Class 21 and 29 – User Guide Maintenance, Lighting and DCC installation

The Class 21 and 29 models model feature independent lighting function allowing separate control of Number 1 and number 2 end white / red lamps and also cab lights. Please note that unlike modern locomotives, prototypical lighting operation (depending on locomotive class) consists of (class 21) red lamps and white lamps, or (class 29) red lamps and headcode illumination. Both models lighting is directionally dependant.

This information sheet describes the operation for DC & DCC operation.

DC operation:
The factory setting is for traditional front and rear lights which operate directionally. i.e. White and red lamps change colour when the loco reverses direction. The cab lights operate directionally and are on at the same end as the front white lamps (or illuminated headcode). Using the two switches located on the underside the cab light at either end can be switched off. A further two switches are provided which will switch off entirely the lighting at No. 1 and/or No. 2 ends. Each switch function is indicated by a moulded caption.

DCC Operation:
If you are installing your own decoder please note the information in the 'Installing your own decoder' section below.

Factory fitted DCC:
Please note that these instructions are only relevant to locomotives supplied as 'factory fitted DCC' The loco address is 3. Lighting is arranged so that either 'Light engine' or Push/pull mode can be chosen. Factory fitted DCC versions are pre-programmed to operate the lighting prototypically.

If you perform a factory reset, please reset the CVs listed in the 'Decoder setup' section below.

DCC Functions (Factory fitted DCC):
F0 – Light engine mode, Front and rear lights illuminate appropriately in the direction of travel

F1 – Hauling mode (No. 2 end facing train) No. 1 end lamps only illuminate (White forwards, red reverse) No. 2 end lamps are off.

F2 – Hauling mode (No. 1 end facing train) No. 2 end lamps only illuminate (White forwards, red reverse) No. 1 end lamps are off.

F3 – No. 1 end cab light control. ON/OFF for the cab light, this is not directional. N.B. some controllers may only allow operation of F2 as a momentary switch, in this case the decoder will need to be re-mapped to move the cab control to a different function.

F4 – No. 2 end cab light control. ON/OFF for the cab light, not directional.

Installing your own decoder (Inclusive of Dapol 'Imperium' decoders which are not factory fitted):
Firstly, remove the DC blanking plate (the small PCB with switches fitted) and install the DCC decoder of your choice. For full operation, we recommend a 6-function decoder (i.e. Dapol Imperium 21 pin, imperium.dccsupplies.com part number **113187**) Please refer to the table below for function operation with other types of decoder.

Decoder Setup (Inclusive of Dapol 'Imperium' decoders which are not factory fitted):
No changes are required for the factory fitted version, but if you perform a decoder reset or install your own decoder, then you will need to configure the CVs (please refer to your controller handbook to regain correct operation. If you are installing an NMRA compatible 6 function decoder of your

choice, then these CVs can be used as a guide for programming, please check with your decoder manual that the CVs are relevant for your decoder. Lighting allocation to decoder output is also shown below for assistance in self-installing your decoder.

Decoder Factory reset: CV8 = 4 N.B. *This will remove the factory setup from your decoder and it will need to be reprogrammed as described in 'CV Settings' below.*

Functions available by decoder type:

- 2 function decoders: No. 1 end lamps Headcode box, White and red only
- 4 function decoders: No. 1 and No. 2 end lamps Red/White & Headcode box).
- 6 Function decoders: As 4 function decoders plus No. 1 & No. 2 cab lights.

Decoder output functions:

- F0F – No.1 end white and headcode lamps
- F0R – No. 2 end red lamps
- Aux 1 – No. 2 end white and headcode lamps
- Aux 2 – No. 2 end red lamps
- Aux 3 – No 1 end Cab light
- Aux 4 – No 2 end Cab light

CV settings (Dapol Imperium 21 pin 6 function decoder. NMRA standard):
CV33 = 5   CV34 = 6   CV35 = 10   CV36 = 9   CV51 = 24   CV52 = 0
(For Imperium 3 only) CV 59 = 1

If your controller only allows F2 to operate momentarily:
The default settings of your DCC fitted class 21 and/or class 29 model operate best with F2 set as 'Latching'. Your control system manual will describe how to change from 'momentary' to 'latching' mode.
If you prefer to change the operation of the decoder to assign lighting functions to different keys on your control system please follow the instructions below.
Change the two CVs for the lamps you wish to alter to the values shown under the function key you require to control those lamps. Please note that if moving functions within the range of F1-F3 additional changes are required. Select along the top, the desired function key and the function to change down the left side. Program the value reached in to the CV indicated. The decoder fitted to this model is a Dapol Imperium. Full programming information can be found on our website: www.dapol.com.

To be controlled by Fx (F1-6)							
Lamps	CV	F1	F2	F3	F4	F5	F6
#1 end lit	33	5	9	17	33	65	129
	34	6	10	18	34	66	130
#2 end lit	35	6	10	18	34	66	130
	36	5	9	17	33	65	129