

## SD049 - DP1 Diesel

F#	Spot Sound Description	Mode								
F0	Headlight/Rear Lights	T								
F1	Sound Enable/Engine Start	T								
F2	Multiple Horns	M	F2a_Hi_Hi_Short	F2b_Hi_Lo_Short	F2c_Lo_Hi_Short	F2d_Hi_Hi_Medium	F2e_Lo_Short	UNUSED	UNUSED	UNUSED
F3	Multiple Horns Fancy	M	F3a_Lo_Hi_Lo_Medium	F3b_Hi_Low_Medium	UNUSED	UNUSED	UNUSED	UNUSED	UNUSED	UNUSED
F4	Brake	M								
F5	Notch up	M								
F6	Notch Down	M								
F7	Return to Idle	M								
F8	Thrash	T								
F9	Diesel Cold Start override operation of F1, until disabled.	T								
F10	Compressor (Manual)	T								
F11	MARS Light*	T								
F12	Cooling Fan 1 (Manual)	T								
F13	Cooling Fan 2 (Manual)	T								
F14	Flange Squeal (Speed Dependent)**	T								
F15	Cab Light***	T								
F16	Drivers Console Light****	T								
F17	Coupling	M								
F18	Sound Guards Whistle	M								
F19	Engine Bay Lighting	T								
F20	Spirax Valve	T								
F21	<b>Aux1 - White Front Lights Off</b>	<b>T</b>								
F22	<b>Aux2 - Red Rear Lights Off</b>	<b>T</b>								
F23	<b>Aux 3 - Cooling Fan 1 (Auto)</b>	<b>T</b>								
F24	<b>Aux 4 - Cooling Fan 2 (Auto)</b>	<b>T</b>								
F25	<b>Shunt Mode</b>	<b>T</b>								
F26	<b>Creep Mode</b>	<b>M</b>								
F27	<b>Dynamic Brake</b>	<b>M</b>	<b>M = Momentary Action</b>							
F28	<b>AFC Enable</b>	<b>T</b>	<b>T = Toggle On/Off</b>							

F11 \*MARS Light - The default lighting effect is pre-set to MARS light operation. This can be changed if required. Please see page 2 overleaf for further instructions.

F14 \*\*Speed Dependent Flange Squeal will only automatically commence playback when the loco is between speed step 2 and speed step 60. Please see page 2 overleaf for further instructions.

F15 \*\*\*Cab Light only operates when the loco is stationary. When enabled, it will automatically switch off when the loco is in motion.

F16 \*\*\*\*Drivers Console Light will illuminate in the front cab, depending on direction of travel.

Please refer to the main HM7000 Series Decoder Reference Manual for further information

## F11 MARS Light Operation

This model of the DP1 Deltic, has a working MARS light fitted to either end of the locomotive. This is a simple toggle on/off operation by activating/deactivating F11 from your DCC control, or via the HM7000 app.

Note: F11 is currently set to MARS light operation (CV129 = 2) as per the table shown on page 2 below.

### Summary... Logic-Level Outputs

**HFO5 to HFO12** are logic level outputs designed to interface to digitally controlled ancillary features. i.e., A logic level output is rated at low current capability and a reduced voltage to directly drive logic level inputs. They may be used for dedicated functionality dependent on the decoder firmware type... e.g., STEAM generator control.

These **HFO5** and **HFO6** are controlled by **F3** and **F4** respectively on non-Sound decoders, for sound decoders use **F23** and **F24** respectively. Alternatively, these HFOs are referred to as **AUX3** and **AUX4**.

**HFO7 (AUX5)** through to **HFO12 (AUX10)** are function allocated depending on the sound project, so will vary.

**Warning...** HFOs can also be utilised for loco features other than lighting. When connected to non-lighting features the following CV information may or may not apply. This depends on the nature of the feature to be controlled. However, some “effect” modes listed below may have use with other types of connected peripheral devices.

HFO1, HFO2, HFO3, HFO4 and HFO7 to HFO12... the action/effect and brightness of HFO outputs can have various lighting type effects and brightness may be configured. See tables below.

HFO5 and HFO6 are toggle only digital outputs for logical control of other peripheral electronics. Unlike the above, they are not configurable. See next for configuration of lighting effects etc re HFO1 – HFO4 and HFO7 – HFO12. ...see tables below for further explanation.

