MarWick Class 37 – Soundscape with RealDrive

Putting you, the user, in the driving seat...

Manufacturer: Mark's Trains & Wickness Models
Project number: MW37-SSv1-RD
Project version: V5 - Airport/Christmas/Diesel Depot/Farm/ Grand Station/Hedgerow/London/Market/Seascape/Steam Depot/ Urban Station/Special

Locomotive: BR Class 37 (English Electric Type 3)
Power type: Diesel-electric
Builder: English Electric at Vulcan Factory & Robert Stephenson & Hawthorns
Build date: 1960 – 1965
Total produced: 309

Decoder type: ESU LokSound v5, Micro, L & XL
DCC Address: 3
Speed steps: 128 speed steps
CV63 main volume: 120 (max 192)
Speakers supported: 4 - 32 Ohms impedance, 3 Watt power maximum
Volume CV's column: Relevant CV's to adjust individual sound volumes
Volume values column: Default volume setting for relevant sound CV's
Before changing volume settings CV32 must be set to 1, and returned to 0 when finished. Failing to do so will inadvertently alter function settings.

Diesel locomotive (diesel-electric)
Diesel-electric locomotives are in principle electric locomotives with electrical generators that are powered by diesel engines. The diesel locomotive is generally driven at constant Driving notches subject to the speed of the locomotive. Therefore the noise generated changes (driving) step by (driving) step. The quiet electric motor can hardly be heard over the noise of the diesel powered plant. Most diesel-electric locomotives have 4 to 8 throttle notches.

Fn Key	Function	Volume CV's	Volume Values		Fn Key	Function	Volume CV's	Volume Values
F0	Running Lights				F15	Automatic Coupler	363	128
F1	Startup / Shutdown (Multi Start)	259	128		F16	Compressor	371	128
F2	Horn	283	128		F17	Cooling Fan	379	128
F3	No1 Cab Lights				F18	Soundscape	387	128
F4	No2 Cab Lights				F19	Sanding Valve	395	128
F5	Tail Lights Enable / Disable				F20	Spirax Valve	403	128
F6	Brake Key	291	128		F21	Shunting Mode		
F7	Emergency Brake	299	128		F22	Drive Hold / Coast		
F8	Curve Squeal	307	128		F23	Heavy Load		
F9	Switch Flange	315	128		F24	AWS / Fire Bell Test	411	128
F10	Rail Clank	323	128		F25	Smoke Generator		
F11	Rail Noise	331	128		F26	Volume Control		
F12	Guard's Whistle	339	128		F27	Disable Brake Squeal Sound		
F13	Station Announcements	347	128		F28	Fade Out Sounds		
F14	Cab Doors Open / Close	355	128					

Thank you for purchasing a MarWick Soundscape with RealDrive sound decoder. MarWick Soundscape with RealDrive raises the bar to a much higher level than previously available in LokSound technology. These sound projects have been developed by Mark's Trains and Wickness Models in great detail to be throttle and volume responsive through the range of 128 speed steps, with RealDrive features to give the user a prototypical user experience; putting *you* in the driving seat.

MarWick Soundscape projects have been developed to be used on any DCC system although we do not recommend Hornby Select or Bachmann EZ Command due to limited function options.

So what is Soundscape then? Soundscape is a set of ambient sounds on a given theme additional to the standard running sounds. The soundscape runs on an available function within the project just like any other function such as a horn. This is exclusive to MarWick sound projects on LokSound decoders. The soundscape is selectable, you can activate it during running or while motionless to provide additional background noises based on the theme of your layout. For example, you might choose London-scape or Airport-scape for a city centre layout, or Farm-scape or Hedgerow for a rural one. You can listen to samples of the soundscapes available and view some of the project function sheets by visiting the following link - https://www.marks-trains.co.uk/soundscape-realdrive-decoders/

What does RealDrive do? RealDrive fully utilises the advanced functions and logical programming available to the LokSound v5 decoder family, giving the user a prototypical and immersive experience. It's like driving a real train – to an extent! The following is an explanation of the many great features of RealDrive.

Active braking allows you to reduce the throttle to speed step 0 and let your train coast to an eventual stop, simulating the prototype without traditional throttle-based braking. You can bring the train to a controlled stop much quicker from any speed by applying the brakes via the ***brake key on F6,*** this will reduce speed quicker and can be pulsed (F6 on & off) to suit your desired speed. A full ***emergency brake*** application is available on ***F7*** should you need to stop quickly. Both brake keys have integrated brake application and release sounds to make this feature realistic.

