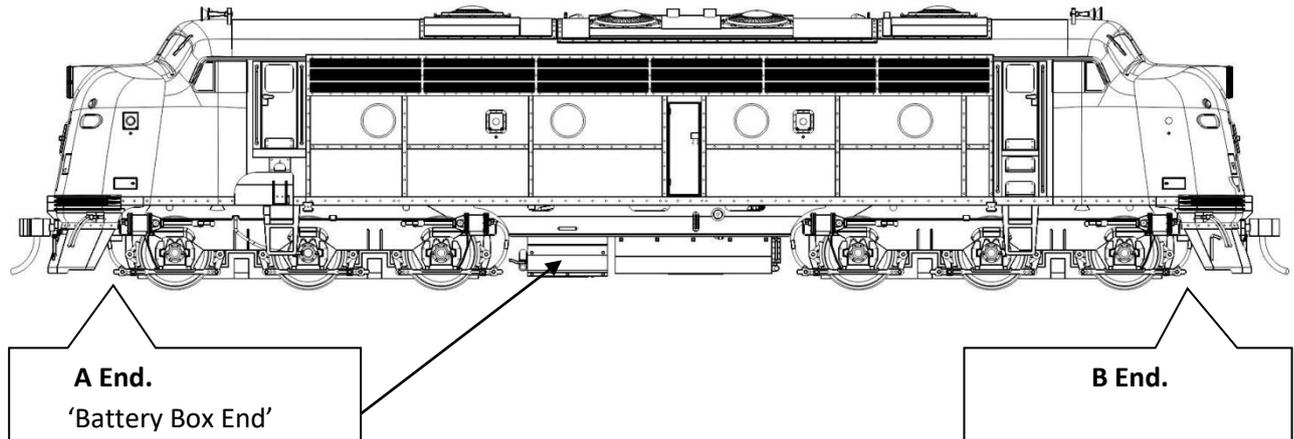


Auscision Models

B Class Locomotive Operating Information

Your Auscision Models B Class locomotive's main printed circuit board and associated lighting has been designed to function as a **DC** and **DCC Sound Decoder Installed Model**. In these notes reference is made to the A end and the B end of the model. This diagram will assist in identifying which end is which.



DC Model

The **DC** model is able to control the locomotives lighting via the micro switches on the bottom of the fuel tank. The lighting is directional. The switches are able to isolate, turn on/off:

1. The Locomotives Headlights / Fog lights (on applicable versions)
2. The Locomotives Number Boards and White Marker Lights.
3. The Locomotives Red Marker Lights.

For the **DC model** the lighting connection on the main printed circuit board requires connection at the three plugs marked **DC**. The Headlights, Number Boards and Marker Lights connection is via the larger 14 pin wiring connection plug. Certain later period body versions also have Fog / Ditch Lighting on one or both ends of the model. These also require connecting on the applicable ends to the smaller plugs marked **DC** (See image on page 3)

If you're going to operate your model on a DC system /controller then read no further. If you plan on fitting an after marker decoder or your model is a DCC factory decoder installed model then please read on.

DCC Ready Model - fitting an aftermarket decoder

The B Class models main printed circuit board has been specifically designed to function through the '**NEM660 standard**' 21pin connector and integrate with an **ESU Loksound V5 decoder**. Via the 21 pin connector this decoder functions with four individually powered auxiliary lighting outputs (Headlight front, Headlight rear, Aux 1 and Aux 2) and a further eight individual logic controlled outputs (Aux 3, 4, 5, 6, 7, 10, 11, 12) which the main circuit board has electronic components included for their operation.

The **Factory DCC Decoder Installed Model** has the lighting connection via 3 separate plugs. One larger common 14 pin connection for the Headlights, Number Boards and Marker Lights, and on certain later body version models up to two smaller plugs for Fog / Ditch Lighting on the applicable ends. These all connect to the plugs marked **'DCC'**. (See image on page 3)

When selecting an aftermarket decoder a few details may need to be considered first. As there are two standards of decoder 21pin connections available on the market, the **NEM660** version and the **NRMA** version, two lighting connection possibilities are available on the Main PCB. The lighting connection will be dependent on the brand and version of the aftermarket decoder being used. Generally speaking any aftermarket 21 pin decoder can be fitted.

