

Using

# 'STAY ALIVES'

The capacitor is a useful electronic component and the latest generation of sound decoders allow these to be connected to maintain uninterrupted sound. **MIKE WILD** explains how they work and which brands support their use.

**I**F YOU HAVE READ OUR digital sound installation features before, you have probably heard the term 'stay alive' used on a regular basis. A

'stay alive' is an energy storage circuit which can be connected to a DCC decoder, either sound or non-sound, which will keep a locomotive moving or the lights on when it crosses a small dead

section of track due to dirt or other interruptions.

The concept of the stay alive isn't new. All are based around the use of capacitors – a small electronic component which charges up through a support circuit and then discharges when required. The good thing about DCC and stay alives is that the decoder handles this automatically for you where they are equipped to do so.

There are two types of stay alive circuit – two and three wire systems. Both do the same thing but use different wiring configurations. ZIMO and Doehler & Haass sound

chips employ a two wire stay alive system (positive and negative) which must be connected the right way around. Blue is always the positive lead on these while either black or grey will be the negative wire. With ZIMO decoders, some have wires pre-soldered to the decoder to allow for connection of a capacitor unit, such as the MX645R 8-pin type, whereas others including the MX644D 21-pin and smaller MX648 family require the connections to be made to the decoder after purchase by the modeller. Each decoder comes with a manual to explain the process involved, but in the case of those which require soldering direct to the decoder you will need to have your soldering skills up to scratch.

Doehler & Haass requires the positive connection for a stay alive to be joined to the blue common positive lead from an 8-pin decoder while the grey negative goes to a separate solder pad on the decoder called ground. Its location is detailed in the comprehensive manuals for these decoders and we recommend bookmarking or saving the PDF manuals for future reference.

Further to this, the ESU decoders now use a three-wire stay alive system (red, white and black) for charging and discharging when required to keep a model on the move. The principles are the same and the stay alive support is available on all LokSound V5 decoders (the latest generation).

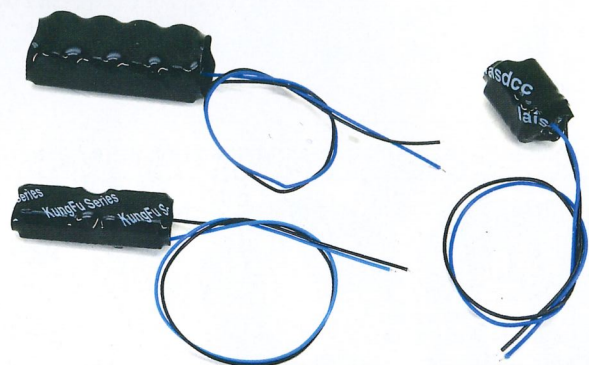
## Choosing a stay alive

Now we know which decoder brands support stay alive and the difference between two and three



**GO ONLINE!**  
VISIT [WWW.KEYMODELWORLD.COM](http://WWW.KEYMODELWORLD.COM)  
TO HEAR THIS IN ACTION

Stay alive energy storage packs make a huge difference to the performance of sound fitted models by providing uninterrupted power to the decoder to keep the locomotive moving and making sound. This Class 59 has a ZIMO MX645R sound decoder with a Lais 860009 stay alive pack connected. Its power distribution is managed by the ZIMO decoder when the chip detects a loss of track power.



A wide range of stay alive types are available to suit a range of applications. Variance include capacitor size, storage capacity and arrangement. These are all two wire stay alives from Lais which can be used with ZIMO and D&H decoders.

wire types, we can start choosing how we provide that energy storage. In some cases, such as the ZIMO MX645R and MX644D, it is as simple as soldering the leads to a single capacitor as the charging circuit is already built into the decoder. However, the downside of that is that a single capacitor isn't necessarily going to provide the level of on-board energy storage we will want.

An alternative is to use a pre-built stay alive pack such as those available from DCC Concepts, TCS and Lais. These are factory built with a charging circuit which means they can be joined to the ZIMO and D&H sound decoder families mentioned here without any modification. We have used all three types repeatedly in our sound installations and there are several shapes, sizes and power levels available off the shelf.