Multi start - Advanced is now available on most projects with the use of the ***F1*** function key. The available engine starting routines are; warm start, cold start and failed start. To activate these various starting routines you will need to undertake the following procedures;

Warm start – Activate F1 and wait for 3 seconds to pass, the engine should start.
Cold start – Activate F1 and deactivate within 3 seconds, when you are ready (there's no time limit) activate F1 again and the cold start procedure should begin.
Failed start - For a failed start follow the same procedure as a cold start but deactivate F1 whilst the engine is cranking over, this will result in the engine shutting down.

Prototypical lighting selector: RealDrive projects are provided with normal light mapping as standard, changes in direction of travel will result in normal operation. Lights are activated using ***F0***.

The unique lighting selector feature, when enabled, allows you to cycle through different lighting configurations using ***F0***, in a similar manner to a rotary switch on the prototype. Lighting configurations are; Day head lights, Night head lights (where applicable), Yard mode, Tail lights (on both ends), Hazard lights, and Off. Directional tail lights are switched off as standard when the head lights are being used. However if you require tail lights, for example on light engine movements, ***F5*** will activate them.

With this feature, lights can be operated just like the prototype. The complex function mapping has already been done for you, all that is needed is to connect the lights to the appropriate decoder outputs (instructions on the next page) and enable this feature with the following CV change procedure; ***CV31=16, CV32=8, CV262=1***, finally resetting CV31 & 32 back to 0. To disable, use the above procedure but change **CV262=0.**

Directional cab lights illuminate when stationary and automatically extinguish when moving off. Cab lights change ends when direction is changed. Wiring instructions are on the next page.

Intelligent sounds: Curve squeal, switch flange, rail clank, rail noise & spirax valve have powerful logic driving them, intelligently engaging them depending on speed. Rail clank changes frequency with speed like the prototype, whilst the spirax valve randomly sputters and clicks away to sound much more realistic than a looped sound file ever did!

Random sound functions: A selection of horns, guard's whistles and station announcements are now randomly played from a single function key for each, instead of many keys often difficult to reach. Some horns are also programmed to play in varying lengths. So now there's a different horn every time you press F2!

Auto couple / uncouple: Along with the coupling / uncoupling sounds, this function now automatically pushes the train back towards a ramp / magnet at a predefined distance then drives the loco forward to clear the train.

Shunting mode halves speed and disables momentum - useful in yard operations. With the lighting selector enabled you can change the lights to 'Yard mode' to simulate markers commonly used whilst in a yard or undertaking shunting movements.

Drive Hold can be used for both coasting and heavy load simulations, this is achieved by locking the motor speed so engine sounds can be increased or decreased. Dropping to speed step 0 will result in braking.

Heavy Load simulates a fully loaded train, the engine sounds are increased to simulate the extra load whilst the motor momentum is doubled so that it takes a much longer time to reach its set speed.

Function mapping on RealDrive projects are designed to be consistent throughout the range of sound projects; Diesels and Electrics have similar mapping with only a couple slight variations, whilst Steam have their own consistent function mapping in place. This makes it easier to operate your fleet of sound fitted trains with the *MarWick Soundscape with RealDrive* range.

Other traditional features include **Fade out sound;** when enabled fades the sound to the volume setting for "Fade sound" (CV133) in the "sound settings" section; this allows the simulation of going into tunnels, buildings, fiddle yards etc.

Volume control: when set, allows setting the volume in 6 steps by toggling the function key on and off, once per step. Changes the master volume in 6 steps (CV 63).

Smoke generators on diesel and steam locomotives have been assigned to ***AUX 6***, which is now available on all of the LokSound v5 decoders. Although unfortunately for N scale smoke generators are not small enough to fit inside the body, so this feature is available for those wishing to install a LokSound micro inside a OO gauge loco where space is a little tight. The location of AUX 6 can be found on the decoder pin-out diagrams on the next page.

Stay Alive: All LokSound v5 decoders can be fitted with a stay alive capacitor system, to see how please view the decoder pin-out diagrams on the next page. Stay alive capacity depends on the space available inside your model.

Prototypical lighting installation instructions
To control the lights with the lighting selector, hard-wire connections need to be made. The table below lists the necessary connections needed.