For the majority of aftermarket decoders with a reduced number of auxiliary lighting outputs, the Models **Reversible Headlights and Fog/Ditch Lights** along with **Aux 1 (Front Number Boards, Front White Marker Lights, Rear Red Markers lights)** and **Aux 2 (Rear Number Boards, Rear White Marker Lights, Front Red Markers lights)** will function as long as the Lighting is connected to the **'DC'** PCB plug connections.

Note: If using a four lighting output decoder the Lighting functions can also be isolated with the micro switches on the bottom of the fuel tank. (E.g. turning the opposing end, red marker lighting off).

Alternatively refer to the link below for further decoder possibilities. This is an excellent source of information which addresses the 21pin NEM660/NMRA standards and their associated differences and functionality issues, along with a chart identifying which other brand decoders and versions that may also be suitable.

<http://www.sbs4dcc.com/tutorialstipstricks/21mtconnector.html>

Fitting the decoder - once the model's body is removed from the chassis, taking care with the body's wiring and lighting connection plugs, first remove the small 21pin DC adaptor PCB from the main PCB's 21 pin plug. Removal of the DC adaptor PCB also removes the components associated with motor noise suppression for DC function. Then, and paying close attention to the pin alignment, firmly push the decoder onto the 21 pin plug.

Note: When altering the Models Lighting plug connection between **DC and **DCC**, inadvertently plugging the lighting into the wrong plug should pose no risk of damaging any circuitry, although care should be taken to ensure the lighting is connected to the correct plug for the decoder that has been selected.**

Speaker connection is via the supplied connector plug/wiring harness, fitted to the plug marked 'SP' (see image on page 3). Keep in mind matching the chosen speaker and decoder's amplifier impedance.

ESU Loksound V5 DCC Decoder Installed Model

Your **Factory installed DCC Sound B Class Model** is fitted with an **ESU Loksound V5 Decoder**. All switches on the bottom of the fuel tank are to remain in the turned on position. The Decoder connects to the main printed circuit board via the 21pin connector. The models lighting connects via up to three plugs at the main PCB (see image on page 3):

- The Headlights, Number Boards and Marker Lights connect to the main PCB via the larger 14 pin connector to the plug marked **'DCC'**.

- If required, adjustments and individual finetuning of your DCC model and decoder can be made primarily in two ways.
 1. The most simple and effective way is with an ESU Lokprogrammer interfaced with a Windows operating system PC.

The details of which can be found here:

Note: An updated Lokprogrammer software Version 5.0.0 or newer will be required to function with the V5 decoder.

Product Information... <http://www.esu.eu/en/products/lokprogrammer/>

Instructions..... <http://www.esu.eu/en/downloads/instruction-manuals/lokprogrammer/>

Updated Software..... <http://www.esu.eu/en/downloads/software/lokprogrammer/>

2. Alternatively adjustments can be made via your DCC operating system controller or with other PC based software such as JRMI. Refer to your operating system manual and the ESU V5 decoder manual.

Quick Start Guide

Care has been taken in order for your model to perform straight out of the packaging. In general it has been programmed to ESU Loksound's V5 Decoder default values. As modellers we all have different ideas and preferences as to how our models perform. Should you wish to further adjust how your model performs, the following is a quick start guide to some of the primary settings required to do so.

Excerpts from the ESU Loksound V5 and Lokprogrammer references are included in the description and are as follows. (Refer to the V5 Decoder Manual, the Lokprogrammer Manual or your DCC systems programming section for full programming details)

- The Default Locomotive Address for your B Class Model is **3**.

In order to change the locomotive address, refer to chapter 9.1, 9.2 'Address Settings' of the ESU V5 Decoder Manual. Individual DCC controller systems may also have a programme track output and function available for this purpose.

