

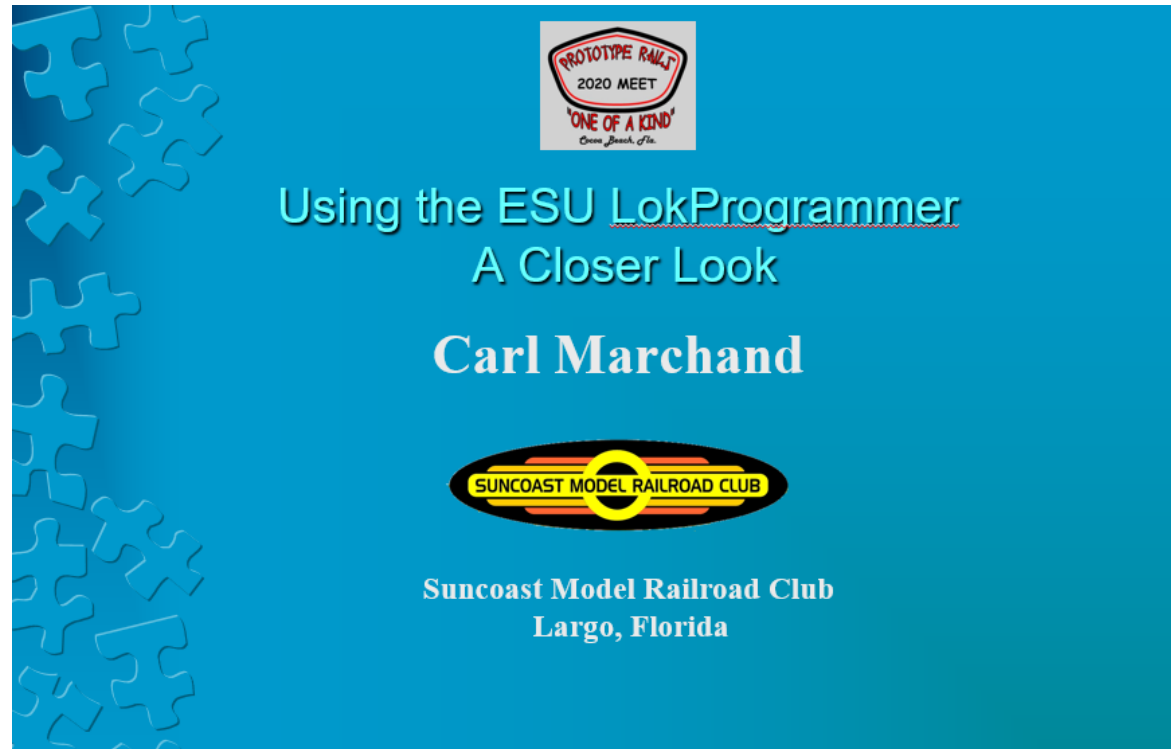


New Features Using ESU Decoders

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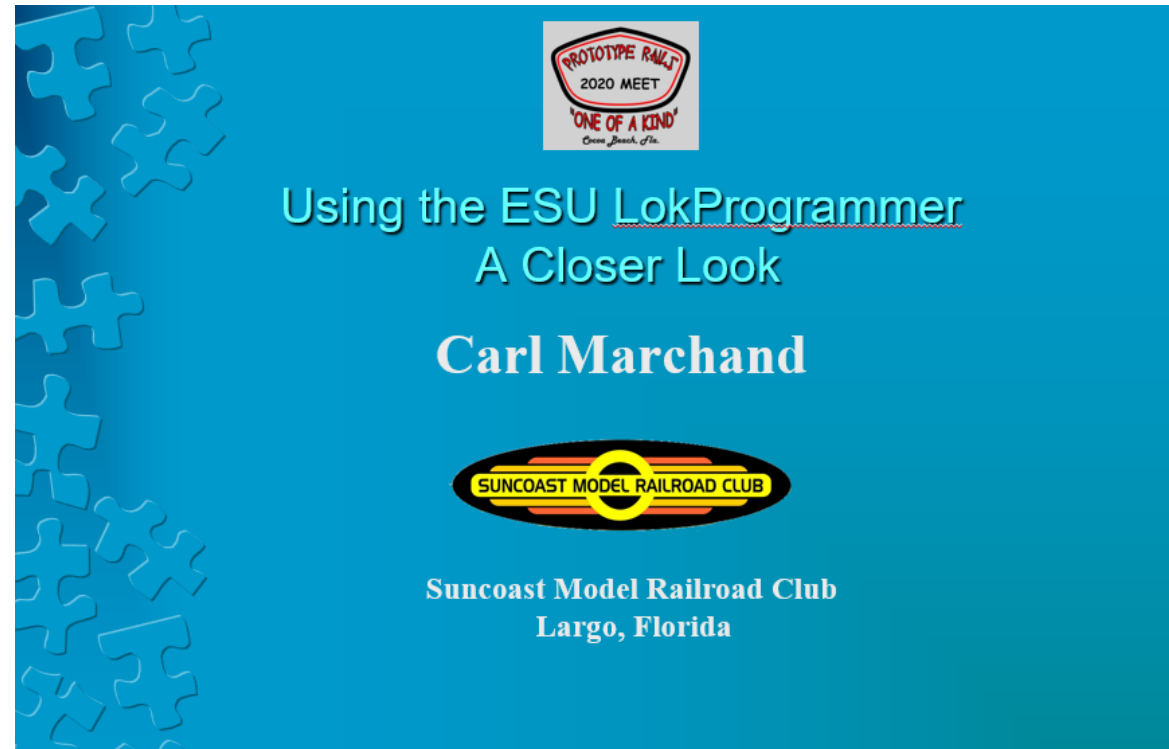
NMRA DCC Working Group Manager

For additional information...



http://dccgeek.com/InternetFiles/ESU_Loksound_Deep_Dive.pdf

For additional information...



<http://www.dccgeek.com/downloads.html>

ESU Decoder LokProgrammer Updates and Deep Dive Part 3

- ESU Loksound V5 decoders using firmware 5.9.159 and higher have additional features not available in previous releases.
 - Existing Loksound V5 decoders can be updated currently to 5.12.172 using the LokProgrammer and the 5.29 version of the software.
 - We will explore these new features as well as cover additional advanced use of the LokProgrammer.
-

Functions available in a consist

The screenshot shows the 'DCC Settings' window with a sidebar on the left containing icons for 'Driving characteristics', 'Function outputs', 'Function settings', 'Function mapping', 'Identification', and 'Compatibility'. The main area is titled 'Activate functions in consist mode' and includes a dropdown menu for 'Consist size' and a checkbox for 'Reverse direction [CV19.7]'. Below this is a section titled 'Select the functions that should respond to the consist address [CV21, 22, 109, 110]' with a grid of checkboxes for functions F1 through F30. The checked functions are F7, F15, F4, F12, F9, and F10.

