DCC concepts
thinking outside the square
DECODER INSTALLATION ADVICE
⊃ DAPOL CLASS 68 IMPROVEMENT
Zen 218-6 for direction independent 6-function lighting

The Dapol Class 68 is a nice loco, however we found that the Dapol approach to decoder installation and lighting was not really done in line with "standard DCC practice", and that it failed to allow for our preference in direction independent lighting control.

This is because Dapol both tried to make it all things to all people by adding multiple switches and that inevitably introduced compromise. They also appear to have chosen to use a decoder with two "virtual functions" rather than a true 6-function decoder - and as you can see from the pictures here, in order to accommodate this, they have also had to make some simple "post production" circuit board modifications.

Curiously, removing these "post production modifications" and adding two short links will return the loco to a more appropriate state for correct lighting!

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This change does require some soldering. It is however extremely simple, so with a little care when using the soldering iron, they are well within the skill-set of most modellers.

All of the minor changes needed are very clearly shown in the photographs.

This advice document covers the very simple changes needed to give total lighting control of all lighting in a Dapol Class 68 when combined with a "Standards Compliant" 6-function decoder.

We used our 6-function Zen Z218-6 6 function decoder. It works beautifully with this locomotive.

The modification will allow full 3-stage use of head lights and it also adds the ability to properly control the red tail lighting, so you will now be able to use them or not depending on whether the class 68 is running light-engine or operating in service with a train.

Full lighting NO halo lights	Lower lighting HALO lights on	Full lighting HALO lights on	Full control of rear or tail lights

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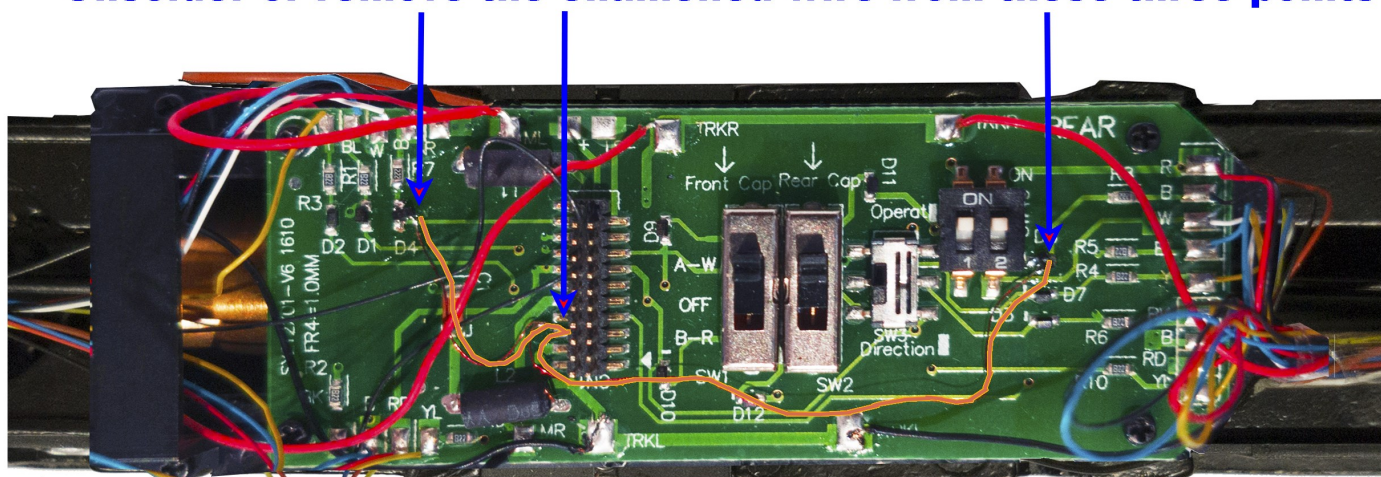Zen 218-6 for direction independent 6-function lighting

STEP ONE: REMOVE the ENAMELLED wire LINKS
They are shown clearly in this image as we have highlighted them in ORANGE.
Hold the wire under slight tension & touch the solder pads with a clean, hot soldering iron.
A little flux added before using the iron will actually make it come off more tidily. If there is any excess solder, use some "De-soldering braid" to mop it up. Part number DCS-DSB

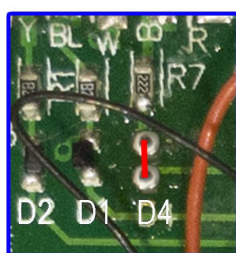**Unsolder or remove the enamelled wire from these three points**

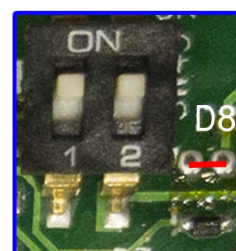## STEP TWO: (a) REMOVE the small components at D4 and D8.
   (b) ADD small wire links at D4 and D8 (RED lines in the picture).