- Decoders operating within a **DC operating system** will function as per ESU's default DC settings. For further detail also refer to the DC notes contained within the 48 class operating information document.

<http://www.auscisionmodels.com.au/PDFs/Auscision%20HO%20Scale%2048-830%20class%20DCC%20Operating%20Information%20v4.pdf>

Motor Auto Tune Procedure

Should you encounter any running performance issues, the following Auto Motor Tune procedure may help resolve the problem.

This feature will automatically adjust the Motors Back-EMF in most cases. This is not meant to be a “cure all” solution. In most cases this will be all that is required, however there still may be the need to perform some manual adjustments.

In order to use this automatic adjustment you will first need to place your locomotive on a section of track paying attention to the set direction of travel. Write a value of 0 to CV54. Activate function F1.

Be sure to have plenty of clear space ahead of your locomotive. Allow 2 metres of available track

Your locomotive will quickly take off at full speed and then stop while reading the motor responses. This will automatically set the motor values required in CV51, 52, 53, 54, and 55. Original file default values for these CV's will alter following this adjustment. Depending on the user's operating system /power supply from which the auto tune was performed, variations in the CV value's can occur.

Following a motor auto tune the value in CV53 (Regulation Reference Voltage) may need further manual adjustment. Typically using a 28 speed step controller, ensure your model has a gradual speed increase across all 28 steps. If a maximum speed is reached at a lower position with a flat response across the remaining steps then the value in CV53 will require adjusting to obtain the optimal setting. Values in the CV53 range are as follows, 0 = 0v through to 255 = 25.5v.

For further detail refer Loksound V5 instruction manual, chapter 11 for full motor adjustment details.

Minimum and Maximum Speeds

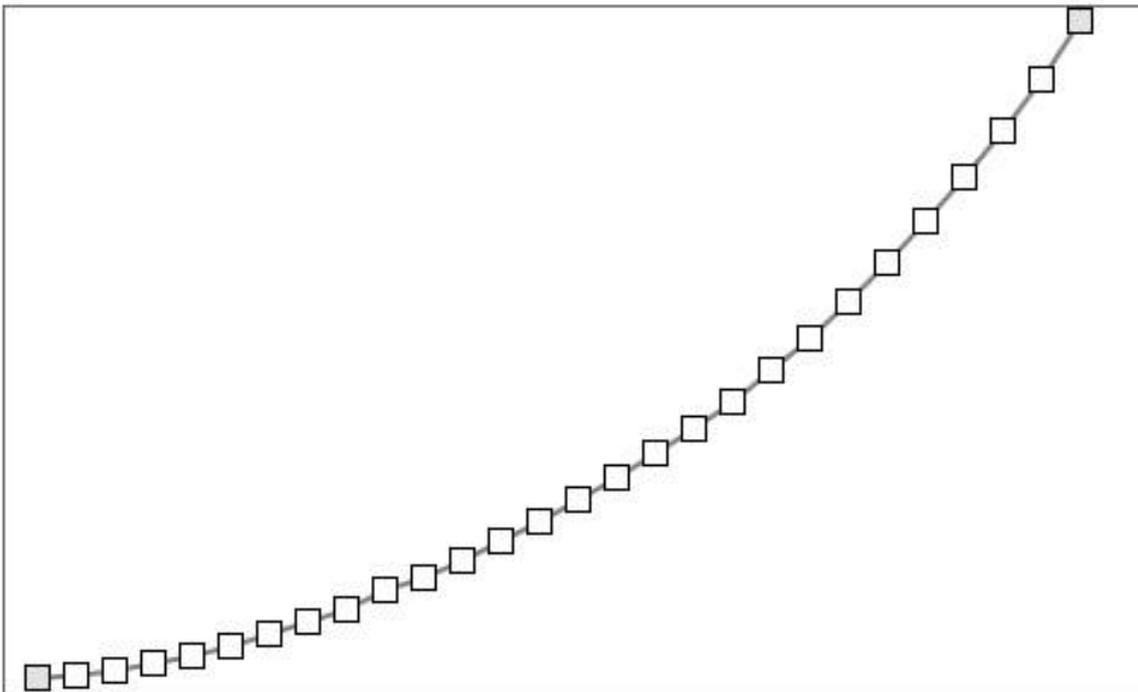
As default, the decoder will automatically detect the user's controller speed step settings, with the controller using 14, 28 or 128 steps (28 being common).