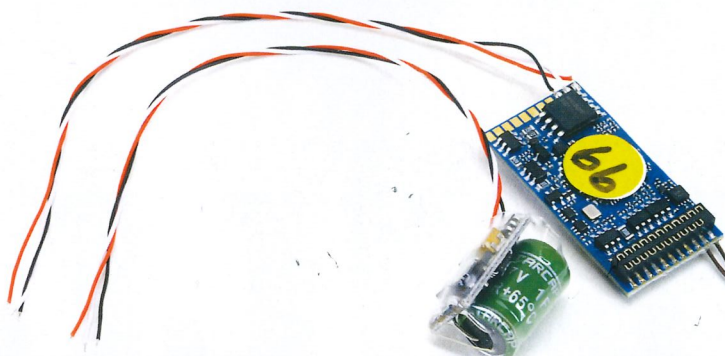
A favourite where it fits is the Lais 860009 which offers up to 20 seconds of on-board energy storage from a bank of four capacitors which measures 27mm x 10mm x 9mm. This pack is also delivered with a charging circuit from the factory, making it suitable to connection

to a wide range of sound decoders from the ZIMO and D&H catalogues. Also well worth looking at for applications where space is limited are the Lais Kung Fu stay alives which come in three formats to suit different locomotive interior spaces.

DCC Concepts produces high power stay alive packs, also delivered from the factory with a charging circuit, which offers up to two metres of travel for a locomotive off-power. The pack measures 32.3mm x 16.1mm x 5.3mm. More stay alive packs are also on the way from DCC Concepts and we will be reporting on those in a future issue of *Hornby Magazine*.

For more choices, there are also two-wire stay alive packs available from Train Control Systems which can be used with ZIMO and D&H decoders – Cat Nos. KA1 and KA2. These have recently been reengineered by TCS for greater efficiency.

For those looking to make the most of the new ESU LokSound V5 stay alive connection, there are fewer choices at the moment with the primary choice being ESU's own device – Cat No. 54671. This comes with a single capacitor and charge circuit which is pre-wired for connection to a V5 sound decoder. It can provide up to four seconds of onboard energy storage.



ESU's latest LokSound V5 decoders support a three-wire stay alive system which can be connected to ESU's 54671 stay alive circuit. This provides up to four seconds of on-board energy storage.

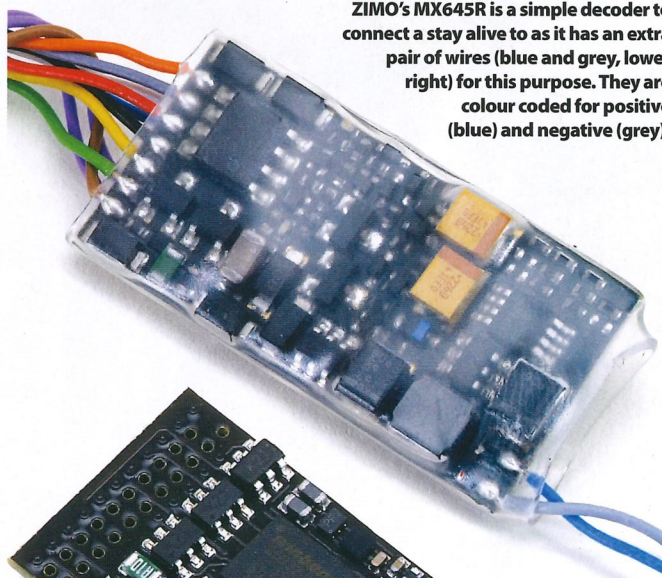
## Never stop

Stay alive capacitor packs are hugely advantageous for sound locomotives as not only do they keep the motor running during brief power interruptions, they keep the sound working too so there is no drop in audio while a locomotive is in service. We've employed stay

alives in as many of our sound installation projects as we can which gives us consistent running qualities throughout and they are particularly useful in small locomotives. If you haven't added a stay alive to your DCC sound locomotives yet, we are certain that you will be impressed by the results when you do. ■

## USEFUL LINKS

Digitrains	<a href="http://www.digitrains.co.uk">www.digitrains.co.uk</a>
Locoman Sounds (D&H decoders)	<a href="http://www.locomansounds.com">www.locomansounds.com</a>
YouChoos	<a href="http://www.youchoos.co.uk">www.youchoos.co.uk</a>
DCC Concepts	<a href="http://www.dccconcepts.com">www.dccconcepts.com</a>
TCS	<a href="http://www.tcsdcc.com">www.tcsdcc.com</a>
ESU	<a href="http://www.esu.eu">www.esu.eu</a>
ZIMO	<a href="http://www.zimo.at">www.zimo.at</a>
Doehler & Haass	<a href="http://www.doehler-haass.de">www.doehler-haass.de</a>



ZIMO's MX645R is a simple decoder to connect a stay alive to as it has an extra pair of wires (blue and grey, lower right) for this purpose. They are colour coded for positive (blue) and negative (grey).

Not all decoders have leads pre-soldered for the connection of stay alives. This is a ZIMO MX644D which has solder pads on the rear of the decoder for a stay alive – the blue arrow marks the positive connection and the black arrow marks the negative connection. These need to have wires soldered to them where a stay alive is required.