AUX3 & 4 may reside on a solder pad, their locations can be found in the decoder pin-out diagrams on the next page. Interior lights on multiple units connect to AUX5.

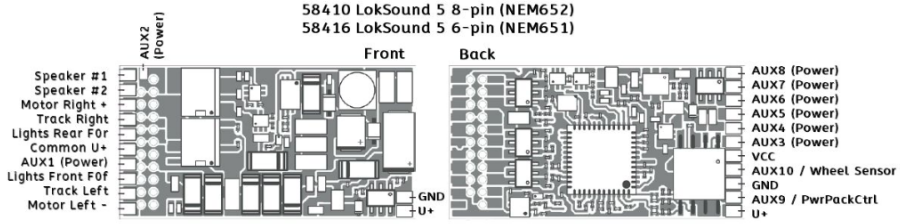
If prototypical lighting is not required simply install the lights as usual, with No1 end headlights and No2 end tail lights connected to F0f (White), No2 headlights and No1 tail lights connected to F0r (Yellow).

LED's should have a resistor on the function output wires to prevent over-current blowing LED's or the decoder. We recommend a minimum of 470 Ohms, but this usually produces an intense light. 1.2K to 1.5K Ohms is typical in this application so the lights would be at the correct brightness.

Red		Track Right	White		Front Lights	No1 end head lights
Black		Track Left	Yellow		Rear Lights	No2 end head lights
Orange		Motor Right (+)	Green		AUX 1	No1 end cab lights
Grey		Motor Left (-)	Purple		AUX 2	No2 end cab lights
Blue		Common Positive (+)	Pink/Solder pad		AUX 3	No2 end tail lights
Brown		Speaker Wires (x2)	Turquoise/Solder pad		AUX 4	No1 end tail lights

LokSound 5 decoder pin-outs

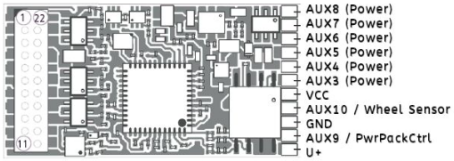
58410 LokSound 5 8-pin (NEM652)
58416 LokSound 5 6-pin (NEM651)



AUX9, AUX10 are Logic Level inputs and outputs
AUX9 Defaults to ESU Power Pack Control

58419 LokSound 5 21MTC
58449 LokSound 5 21MTC 'MKL'

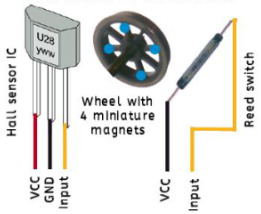
AUX10 / Wheel Sensor	1	22	Track Right
AUX7 (Logic Level)	2	21	Track Left
AUX6 (Logic Level)	3	20	GND
AUX4 (See below)	4	19	Motor Right +
AUX12 / SUSI Clk / Servo6	5	18	Motor Left -
AUX11 / SUSI Dta / Servo5	6	17	AUX5 (Logiv Level)
Lights Rear F0r	7	16	Common U+
Lights Front F0f	8	15	AUX1 (Power)
Speaker #1	9	14	AUX2 (Power)
Speaker #2	10	13	AUX3 (See below)
Index Pin (Blocked)	11	12	VCC



AUX9, AUX10 are Logic Level inputs and outputs
AUX11, AUX12 are Logic Level outputs
AUX9 Defaults to ESU Power Pack Control

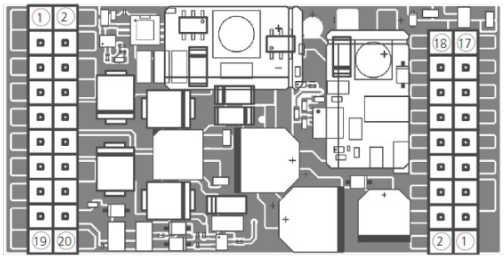
58449 - AUX3 & AUX4 are amplified outputs at the 21MTC interface
58419 - AUX3 & AUX4 are Logic Level outputs at the 21MTC interface

Wheel Sensors used for chuff rates
Hall sensor or reed switch



Stay alive connections with ESU Power Pack or capacitor circuit

58315 LokSound 5 L



AUX1 (Power)	1	2	Lights Front F0f
AUX2 (Power)	3	4	Lights Rear F0r
AUX3 (Power)	5	6	Motor Right +
AUX4 (Power)	7	8	Motor Left -
AUX5 (Power)	9	10	Track Right
AUX6 (Power)	11	12	Track Left
AUX7 (Power)	13	14	Common U+
AUX8 (Power)	15	16	Smoke Fan -
AUX9 (Power)	17	18	Smoke Fan +
Smoke Heater	19	20	Smoke Temperature Sensor