- Default is the Exponential 1 28 step speed table as per the following graph utilising minimum and maximum speed settings.
- Defaults are CV2 = 2 (minimum speed value) and CV5 = 255 (maximum speed value).
- These two values define the compression of the curve while automatically adjusting the 28 individual speed steps in between that make up the curve. Alternatively and using Lokprogrammer there are several other speed preset tables available, as well as being able to adjust each of the 28 individual speed steps by changing the values at CV67 through to CV94 with values in the range between 1 and 255. Full details can be found in Chapter 10 'adaptive driving behaviour' of the Loksound V5 instruction manual.

Speed table

Use three values (VStart, VMid, VHigh)

Use speed curve



Index: Value: Preset:

Minimum speed



Maximum speed



Acceleration Momentum and Deceleration Momentum

The models acceleration momentum time and deceleration momentum time can be adjusted individually.

The time for accelerating from 0 to maximum speed is adjusted in CV 3 (default value = 20, which equates to 17.92 seconds) while deceleration is set in CV 4 (default value = 20, which equates to 17.92 seconds). Value Range is from 1 to 255 or from 0.9 to 228.48 seconds. (Approximately 0.89 seconds for each increment of value)

The times set in these CVs work speed dependant. Therefore, the acceleration distance and the brake distance are longer at higher speeds. In other words, the faster the locomotive moves, the longer the distance until it stops.

DCC Function Table

F0	Directional Headlights
F1	Directional Fog / Ditch Lights
F2	Playable Air horn
F3	Drive Hold (Full throttle feature)
F4	Dynamic Brake
F5	Locomotive Brake (Full throttle feature)
F6	Headlight Dimmer Control
F7	Front A End. Marker Light and Number Board Logic (See notes below)
F8	Prime Mover Locomotive Sound (Start/Stop)
F9	Rear B End. Marker Light and Number Board logic (See notes below)
F10	Manual Coupler sounds
F11	Coast (Full throttle feature)
F12	Run 8 (Full throttle feature)
F13	Radiator Fan. SV16 Selectable. Fan Mode Auto = 0, Manual = 1 (Auto Mode, When Function Active Turns On At Speed Step 12/28. Sound Remains On Until Speed Step 0 and End Timer Completes)
F14	Acceleration / Shunting mode (Turns off any momentum settings. Runs at half speed)
F15	Volume Fade Control (set at 50% normal volume level - ideal for loud multiple unit consists)
F16	Manual Sanding Valve on/off
F17	Manual Compressor on/off
F18	Brake Set / Brake Release (Default is on. Automatically plays Brake Valve Sound when moving off or stopping)
F19	B Class Handbrake – Apply and Release (When applied, brakes squeal and speed limited)
F20	Flange Squeal (Sound will begin to function at Speed Step 4 and above)
F21	Headlight, #1 / Front End (not directional)
F22	Headlight, #2 / Rear End (not directional)
F23	Number Boards #1 / Front End
F24	Number Boards #2 / Rear End
F25	White Marker Lights #1 / Front End
F26	White Marker Lights #2 / Rear End
F27	Red Marker Lights #1 / Front End
F28	Red Marker Lights #2 / Rear End
F29	Manual Engine Sound Notching. Used in conjunction with F11 and F12
F30	Cab Door. Open/Close
F31	