Again a quick touch of a clean iron with the aid of a little flux. Just heat and flick the parts away with the tip of a small screwdriver, etc. Then add the small wire links as shown in red.
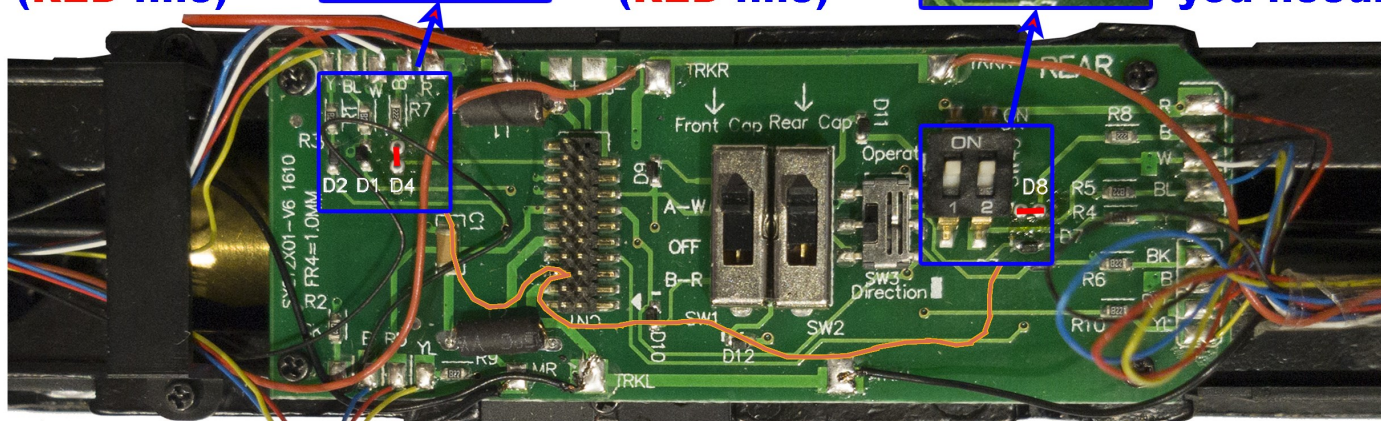
Remove the part at D4 and then LINK the two solder pads (RED line)

Remove the part at D8 and then LINK the two solder pads (RED line)

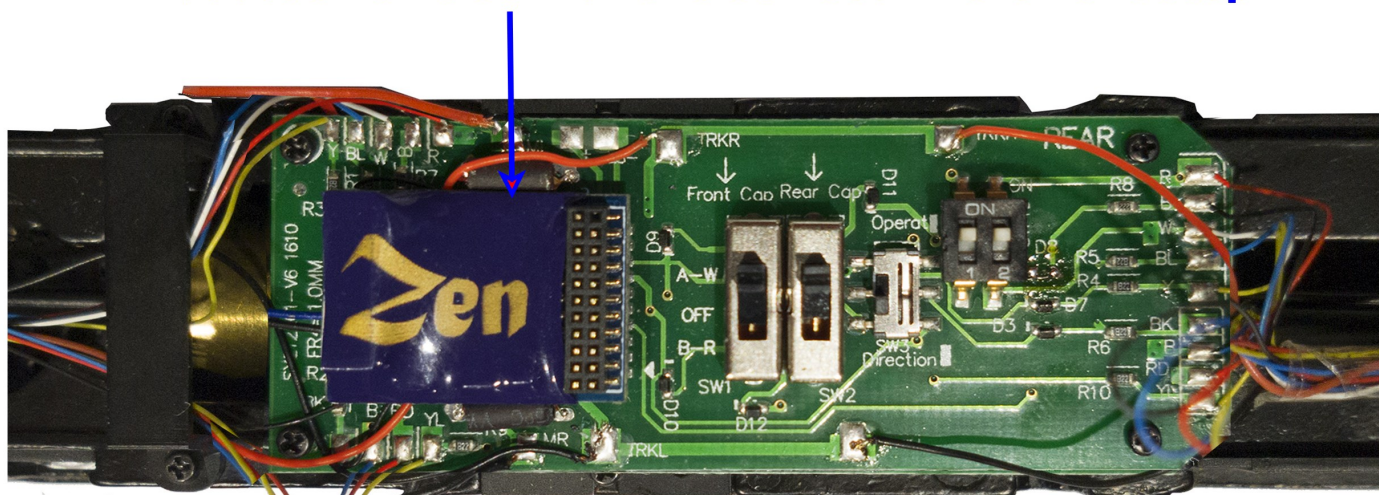**That's it You have finished all of the changes you need.**