DCC Settings

Driving characteristics

Function outputs

Function settings

Function mapping

Identification

Compatibility

Consist size for consist operation

☐ Reverse direction [CV19.7]

Activate functions in consist mode

Select the functions that should respond to the consist address [CV21, 22, 109, 110]

<input type="checkbox"/> Front light	<input type="checkbox"/> Rear light	<input type="checkbox"/> F1	<input type="checkbox"/> F2
<input type="checkbox"/> F3	<input checked="" type="checkbox"/> F4	<input type="checkbox"/> F5	<input type="checkbox"/> F6
<input checked="" type="checkbox"/> F7	<input type="checkbox"/> F8	<input checked="" type="checkbox"/> F9	<input checked="" type="checkbox"/> F10
<input type="checkbox"/> F11	<input checked="" type="checkbox"/> F12	<input type="checkbox"/> F13	<input type="checkbox"/> F14
<input checked="" type="checkbox"/> F15	<input type="checkbox"/> F16	<input type="checkbox"/> F17	<input type="checkbox"/> F18
<input type="checkbox"/> F19	<input type="checkbox"/> F20	<input type="checkbox"/> F21	<input type="checkbox"/> F22
<input type="checkbox"/> F23	<input type="checkbox"/> F24	<input type="checkbox"/> F25	<input type="checkbox"/> F26
<input type="checkbox"/> F27	<input type="checkbox"/> F28	<input type="checkbox"/> F29	<input type="checkbox"/> F30