Random Sounds

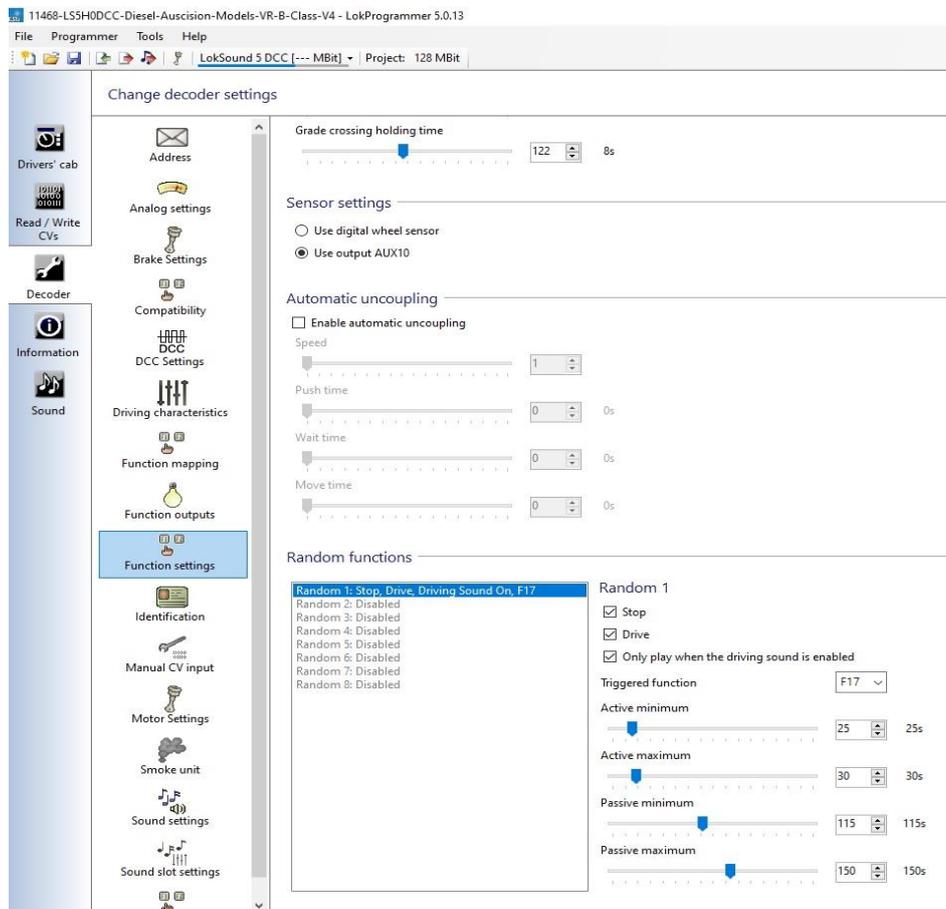
With previous Loksound Select and V4 decoders Random Sounds such as ‘Compressor’ were turned on as default and would start and stop automatically. The parameters within the sound flow in most cases made it difficult to alter their condition.

The V5 decoder along with the updated Lokprogrammer software allows more flexibility to use and control random sounds. The following is an overview on how to activate and adjust these sounds using Lokprogrammer. With reference to the below screenshot the following settings can be adjusted to your personal preferences if required. The random compressor sound will be used as the example, although virtually any sound contained in the default file can be used. The V5 also has the flexibility of importing further sounds into the models default file from ESU’s template sound files.

Refer to the default function table: Compressor being mapped to Function 17.

Under the **Decoder – Function Settings – Random functions** tab in Lokprogrammer, select position ‘Random 1’ and select triggered function **F17**, along with the **Stop**, **Drive** and **Only Play When Driving Sound Is Enabled** check box’s being ticked. If the ‘Drive’ check box is unticked the random compressor sound will only function when the locomotive is stationary. **Active Minimum** and **Active Maximum** is the variable length of time the random sound will occur, while **Passive Minimum** and **Passive Maximum** is the variable time frame in which the random sound will turn on and function. These values once selected will then require writing to the decoder in order for them to function.

