SD055 - APT-P

F#	Spot Sound Description	Mode								
F0	Headlight/Rear Lights	T								
F1	Sound Enable/Engine Start	T								
F2	Multiple Horns (6)	M	F2a_Low_Short	F2b_High_Short	F2c_Low_High_Short	F2d_High_Low_Short	F2e_Low_High_Low_Short	F2f_High_Low_High_Short	UNUSED	UNUSED
F3	Multiple Horns Fancy (6)	M	F3a_High_Medium	F3b_Low_Medium	F3c_High_Low_Medium	F3d_Low_High_Medium	F3e_High_Low_High_Medium	F3f_Low_High_Low_Medium	UNUSED	UNUSED
F4	Brake	M								
F5	Cab Start Up	M								
F6	*Detonators	T								
F7	Spirax Valve	T								
F8	**Doors Open/Close	T								
F9	AWS Warning Siren	M								
F10	Compressor	T								
F11	Wipers	T								
F12	Diesel Generator	T								
F13	Pantograph Arc	M								
F14	Flange Squeal	T								
F15	Cab Door Close	M								
F16	Slow Speed Rail Clack	T								
F17	Doors Closing Announcement	M								
F18	General Station Sounds	T								
F19	Guards Whistle	M								
F20	Tilt Pumps	T								
F21	Aux 1	T								
F22	Aux 2	T								
F23	Aux 3	T								
F24	Aux 4	T								
F25	Shunting Mode	T								
F26	Creep Mode	M								
F27	Dynamic Brake	M	M = Momentary Action							
F28	AFC Enable	T	T = Toggle On/Off							

NOTES -
*F6 Detonators only functions if the loco is in operation between SS2 - SS75.
**F8 Doors Open/Close work as a toggle operation i.e F8 Doors Open playback starts when enabled and the Doors Close sound is played when the function is disabled.

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

CV119 Function Masking

The Class 370 APT-P operates with 3 or 4 decoders...... e.g with one fitted in each of the unpowered Driving Trailer Second (DTS) cars at the ends of the rake and the 3rd or 4th decoder located in the centrally powered Non-Driving Motor (NDM). The decoders can be set up to have different responsibilities...see below for further explanation.

3 Decoder Set-up

Please refer to the 3 decoder set-up image 1

Decoder 1 and decoder 3 will only be used to control directional lighting and a variety of corresponding running and spot sounds at each end. The "powered NDM" (decoder 2) is responsible for full motor control and engine and associated spot sound playback...
However, it may be desirable for sounds (typically horns) to be played by either "decoder 1" or "decoder 3"... but, not both at the same time. This is usually dependent on the locomotive direction.

Since it is usual to configure the decoders in the above scenario with a common address, it is therefore desirable to set up the system so that e.g. "horns," are only played from the desired "end" of the rake... dependent on direction. Other, sound functions could also be direction dependent.

However, by using CV119 it is possible to select a preset function mask for each decoder so that common commands to the decoder pair will only be active in the desired decoder... i.e. decoder 1, 2 or 3.

The masks are referred to as "Normal", "Motorised Profile", "Non-Motorised Profile 1" and "Non-Motorised Profile 2". Please check the tables below for full details... there are mask states...

CV#	Default Value	Range	Comment
CV119	0	0 - 3	0: Normal 1: Motorised Profile (NDM) 2: Non-Motorised Profile 1 (DTS) 3: Non-Motorised Profile 2 (DTS)

Example..
By setting decoder 1 to a value of 2, decoder 3 to a value of 3 and decoder 2 to a value of 1, the correct sounds will be played by each car according to direction.

4 Decoder Set-up

Please refer to the 4 decoder set-up image 2

This time decoder 1 and decoder 4 will be used to control the lighting and a variety of corresponding traction motor and spot sounds at each end and both central positioned "powered NDM's" (decoder 2 and 3) are responsible for traction motor, traction motor fans, compressor and associated spot sound playback...

Example..
By setting decoder 1 to a value of 2, decoder 2 and 3 to a value of 1 and decoder 4 to a value of 3, the correct spot sounds will be played from the correct part of the train.
Please note that only relevant auxiliary sounds will be played from decoder 2 and 3 (NDM).

CV194 Electric / Diesel Engine Playback

The Class 370 sound profile allows you assign different engine sounds, to the correct portion of the train. (see below).