Loksound decoders can now support up to F30 in consist (depending on your DCC system)

Class Light Logic – Function Outputs Section



Front light [1]: Front Headlight

Name:
Front Headlight

Power on delay: [CV260.3:0 (CV32=0)]
0 0s

Power off delay: [CV260.7:4 (CV32=0)]
0 0s

☐ Enable function timeout [CV261 (CV32=0)]
Time until automatic power off: [CV261 (CV32=0)]
1 0.41s

Output mode (effect):
Dimmable headlight (fade in/out)

Brightness [CV262.4:0 (CV32=0)]
25

☐ Use Class light logic [CV258.7:6 (CV32=0)]

Sequence position: [CV258.7:6 (CV32=0)]
1

Enable following special functions:
☐ Rule 17 forward ☐ Rule 17 reverse ☒ Dimmer
☒ LED mode

This alternate version allows you to setup class lights easily, without having to use the Logic module

Class Light Logic – Function Settings

Analog settings

Brake Settings

DCC Settings

Driving characteristics

Function outputs

Function settings

Function mapping

Identification

Compatibility

Grade crossing holding time [CV132] 39 1.95s

Fade-In time of light effects [CV114] 79 5.18s

Fade-Out time of light effects [CV115] 92 0.75s

Logical function dimmer will reduce brightness to: [CV131] 64 50%

Class light logic sequence length [CV199]

☐ 2 (Two different color class lights)

☒ 3 (Three different color class lights)

☐ Enforce slave communication on AUX3 and AUX4 [CV122.4]

Sensor settings

☐ Use digital wheel sensor [CV124.4]

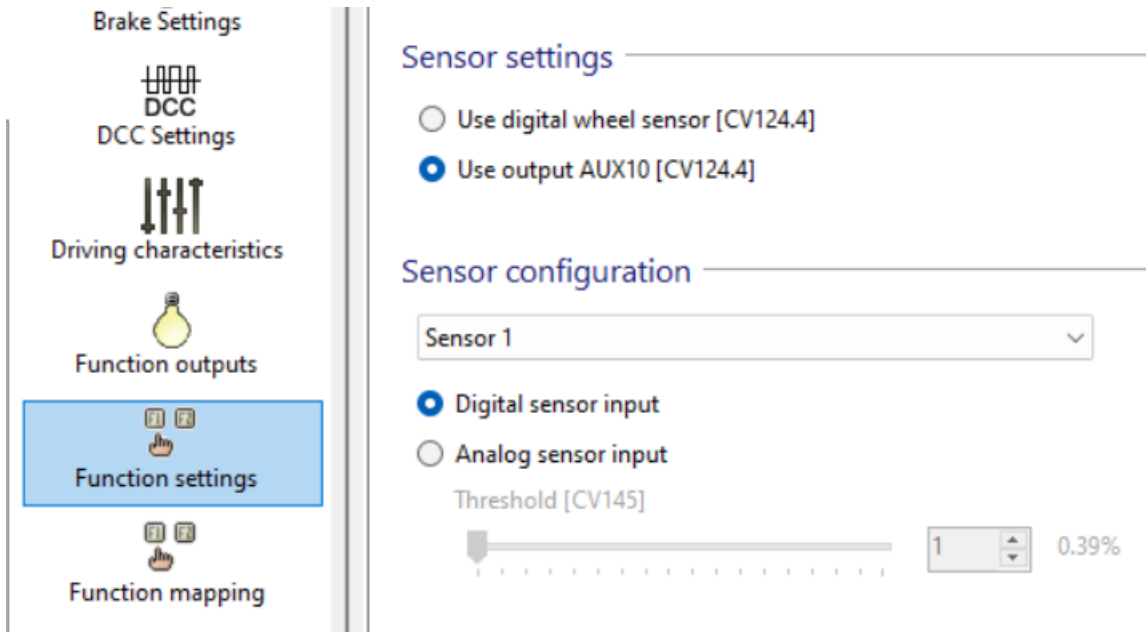
☒ Use output AUX10 [CV124.4]