For further information refer to Chapter 13 ‘Adjusting the Sound Effects’ in the Loksound V5 instruction manual.

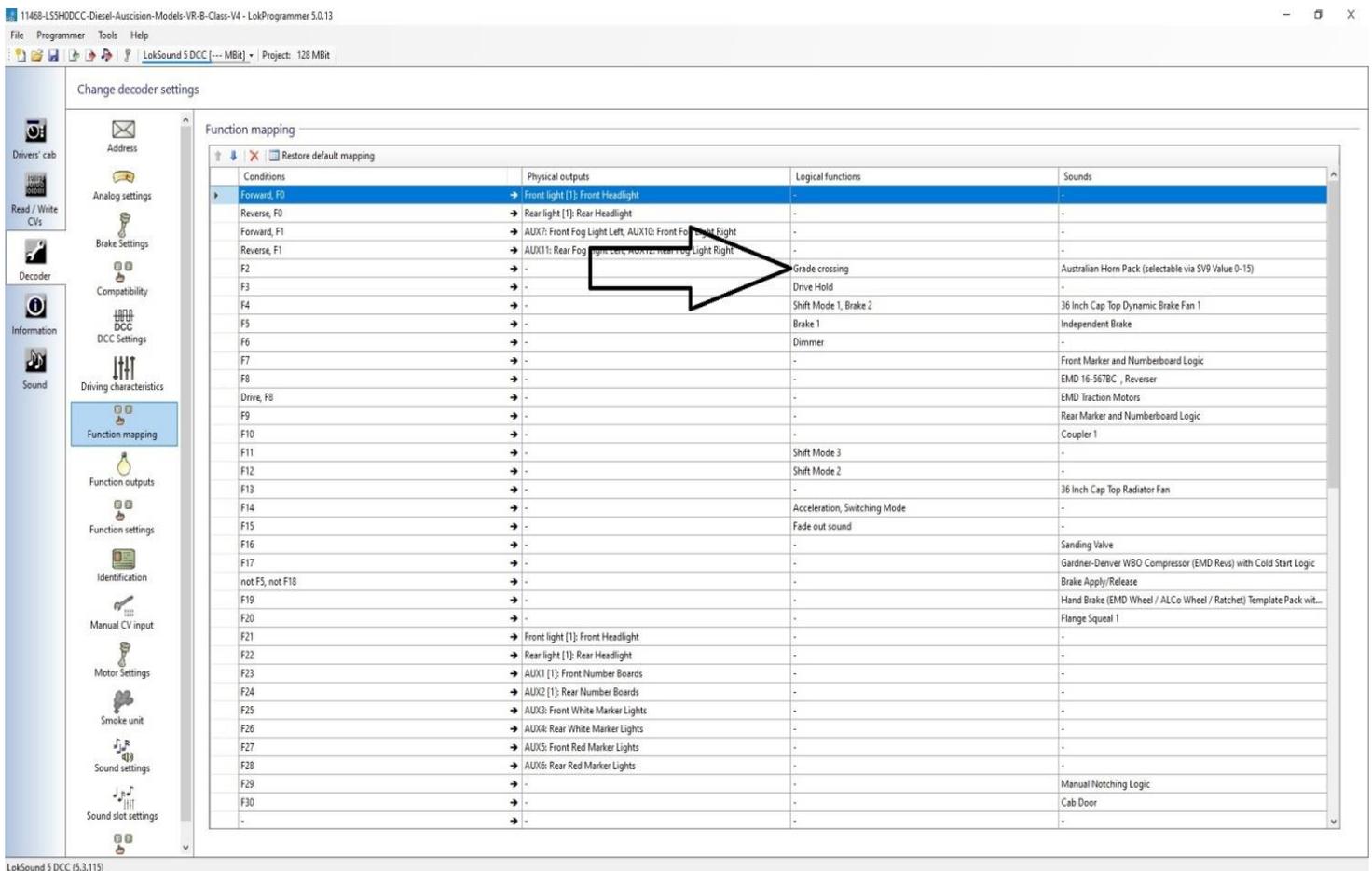


Fog / Ditch Lights

A number of B Class prototype locomotives had Fog / Ditch Lights installed later on during their working lives. A number of models have been produced to replicate these prototypes which include working Fog / Ditch Lights. These also have the ability to flash alternatively when the horn is blown as per some of the prototypes. Flashing Fog / Ditch Lights have been programmed into the sound project as a default setting.