Lighting.... HFO0 – HFO4 Function					
CV#	CV Name	Hardware	Default Value	Range	Comments
51	Lighting Effect F0 - (Front)	HFO1	0	0-7	Lighting Control 0: Constant bright light 1: Random flicker (fire box) 2: Mars light 3: Flashing light 4: Single pulse strobe 5: Double pulse strobe 6: Rotary beacon 7: Gyra light
52	Lighting Effect F0 - (Rear)	HFO2			
53	Lighting Effect F1/F21	HFO3			
54	Lighting Effect F2/F22	HFO4			

Lighting.... HFO0 – HFO4 “Brightness”					
CV#	CV Name	Hardware	Default Value	Range	Comments
55	Lighting Brightness F0 - (Front)	HFO1	8	0-8	9 Brightness levels available... 0: Off ... to 8: Maximum Brightness
56	Lighting Brightness F0 - (Rear)	HFO2			
57	Lighting Brightness F1/F1	HFO3			
58	Lighting Brightness F2/F2	HFO4			

Lighting.... HFO7 – HFO12 Function					
CV#	CV Name	Hardware	Default Value	Range	Comments
129	Lighting Effect	AUX5 HFO7	0	0-7	Lighting Control 0: Constant bright light 1: Random flicker (fire box) 2: Mars light 3: Flashing light 4: Single pulse strobe 4: Single pulse strobe 5: Double pulse strobe 6: Rotary beacon 7: Gyra light
130	Lighting Effect	AUX 6 HFO8			
131	Lighting Effect	AUX 7 HFO9			
132	Lighting Effect	AUX 8 HFO10			
133	Lighting Effect	AUX 10 HFO12			

Lighting.... HFO7 – HFO12 “Brightness”					
CV#	CV Name	Hardware	Default Value	Range	Comments
134	Lighting Brightness	AUX 5 HFO7	8	0-8	9 Brightness levels available...  0: Off ... to 8: Maximum Brightness
135	Lighting Brightness	AUX 6 HFO8			
136	Lighting Brightness	AUX 7 HFO9			
137	Lighting Brightness	AUX 8 HFO10			
138	Lighting Brightness	AUX 10 HFO12			

### **F14 Auto Speed Dependent Flange Squeal**

This model also features auto speed dependent flange squeal operation. Fitted to each motor bogey is an optical sensor meaning when negotiating R2 curves or greater and with F14 enabled, flange squeal audio will commence playback.

Operation is also speed dependent so the audio played will change when the locomotive travels slower or faster.

Note: This feature will only work when the loco is in operation between speed step 2 and speed step 60. If the locomotive is stationary or has reached SS61 or over, the flange squeal audio will fade out and stop.

## **F12/F13 and F23/F24 Cooling Fan Operation**

There are 2 individually controlled roof fans fitted to this model. Each motorised fan will switch on and off (manual operation) when F12 or F13 is toggled.

For a realistic mode of operation, the user can instead select an automatic mode of operation for each roof fan by enabling F23 and/or F24 on their DCC control system or via the HM7000 app.

Mode 1 - If F23 and /or F24 are enabled and the locomotive is stationary or within the Notch 1 trigger threshold (see diesel model trigger thresholds table below for speed step information), each fan will switch on and run for around 10 seconds before switching off. They will remain off for 30 seconds before the cycle repeats.

Mode 2 - If F23 and/or F24 are enabled and the locomotive is at the Notch 2 threshold or higher, each fan will switch on and remain on thereafter. When the engine speed drops below the Notch 2 threshold, mode 1 operation as above will resume operation.

## **Diesel Mode Trigger Thresholds**

A detailed overview on Diesel mode notch configuration and playback can be found in the main HM7000 manual under section “DIESEL LOCOMOTIVES... Engine Running Sound Playback.”

Please see table below...

<b>CV#</b>	<b>Description</b>	<b>Default</b>	<b>Range</b>	<b>Explanation</b>
	Idle			Applies to SS of < <b>DTT1</b>
<b>CV210</b>	Trigger Threshold 1 ( <b>DTT 1</b> )	5	5-15	Applies when SS > <b>DTT1</b> but < <b>DTT2</b> ... Plays Notch 1
<b>CV211</b>	Trigger Threshold 1 Window ( <b>DTTW 1</b> )	5	5-9	<b>DTTW1</b> ... Forces Notch to increase from Idle to Notch 1 and then Decrease back to Idle
<b>CV212</b>	Trigger Threshold 2 ( <b>DTT 2</b> )	30	25-45	Applies when SS > <b>DTT2</b> but < <b>DTT3</b> ... Plays Notch 2
<b>CV213</b>	Trigger Threshold 2 Window ( <b>DTTW 2</b> )	5	5-14	<b>DTTW2</b> ... Forces Notch to increase from Notch 1 to Notch 2 and then Decrease back to Notch 1
<b>CV214</b>	Trigger Threshold 3 ( <b>DTT 3</b> )	60	60-80	Applies when SS > <b>DTT3</b> ... Plays Notch 3
<b>CV215</b>	Trigger Threshold 3 Window ( <b>DTTW 3</b> )	5	5-15	<b>DTTW3</b> ... Forces Notch to Decrease back to Notch 2