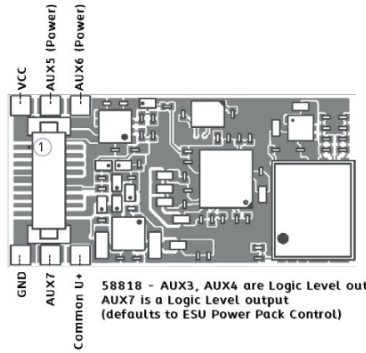
Motor Enable	18	17	AUX10 / Wheel Sensor
Sensor 2	16	15	Sensor 1
AUX11 / SUSI Dta / Servo5	14	13	AUX12 / SUSI Clk / Servo6
Servo4	12	11	Servo3
Speaker 2 #2	10	9	Speaker 2 #1
Speaker 1 #2	8	7	Speaker 1 #1
AUX13 (Logic Level)	6	5	+5V (for servos)
VCC	4	3	GND
Potentiometer +	2	1	Potentiometer -

AUX10 is a Logic Level input and output
AUX11, AUX12, AUX13 are Logic Level outputs

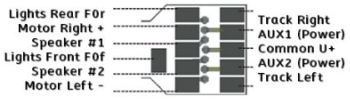
58810 LokSound 5 micro 8-pin (NEM652)
58816 LokSound 5 micro 6-pin (NEM651)
58818 LokSound 5 micro Next-18 (NEM662)

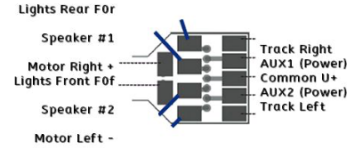
58818 Next-18

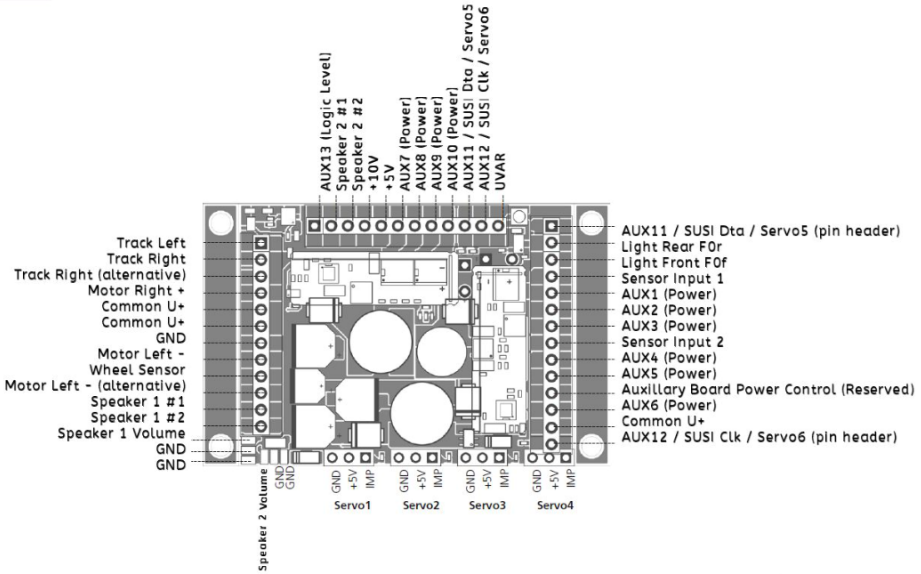
Track Right	1	18	Track Right
Motor Right +	2	17	Lights Rear F0r
AUX1 (Power)	3	16	Speaker #1
AUX3 / SUSI Clk / Servo6	4	15	Common U+
GND	5	14	GND
Common U+	6	13	AUX4 / SUSI Dta / Servo5
Speaker #2	7	12	AUX2 (Power)
Lights Front F0f	8	11	Motor Left -
Track Left	9	10	Track Left



58818 - AUX3, AUX4 are Logic Level outputs
AUX7 is a Logic Level output
(defaults to ESU Power Pack Control)







58515 LokSound 5 XL 'pin headers'
68513 LokSound 5 XL 'screw terminals'

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