If you wish to turn the flashing feature off using Lokprogrammer the 'Grade Crossing' tab in the F2 column requires the function to be turned off (unmapped) and the details written to the decoder. Refer the below image

Alternatively the following CV's require altering and writing the information to the decoder.
 Flashing Tuned on.... CV31=16 CV32=8 CV325=4 (Default)
 Flashing Tuned off... CV31=16 CV32=8 CV325=0



Flashing Rate and Grade Crossing Holding Time

As per the following image the flashing rate is set to 1.4 seconds with an 8 second flashing hold time. These rates can be adjusted with Lokprogrammer by using the sliders to adjust the preset values.

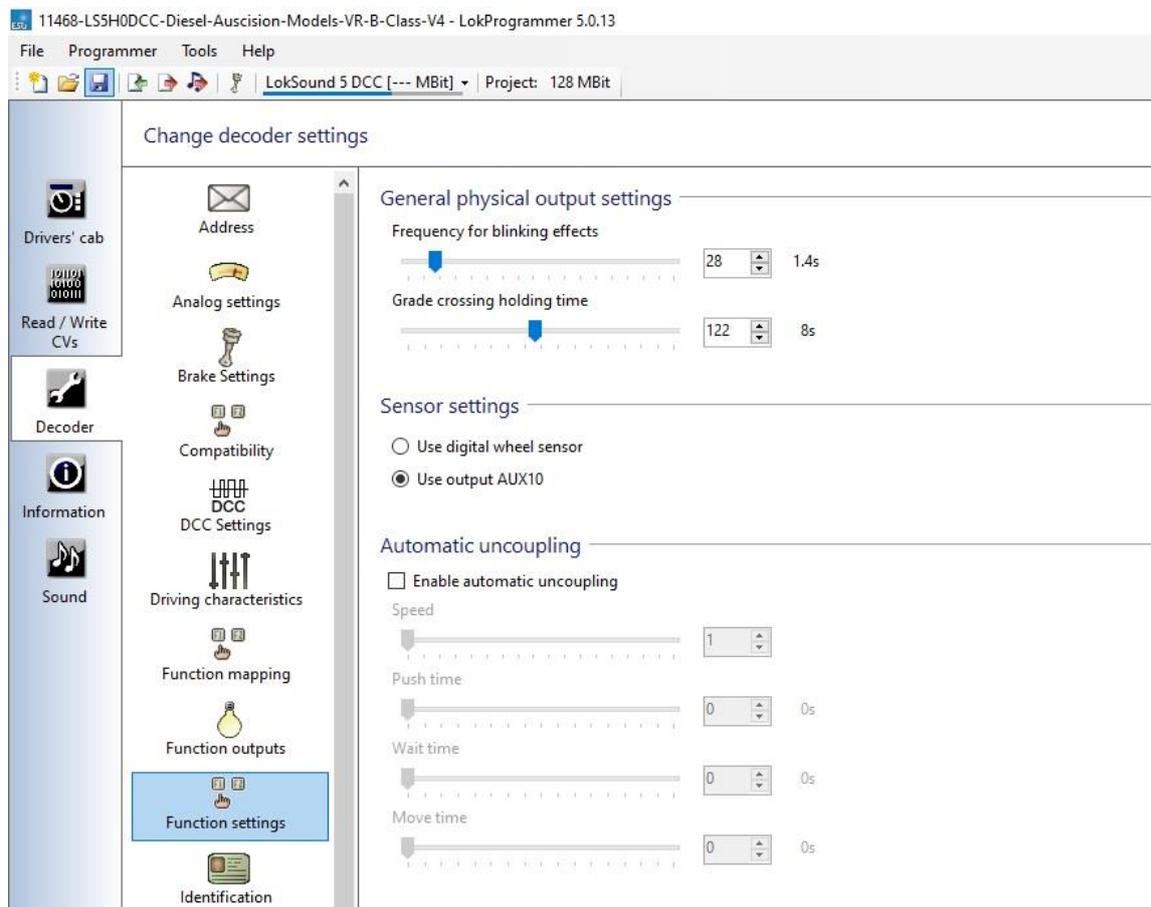
Alternatively the following CV's require altering and writing the information to the decoder.