Sensor configuration

Sensor 1

Choose 2 color or 3 color class light options

Additional Sensor Settings



The interface shows a sidebar on the left with the following menu items: Brake Settings, DCC Settings, Driving characteristics, Function outputs, **Function settings** (highlighted), and Function mapping. The main content area is titled 'Additional Sensor Settings' and contains two sections:

- Sensor settings**
 - ☐ Use digital wheel sensor [CV124.4]
 - ☒ Use output AUX10 [CV124.4]
- Sensor configuration**
 - Sensor 1 (dropdown menu)
 - ☒ Digital sensor input
 - ☐ Analog sensor input
 - Threshold [CV145]
 - Slider bar
 - Value: 1
 - Percentage: 0.39%

Choose between digital and analog sensors.
Use the sensor as a function in Function Mapping

Support for Broadway Limited Steam Engine Control (Smoke Generator)



Broadway Limited Steam Engine Control

☐ Enable Support for Broadway Limited Steam Engine Control (instead of SUSI) [CV122.7]

Serial user standard interface

☐ Enable serial user standard interface (SUSI Master) [CV124.3]

☐ Enable serial user standard interface (SUSI Slave) [CV124.1]

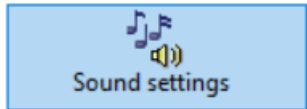
SUSI Mapping

Map decoder functions (F0 - F15) to SUSI functions (SF0 - SF15).

	SF0	SF1	SF2	SF3	SF4	SF5	SF6	SF7	SF8
► F0	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
F1	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
F2	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
F3	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
F4	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

This new feature allows you to operate The BLI smoke generator unit with ESU decoders connected to the upcoming BLI motherboard replacement from ESU.

Bass and Treble Controls



Volume

Master volume [CV63]

192 150%

Fade sound will reduce volume to: [CV133]

64 50%

Soundfader fade-out fade-in time [CV135]

6 6s

Tone control

Bass: [CV196]

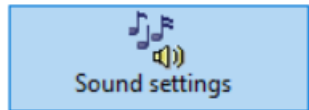
16 0dB

Treble: [CV197]

16 0dB

ESU Loksound decoders now have tone controls for a better sound experience across different speaker types.

Dynamic Sound Control



Dynamic sound control

☐ Soundcontrol based on acceleration and brake time [CV200]

☒ Soundcontrol based on acceleration and brake time and train load [CV200]

Train load at low speed [CV200]

25 9.8%

Train load at high speed [CV201]

244 95.69%

☒ Threshold for load operation [CV202]

Threshold [CV202]

20

Triggered function [CV204]

F28

☒ Threshold for idle operation [CV203]

Threshold [CV203]

26

Triggered function [CV205]

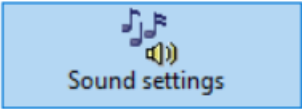
F12

Dynamic Sound Control adds load dependent sound effects for steam and diesel locomotives.

It is recommended to calibrate the BEMF (CV54=0, then press F1) and calibrate the load speed settings (CV200=255, then press F1) first before making any further adjustments.

Dynamic Sound Control

Dynamic Sound Control adds load dependent sound effects for steam and diesel locomotives.