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STEP THREE: Plug in the DCCconcepts ZEN218-6 decoder (DCD-Z218-6)

This is a direct plug installation. Add a "Stay-Alive" to the black and blue wires if required.

That is it: you have done all of the work necessary and you are ready to go. In the next few simple steps, we will test your work first, then proceed with the CV changes needed.

Plug in your Zen Z218 6-function decoder and set the decoder CV's as we have advised in the next step

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STEP FOUR: Before you go any further, test in "Programming track" mode.

We do not think you will have any problems at all, but it is a good idea to put all of your new decoder installations onto the programming track before running them on the main.

This is because the "Program track" output of a controller has very limited power and if it senses a problem, it will warn you that something is not right and give you a chance to correct the problem instead of damaging the decoder!

OK… with everything good to go, lets move on to decoder setup.

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STEP FIVE: Setting up the lighting for full control.

While you may also want to change address, adjust momentum or change the mid and top volts settings, we will just cover the lighting here to keep it simple.

Please note that in comparison to a "standard wiring approach" Dapol chose what is really a non-standard allocation of the function wires so it may appear a bit strange to experienced DCC users - And is probably why setup also confuses those new to the process!

However - follow our instructions and it WILL work OK. If you are new to all this, relax. If you make a mistake or lose your way, it is easy to re-set the decoder to ex-factory condition by setting CV 8 to 8 and starting again. (also - NO step you take while setting CVs will damage our decoders).

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STEP SIX: Settings for the DAPOL switches (on the PCB)

Set all the switches on the DAPOL circuit board to position 1 or ON (UP on all our photographs)

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STEP SEVEN: CV settings for full lighting control with a ZEN218-6 decoder.

A reminder: any CVs with an asterisk * *beside them will need amending from the default setting*

(While it is not needed for the 21 pin / Dapol installations, we have added wire colour info for modellers who may use this setup for installations into 8-pin locomotives)

CV description and purpose: (function output assignments)   **CV Setting**

CV33 = White wire - Forward light mapping / setting …………...   CV33 =1

CV34 = Yellow wire - Rear light mapping / setting ……………...   * CV34 = 4

CV35 = Green wire - Function 3 (aux1) mapping / setting ….......   * CV35 = 2

CV36 = Purple wire - Function 4 (aux2) mapping / setting ….......   CV36 = 8

CV39 = Brown wire - Function 5 (aux3) mapping / setting ….......   CV39 = 16

CV40 = Pink wire - Function 6 (aux4) mapping / setting ….........   CV40 = 32

CV description and purpose: (Light output effects settings)

CV49 = White wire - lighting setting steady on (directional) ……   CV49 = 0

CV50 = Yellow wire - lighting setting steady on ………………….   * CV50 = 32

CV51 = Green wire - lighting setting steady on (directional)   * CV51 = 16

CV52 = Purple wire - lighting setting steady on ………………….   CV52 = 32

CV53 = Brown wire - lighting setting steady on ………………….   CV53 = 32

CV54 = Pink wire - lighting setting steady on …………………..…   CV54 = 32

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Light action on your Dapol class 68 when CVs are set as per the above:

When you select the functions on your controller

F0 - (or "headlight function)   The headlights on either end will work in directional mode

F1 -   The tail lights at #1 end are on - NOT direction dependent

F2 -   The tail lights at # 2 end are on - NOT direction dependent

F3 -   Halo lights at #1 end are on - NOT direction dependent.

F4 -   Halo lights at # 2 end are on - NOT direction dependent.