CV112 controls the flashing rate. Default value is 28 for 1.4 seconds.

A value between 1 and 255 is required. Each change in value equates to 0.05 seconds

CV132 controls the flashing hold time. Default value is 122 for 8 seconds.

A value between 1 and 255 is required. Each change in value equates to 0.06 / 0.07 seconds



Function button 7 (Number 1 End Auxiliary Lighting Logic) **Function button 9 (Number 2 End Auxiliary Lighting Logic)**

The lighting for each end of the locomotive has been divided into four separate lighting states. By pressing the function key repetitively the following applies:

- State 1. All Lighting Off.
 - State 2. Number Boards On. White Marker Lights On. (As in leading end mainline running)
 - State 3. Number Boards On. Red Marker Lights On. (As with yard shunting. Both ends)
 - State 4. Red Marker Lights On. (As in the trailing end of a light engine movement)
- (State 4 is followed by State 1)

If required, the individual light brightness can be controlled / adjusted separately. Refer to the ESU V5 Decoder Manual, with reference to the auxiliary outputs 1 through 6.

Number 1 end Auxiliary Lighting

Aux 1 - Number Boards, Aux 3 - White Marker Lights, Aux 5 - Red Marker Lights

Number 2 end Auxiliary Lighting

Aux 2 - Number Boards, Aux 4 - White Marker Lights, Aux 6 - Red Marker Lights

PLEASE NOTE:

The following notes are relevant for the previously used Loksound Select Series Decoder as used in the Auscision 48 class model which had the following possible issue. The new Loksound V5 decoder utilises an extra 2 sound processing channels, (now 10 in total) and, following thorough testing, the problem appears to no longer exist in the V5. However if the issue should reoccur the following details can be followed in order to remedy the problem.

.....
In order for the Function 7 and Function 9 auxiliary lighting feature to work, ESU Loksound had to create a lighting logic template. This template is NOT built into the decoders function logic, however utilises two of the ten available sound processing flow channels.

Therefore, under certain circumstances and especially when BOTH ends of the model's F7/F9 auxiliary lighting are turned on, then some of the secondary sounds may not function. (For example brake squeal when stopping) This is due to the non availability of spare sound channels at that particular moment in time, and is not a fault with your decoder.

If any activated secondary sound function (including the F7 and F9 lighting) appears erratic/frozen turn off the locomotive prime mover (F8). This will then allow the processes selected and queued the available space to function and complete. Once complete the prime mover (F8) can be turned back on as normal.

If this type of sound response becomes an operating issue, then to free up sound channels the auxiliary lighting has also been mapped to be individually controlled with the Logic Functions F21 through to F28. (See function table)

Decoder Reset

If at any point your model's decoder becomes unresponsive, it may simply require a reset in order to regain normal function. You can reset the decoder to the current memory default settings at any time.

In most cases POM (Programming on the Main) will not work to reset a decoder. Please use a separate programming track.

To reset the decoder:

- Refer to the ESU V5 Decoder manual for full details.
- Enter the value 8 into CV8.
- To complete the reset, power to the decoder must be interrupted.

For ease of connection to the web links attached within this document, an online version of the B class Operating Information can be found on the Auscision website at the below link:

http://www.auscisionmodels.com.au/B_class_page.htm