Dynamic sound control

☐ Soundcontrol based on acceleration and brake time [CV200]

☒ Soundcontrol based on acceleration and brake time and train load [CV200]

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25 9.8%

Train load at high speed [CV201]

244 95.69%

☒ Threshold for load operation [CV202]

Threshold [CV202]

20

Triggered function [CV204]

F28

☒ Threshold for idle operation [CV203]

Threshold [CV203]

26

Triggered function [CV205]

F12

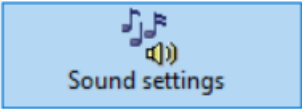
Recommend setting these with auto-calibration (CV200=255)

CV202 sets the heavy load (or Primary Load) threshold – the point where the train gets “heavier”

CV203 sets drop to idle (or Optional Load) threshold – the point where the train gets “lighter”

Dynamic Sound Control

Dynamic Sound Control adds load dependent sound effects for steam and diesel locomotives.



Dynamic sound control

☐ Soundcontrol based on acceleration and brake time [CV200]

☒ Soundcontrol based on acceleration and brake time and train load [CV200]

Train load at low speed [CV200]

25 9.8%

Train load at high speed [CV201]

244 95.69%

☒ Threshold for load operation [CV202]

Threshold [CV202]

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Triggered function [CV204]

F28

☒ Threshold for idle operation [CV203]

Threshold [CV203]

26

Triggered function [CV205]

F12

Recommend setting these with auto-calibration (CV200=255)

Map your heavy load (or Primary Load) sound to a Function and assign the function here.

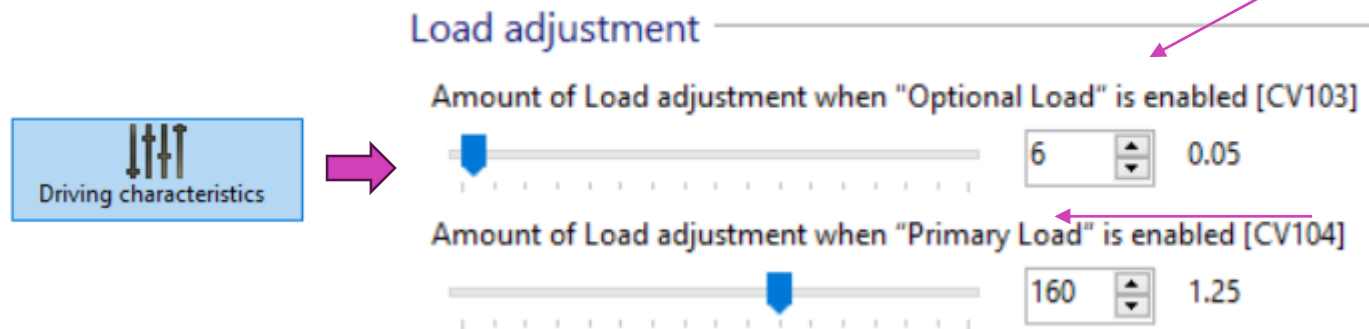
Map your idle (or Optional Load) sound to a Function and assign the function here.

Dynamic Sound Control

CV103 – Optional Load is typically used to set the idle or cruising engine speed sound

NOTE: Optional Load and Primary Load are mapped to buttons for manual control OR assigned to Dynamic Sound Control triggers

CV104 – Primary Load is typically used to set the increased engine speed for heavy loads



https://youtu.be/9xgEQ4evegQ?si=UIJbcpl_HKQpS70X

Adding sounds from ESU decoder files to your Sound Library

Sound project overview

Sound type:
Standard (diesel, electric etc) ▼

Available sound slots:

