectors.*
- *It is important to keep the wiring of the BD20 detectors as we show - do not swap connections of T1 and T2*
- *All of the track sections can be as long as needed <u>except for</u> the short section specifically for detector BD3. (top of loop, right hand side)*
- *<u>BD3's</u> section should be quite short at about 150mm / 6" for DMU. (longer if trains are longer OR faster running)*
- *The detectors are marked BD1/2/3/4. Note: BD1, BD2 & BD4 are in series with an ABC module. BD3 is on its own.*

Re the switches used:

- *START and PAUSE Switches: We show SPDT On-On switches but you could use momentary buttons if you prefer. (The switches do not see high power so high power specification switches are not needed)*
- *RESET Switches: We show push button switches but you could use "Centre off" momentary switches if you wish. (The switches do not see high power so high power specification switches are not needed)*

There you have it. REX - A small device with huge potential and even bigger versatility. Able to do anything, REX, combined with a huge variety of other things, makes most ideas possible.

The part number is DCP-REX and it is available ex-stock now. At only £19.95 it is incredible value for such a clever, versatile device… and it is equally useful for AC, DC or DCC modellers.

A final comment:

We designed REX to be super versatile however we have to confess that we did not explore it the way we should have when it arrived… so even we did not appreciate just how clever it really is!

As a result - we also learned lots about REX while writing this newsletter. (By the way, every example has been built and tested so they will all work as well for you as they did for us).

We have all enjoyed our time experimenting with REX and we hope that you enjoyed our 2-part REX story. We also look forward to seeing or hearing about your own experiences with REX.

Thank you for sharing your valuable modelling time.

Now it's time for you to get creative too! (Why not join us on the FOCUS Modelling forum (at https://www.dccconceptsforum.com) and share your creativity with REX. Many more modellers can then benefit from your experience.)

DO support your local dealer if you can. Having a specialist model railway store close by is a great advantage for ANY modeller.

In addition to the UK, we also have dealers across the EU and around the world - you'll find these on Google Maps HERE.

If you have a specific subject that you would like us to cover, we will listen. Please email us at web@dccconcepts.com and we will see what we can do.

Until then, thank you for sharing your valuable hobby time with us.

Richard Johnson ***and all of the staff at DCCconcepts***

thinking outside the square
DCC concepts

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