Image 1
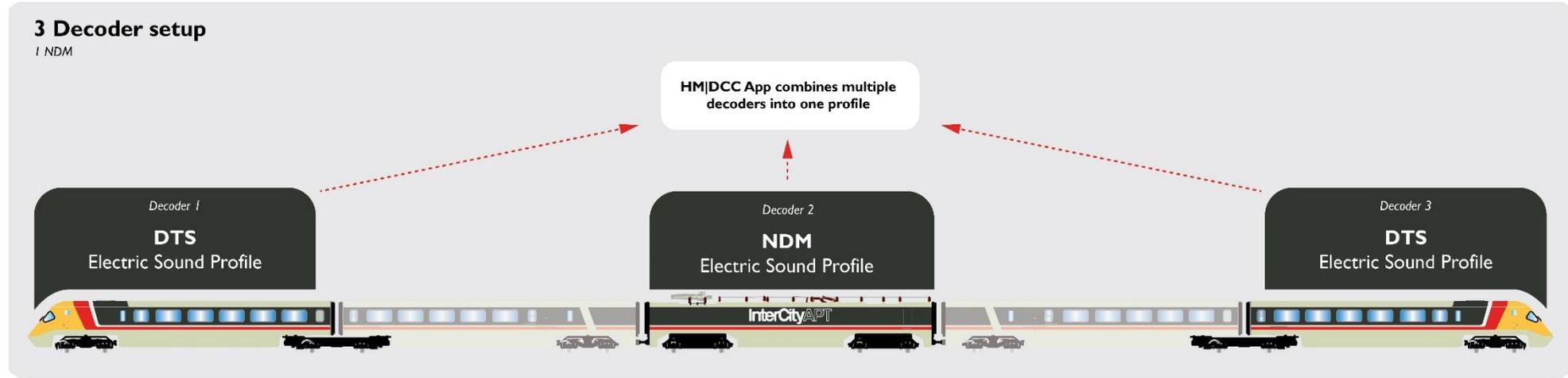
Note: In this setup, you can set the correct engine running sound by simply changing the value of CV194 on the chosen decoder. By default, CV194 = 0 so all 3 decoders will play all sounds relevant for the DTS end unit. However the NDM has it's own, unique engine running sounds. See table below......

Image 2
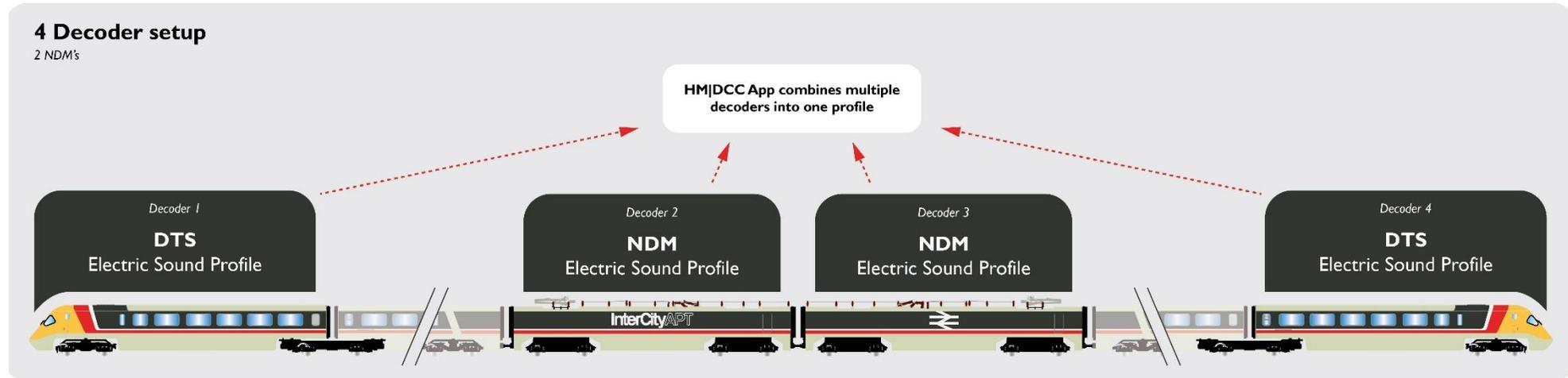
As previously described, by changing the value of CV194, decoders 2 and 3 will play all sounds relevant for the NDM(s). See table below......

CV#	Default Value	Range	Comment
CV194	0	0 - 1	0: DTS running mode 1: NDM running mode

For those users wishing to obtain a 'realistic operation', each of the 3 or 4 decoders (depending on train formation) can be set with a specific value for correct engine sound operation.

In this instance, decoder 2 and decoder 3 should be changed and set-up as NDM running mode therefore a value of 1 should be written to CV194.

You will need to program each decoder either on the main operating track or separate programming track (if you have one), if being used with DCC. Please consult your DCC control operating manual on how to do this.
Alternatively, if using Bluetooth as your primary control method, the CV value for each decoder can be changed via the Adv CV editor tab within the HM7000 app once you linked the decoder to your device.