Sound slot 1: ALCO 12-251B Single Exhaust Ed3	⚙️ ↑ 🌐 ⚡
Sound slot 2: Leslie A200 #2	⚙️ ↑ 🌐 ⚡
Sound slot 3: 1st Generation Horn Pack 1 (AutoBell Trigger)	⚙️ ↑ 🌐 ⚡
Sound slot 4: ALCO Auto Bell On/Off Trigger Template Pack 2	⚙️ ↑ 🌐 ⚡
Sound slot 5: Coupler 1	⚙️ ↑ 🌐 ⚡
Sound slot 6: M-636 Dynamic Brake 1	⚙️ ↑ 🌐 ⚡
Sound slot 7: RS-11 Air Compressor 1	⚙️ ↑ 🌐 ⚡
Sound slot 8: Class Light Cycle Logic Directional	⚙️ ↑ 🌐 ⚡
Sound slot 9: RS-11 26L Automatic Brake Emergency 1	⚙️ ↑ 🌐 ⚡
Sound slot 10: RS-11 26L Automatic Brake 1	⚙️ ↑ 🌐 ⚡
Sound slot 11: RS-11 26L Independent Brake 1	⚙️ ↑ 🌐 ⚡
Sound slot 12: RS-11 26L Independent Brake Bail Off 1	⚙️ ↑ 🌐 ⚡
Sound slot 13: RS-11 Sanding Valve 1	⚙️ ↑ 🌐 ⚡
Sound slot 14: RS-11 Hand Brake Wheel 1	⚙️ ↑ 🌐 ⚡
Sound slot 15: RS-11 Cab Door 1	⚙️ ↑ 🌐 ⚡
Sound slot 16: RS-11 Engine Compartment Doors 1	⚙️ ↑ 🌐 ⚡
Sound slot 17: ALCO Air Dryer Template Pack 2	⚙️ ↑ 🌐 ⚡
Sound slot 18: ALCO Air Dryer On Shutdown Template Pack 2	⚙️ ↑ 🌐 ⚡

Sound library (LokSound Template Pack 1.9):

- USA
 - Leslie
 - MISC Airhorns**
 - Car Horn
 - Galloping Goose Horn
 - Hancock Air Whistle short
 - Ooga Horn #1
 - Ooga Horn #2
 - Ooga Horn #3
 - Ooga Horn #4
 - Prime 990 MNNR 71
 - US airhorns pack #1 - short airhorns (16 airhorns selectable with CV48)
 - US airhorns pack #1 (16 airhorns selectable with CV48)
 - Nathan
 - Wabco
 - Ambient Sounds

Diagram illustrating the process of adding sounds from ESU decoder files to your Sound Library. A red arrow points from the selected sound slot (Sound slot 3: 1st Generation Horn Pack 1 (AutoBell Trigger)) to the Sound library (LokSound Template Pack 1.9). The library structure shows a hierarchy of folders (USA, Leslie, MISC Airhorns) and individual sound files (Car Horn, Galloping Goose Horn, Hancock Air Whistle short, Ooga Horn #1-4, Prime 990 MNNR 71, US airhorns pack #1 - short airhorns, US airhorns pack #1). A red circle highlights the 'Add' button (blue arrow) in the library interface.

Copying horns, bells, etc. from existing Loksound file to your Sound Library is easy

