

Q&A with DCC Fitting

We've collated your questions on DCC and put them to Andy Harris, Technical Director of DCC Fitting Ltd, to help those starting with DCC, or looking to upgrade, get to grips with the technology.



What do most beginners ask you?

Andy: Almost always, the first question is "What controller should I buy?" This is like asking "how long is a piece of string?"

It all depends on the power required by the size and complexity of the layout you have or are planning.

A country branch line terminus, only

capable of taking two locomotives at a time, is a very different kettle of fish to a club-sized layout with a big station and lots of running tracks, with electrically-powered points, signals and a turntable, all operated from the controller.

On a large layout it won't be long before you need to be fitting Power Booster Boxes,

and maybe even considering extra slave controller units to operate far-flung parts of the layout. But the best controllers can run a great many trains at once.

For the beginner, how would you categorise decoder types?

Andy: Yes, I know of quite a few

manufacturers. Many aspects of their products are inter-operable, but it is just as well to standardise on one. One common feature is that the power supplied to the track is always constant - on most systems it is just over 15Vdc.

Every locomotive or train set (Motive Power Unit, or MPU) needs its own decoder. This is 'addressed' individually from the controller, so that it alone reacts to the commands sent to it. All decoders convert the full voltage available at the track to the voltage needed to move the MPU and in the desired direction at the right speed.

The simplest items are 'running decoders', that tell their MPU to move in which direction and how fast, but can't replicate sound. Next come the sound decoders. The simplest of these will supply more or less correct sounds for the particular type of MPU.

To take a very common example - any sound decoder fitted to a GWR/WR 0-6-0 'Pannier' tank ought to carry a specially made recording of the authentic sounds of a real 'Pannier' tank, of which there are many preserved examples working around the UK. But, at the other extreme, there are no genuinely authentic sounds for very many classes that have long since been withdrawn, either because no example made it into preservation, or because they were withdrawn before the technology existed to capture their unique sounds.

Practice varies, but I try to find the closest 'real' locomotive I can with wheels of much the same diameter, the same number of similar sized-cylinders and the same type of valve gear.

But details do matter. For example, I wonder how many of today's enthusiasts know that LMS and London Midland Region steam locomotives had a much deeper toned whistle than locomotives from any other Railway Company/Region, and that this 'hooter' (as it was often called) came to the LMS from The Caledonian Railway in Scotland, one of the 123 Railway Companies that were amalgamated to form the 'Big Four' after the 1923 'Grouping'?

So, there is plenty of variety for modellers to choose from?

Andy: I know of at least six different configurations of decoder, from simple 6-pin ones, through to 8, 18, 20, 21 and 22 pin varieties. And of course, any one sound decoder can accept many sound tracks (one at a time), to suit many types of MPU files.

Can you 'retro-fit' any model locomotive or train set to run with DCC?

Andy: No. Some older MPUs just can't take DCC. For example, a 'split-chassis' locomotive is often impossible to equip, whereas some really elderly proprietary RTR models can be fitted with decoders. But even when you can fit a decoder, some older electric motors are not refined enough to accept the adjustment that it will provide.

Of course, many modern RTR MPUs come with sockets, and plugging a decoder into one automatically converts the model from 'conventional' electrical control to DCC. If the socket is only a simple 8-pin type, one can still cope when fitting a decoder that requires more connections.

Is DCC accessible for all budgets?

Andy: Model railways are not cheap, and DCC is at the luxury end. To achieve the best, you do, I'm afraid to say, almost always have to have quite deep pockets, unless you are good with electronics and soldering.

For example, to fully equip a large layout and all its MPUs with multi-function decoders and all the trimmings might cost thousands of pounds. Some of the big RTR manufacturers have introduced low-cost options, although they're limited. It may not have sound, and the fineness of control might be basic.

As an example, simple decoders can cost as little as £20, while those with more functions cost in excess of £100 each. And then they have to be fitted and fine-tuned to make them work properly and have a well-matched 'chuff rate', and to have squeal from the brakes only as the MPU is stopping - and not afterwards!

This is where people like me come in. And I'm afraid that we have to charge a reasonable amount for what we do.

What are common pitfalls to the technology?

Andy: There are some modellers who successfully do it themselves. But there are also plenty who try - then have to send their efforts to someone like me to sort out.

Until quite recently, all decoders had to be soldered into place - many still do. We call it 'hard-wiring'. Doing this it is only too easy to 'blow' the decoder and to ruin it, needing a replacement.

What special skills do you need?

Andy: Well, skill at soldering does come into it, plus a good understanding of all aspects

of DCC and its fast-moving developments.

Can you advise on the best way to 'Hard Wire' a Decoder?

Andy: All wire joints between the decoder and the motor should be soldered and insulated, using 'heat-shrink' insulating tubing; depending on the make of decoder, some do not come already insulated, which they must be. Avoid wrapping a decoder too tightly in insulating material; all of them need the air to flow around them or they can overheat. Also ensure that you position all wires to avoid them being trapped between the chassis and the superstructure when re-assembling the model.

DCC and its crucial colour-coded wiring can prove difficult for colour-blind modellers. Is there a solution for the visually-impaired?

Andy: This is only a problem if you're having to 'Hard Wire' (ie solder in) a decoder where no socket is provided. You do then need to know the sequence (eg from left to right) in which the wires are attached to the decoder.

Unfortunately there is no universal standard, and different manufacturers follow different conventions.

One of our readers has experienced decoders that revert to their default address of 3, following a period of off-layout storage for a few months. What might be the cause of this problem?

Andy: It sounds like a communication problem between the command station and the decoders. It can be caused by using 4-digit addresses; changing them all to 2-digit might help. But do be sure not to use a 0 as the first character in an address.

Are there any basic tips you can give to the would-be user of DCC?

Andy: Yes. There are two points to make: First: Be sure to use a good weight of cable to supply power to the layout, with each track length individually powered. Do not rely on rail-joiners (often called fishplates) to get the power from one rail to the next.

Second: Don't despair. With skill and care, good results can be achieved with inexpensive systems. But it is true that deep pockets help. DCC is not cheap, and managing to afford good equipment, and getting good advice and help are the solutions to success.