Remember, if making CV changes in DCC programming mode, please make sure that you remove any decoder you do not wish to program from the programming track.

Consisting

Basic consisting is the easiest way of controlling more than 1 locomotive or decoder with a single command. All decoders are programmed with either the same DCC address if operating in DCC mode, or added and consisted together within the HM | DCC app.

Please consult your control operating manual as to how to do this.

For further information about how to set this up within the HM | DCC app, please click this link and scroll to Section 8, Consisting.

Electric Mode Trigger Thresholds

A detailed overview on Electric mode notch configuration and playback can be found in the main HM7000 manual under section "ELECTRIC LOCOMOTIVES... Engine Running Sound Playback."

The same operational principal applies for the Class 370 APT-P which instead, utilises a 7 electric engine notch playback system. Please see table below...

Sound Play Configuration ELECTRIC Locomotive...				ELECTRIC LOCOMOTIVES... Engine Running Sound Playback...
CV	Automatic Idle	Default Value	Value Range	Applies to SS of > 0 but less than **ETT1**
218	ELECTRIC Trigger Threshold 1 **(ETT 1)**	3	1-127	Applies when SS > **EET1** but < **ETT2**
219	ELECTRIC Trigger Threshold 2 **(ETT 2)**	20	1-127	Applies when SS > **ETT2** but < **ETT3**
220	ELECTRIC Trigger Threshold 3 **(ETT 3)**	35	1-127	Applies when SS > **ETT3** but < **ETT4**
221	ELECTRIC Trigger Threshold 4 **(ETT 4)**	50	1-127	Applies when SS > **ETT4** but < **ETT5**
222	ELECTRIC Trigger Threshold 5 **(ETT 5)**	65	1-127	Applies when SS > **ETT5** but < **ETT6**
223	ELECTRIC Trigger Threshold 4 **(ETT 6)**	80	1-127	Applies when SS > **ETT6** but < **ETT7**
224	ELECTRIC Trigger Threshold 5 **(ETT 7)**	95	1-127	Applies when SS > **ETT7**

F17 Door Safety Announcement Configuration

F17 allows the user to select which announcement will be played. i.e. each time F17 is enabled a different announcement is played. Which announcement is played is configurable via CVs.

The announcements can be played in either random or sequential order, thus, a different announcement is played at each press of F17. This function can have up to 8 different announcements associated with it.

Note the APP does not display the content i.e., announcement list for F17. Thus, it is recommended downloading the full function list for your "Locomotive Profile".

The table below contains full details of the "announcements" available F17...

	Value	Announcement
CV195	0 (Default)	London to Glasgow
	1	Glasgow to London

Using the list, you will be able to configure which announcements are in play... see below

CV#	CV Name	Default Value	Range	Comments								
195	Sound Selection F17	***	0 - 255	bit7	bit6	bit5	bit4	bit3	bit2	bit1	bit0	
196	Sound Play Mode F17	0	0 - 1	0: Sequential	1: Random							

CV196 Explanation... This CV configures whether each press of F17 cycles through the selected announcements sequentially or randomly.

CV195 explanation... Announcement selection for play. *** The default value shown in the table above, will depend on the maximum number of announcements available for play for F17. This CVs work in a similar way to CV29, and the AFC setup procedure described earlier... i.e they are bit maps. Each bit position selects a announcement for inclusion for F17.

 e.g. If the maximum number of announcements for F17= 2 ...then the default CV value would be as follows.... CV195 = 3.

Programming tips...

The system can support up to 8 sound slots.

Referring to the table below... Select the desired announcements and add the number in the ADD column to arrive at simple Decimal value to programme the CV with.

As per the announcement table on the previous page this will give a full list of all announcements currently available for use with F17. This list will be continually updated, so keep an eye on decoder firmware updates from time to time for this project.

Once you have downloaded the "Function List," ascertain how many sounds are associated with F17. Once this has been determined, when programming you only need to consider the first applicable bit positions for CV195.

e.g. If there are 2 different announcements associated with F17 then you only need to consider bit0 to bit1.

Bit numbers higher in the CV value are ignored, i.e., in the example above this will be... bit4 to bit7. Attempts to programme non-existent "bits" will leave the current CV value unchanged.

The default of 255 means that all possible announcements will be available for F17 #. i.e., all will be available only limited by the number actually installed. On a power down, the system will revert back to the first announcement in the sequence.

CV195 Announcement Selection re F17		
Announcement Reference	Bit#	ADD
F17a	0	1
F17b	1	2

<u>**Please note:**</u> **F17 operation will only execute when the train is stationary. The sequence will also be interrupted if another momentary spot sound is initiated mid-way through playback.**