Alternate Class Light Logic Method

This method uses the Sound logic module and stores the logic in a sound slot

Sound project overview

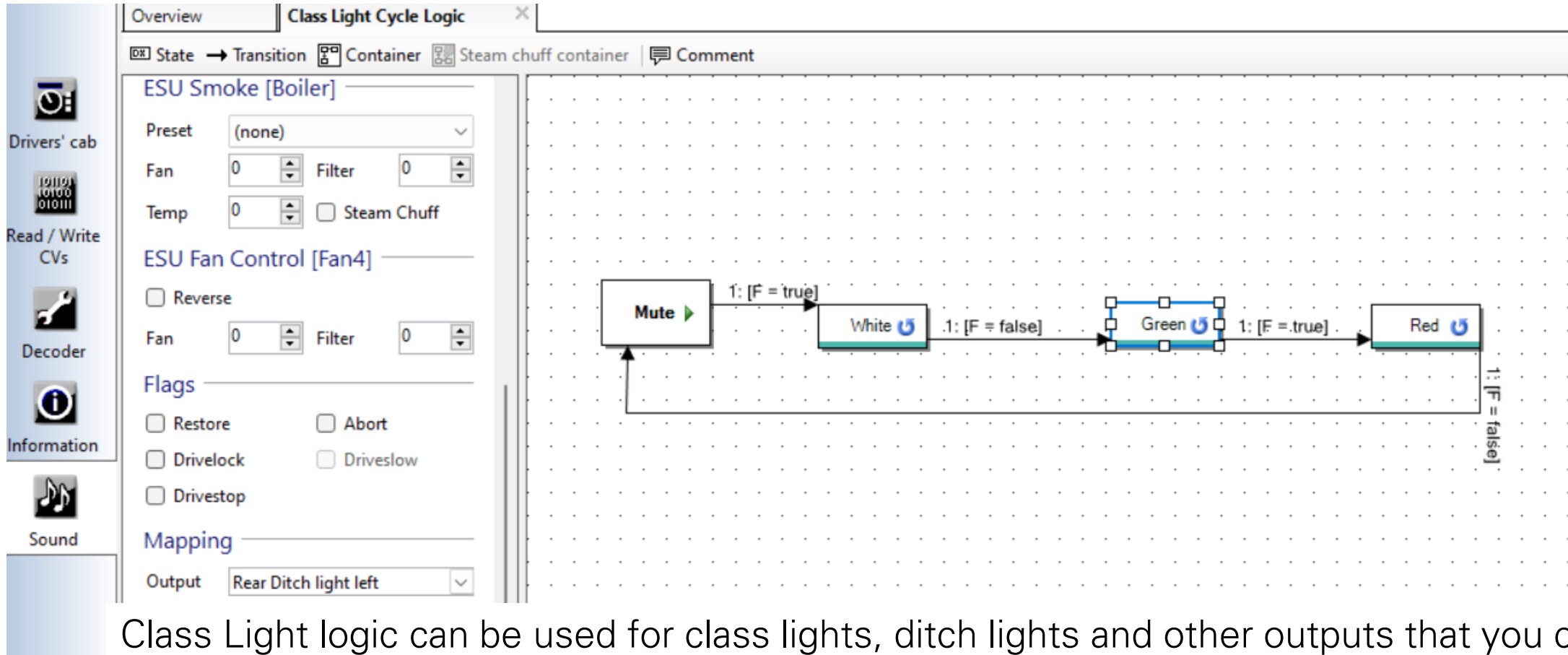
Sound type:
Standard (diesel, electric etc) ▼

Available sound slots:

Sound slot 1: ALCO 12-251B Single Exhaust Ed3	⚙️ ⬆️ 🌐 ⚡
Sound slot 2: Leslie A200 #2	
Sound slot 3: 1st Generation Horn Pack 1 (AutoBell Trigger)	⚙️ 🌐
Sound slot 4: ALCO Auto Bell On/Off Trigger Template Pack 2	⚙️ 🌐
Sound slot 5: Coupler 1	
Sound slot 6: M-636 Dynamic Brake 1	⬆️ 🌐
Sound slot 7: RS-11 Air Compressor 1	🌐
Sound slot 8: Class Light Cycle Logic Directional	💡 ⚡
Sound slot 9: RS-11 26L Automatic Brake Emergency 1	🌐 ⚡
Sound slot 10: RS-11 26L Automatic Brake 1	🌐
Sound slot 11: RS-11 26L Independent Brake 1	
Sound slot 12: RS-11 26L Independent Brake Bail Off 1	
Sound slot 13: RS-11 Sanding Valve 1	
Sound slot 14: RS-11 Hand Brake Wheel 1	

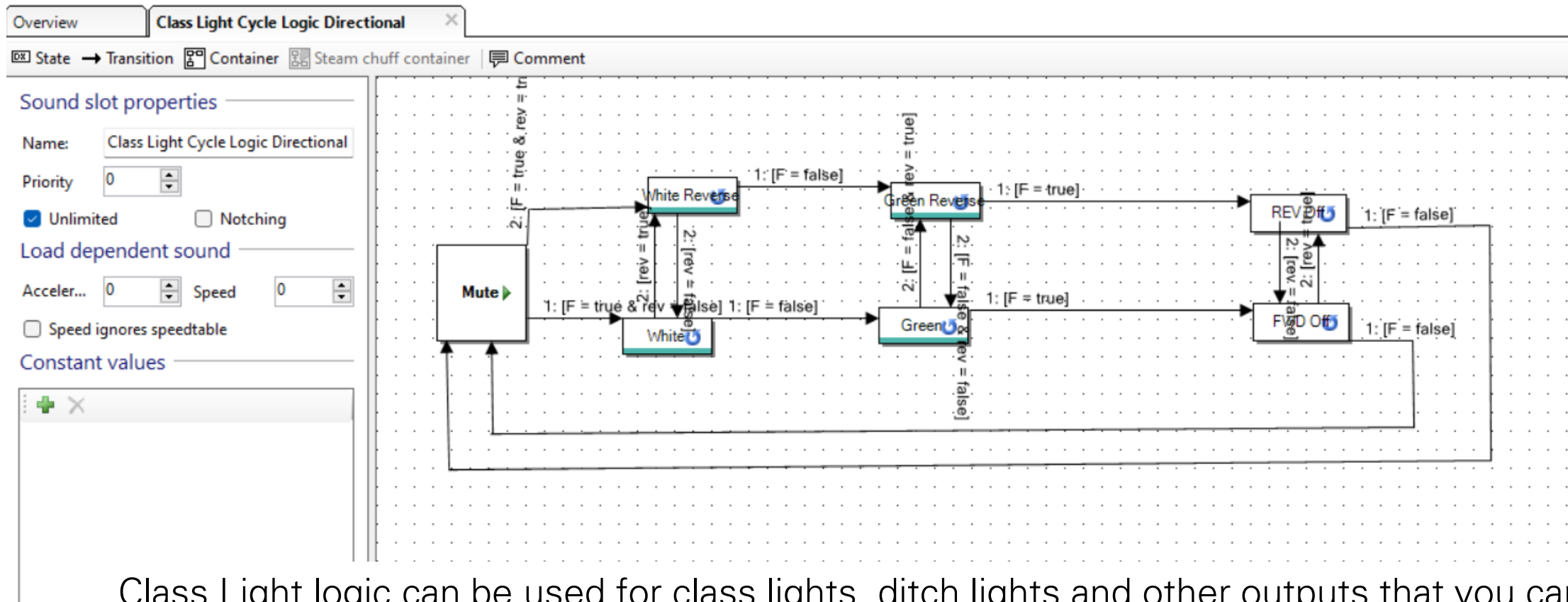
Sound

Alternate Class Light Logic Method



Class Light logic can be used for class lights, ditch lights and other outputs that you can "cycle" using only one function for control.

Alternate Class Light Logic Method



Class Light logic can be used for class lights, ditch lights and other outputs that you can "cycle" using only one function for control.

Horn Option Example

How to setup bidirectional horns in Function Mapping

Conditions		Sounds
Forward, F2, not F6	➔	1st Generation Horn Pack 1 (AutoBell Trigger)
Reverse, F2, not F6	➔	Leslie A200 #2
F2, F6	➔	Leslie A200 #2

Not pressing F6 a multi-chime horn is used in forward direction; the Leslie A200 #2 (copied in to a Sound Slot from the Sound Library) is used in reverse direction. Pressing F6 sets the horn to the Leslie A200 in either direction.

Additional Info / Useful Links

- http://dccgeek.com/InternetFiles/ESU_Info_Websites.pdf
 - <https://www.esu.eu/en/start> OR <https://www.loksound.com>
 - <https://dccwiki.com>
 - <https://www.nmra.org/index-nmra-standards-and-recommended-practices>
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