



OPERATORS GUIDE

ESU Factory Decoder Equipped Locomotives - Default DCC Address for All Locomotives: 3

Decoder Reset: CV8 = 8

Thank you for your purchase of an InterMountain Railway Company locomotive. This guide will direct you through basic operational and decoder functions, shell removal instructions, and maintenance tasks. Should you have any questions that are not answered in this guide please feel free to contact InterMountain service and support at the contact information listed above. All HO scale locomotives are factory equipped with an ESU decoder. Sound locomotives have a LokSound Select decoder and non-sound locomotives have a LokPilot decoder.

Sound On / Sound Off (F8 Function Key):

Sound Equipped Locomotive Only-

Upon placing your locomotive on the track, you will not hear any sound. **You must press the F8 function key in order to get the locomotive's prime mover started.** The LokSound Select allows the F8 function key to create a more realistic operating experience and is not simply a "mute" button. This is done so that both the start-up and shut down sequences can be heard without any CV changes. This also reduces the power-up drain on your DCC system's power booster. The F8 function key operation can be changed to allow track power to start the prime mover by setting CV32 to 2 FIRST, and then CV419 to 32. A prototype locomotive's horn and bell can still be operated with the prime mover shut-down as long as enough air is available. The LokSound Select decoder operates in just this way!

Locomotive Start-Up Delay:

Sound Equipped Locomotive Only-

Prototype locomotives do not move until the locomotive has been fully started, air pressure built and the prime mover has settled into idle. Just like the prototype, when you first place your new locomotive on the track and press F8 to start it up, the locomotive start-up sounds are heard. The locomotive will not be able to move during the start-up sequence. Once the sounds settle to idle and the throttle is increased, the locomotive begins to move only after the prime mover has reached notch one. Although this behavior is very prototypical, it may not be preferred. This start-up delay can be removed by simply changing CV 124 to a value of 0. This will cause the locomotive to start moving immediately when the throttle is increased during the locomotive start-up sounds.

Operational and Decoder Functions:

Sound Equipped Locomotive Only-

With your Digital Command Control (DCC) System you have the option of multiple horns, prime movers, bells, and brake squeals. All are changeable with CV48. No booster is needed! Each individual sound has a separate volume control, and up to 8 different sounds can be played at one time! Not only that, but as new sounds become available and firmware gets updated, you can at any time, hook up to the ESU LokProgrammer and update your decoder! Along with outstanding sound, ALL LokSound decoders give you the benefit of the industry leading ESU Motor Control. You'll see the difference instantly as the engine smoothly accelerates across your railroad! You also have the option to use one of MANY lighting effects on any one of the 6 function outputs!

Extended Addressing:

Most DCC Systems give you the option to enter a 4 Digit Extended (long) Address. Please refer to your DCC System's manual for guidance as to how to do this. If your DCC System does not have this feature a full list of values and instructions are available on-line at www.loksound.com.

Default Function Key Assignments & Effects Table (*LokPilot & LokSound, ALL others LokSound Only):

| Function Key | F-Units | U18B | SD40-2(W) | ES44AC/DC |
|--------------|-------------------------------|-------------------------------|--------------------------------|---------------------------|
| F0* | Directional Headlights | Directional Headlights | Directional Headlights | Directional Headlights |
| F1 | Bell | Bell | Bell | Bell |
| F2 | Playable Air Horn | Playable Air Horn | Playable Air Horn | Playable Air Horn |
| F3 | Coupler Clank | Coupler Clank | Coupler Clank | Coupler Clank |
| F4 | Dynamic Brake | Dynamic Brake | Dynamic Brake | Dynamic Brake |
| F5* | Number Board Light | N/A | Number Board Light | Number Board Light |
| F6* | Nose MARS Light** | Nose MARS Light** | Ditch Lights / Rotary Beacon** | Ditch Lights |
| F7* | Dimmer | Dimmer | Dimmer | Dimmer |
| F8 | Prime Mover On/Off | Prime Mover On/Off | Prime Mover On/Off | Prime Mover On/Off |
| F9 | Manual Notching Up | Manual Notching Up | Manual Notching Up | Manual Notching Up |
| F10 | Manual Notching Down | Manual Notching Down | Manual Notching Down | Manual Notching Down |
| F11 | Compressor | Compressor | Compressor | Compressor |
| F12 | Slow Spitter Valve | Slow Spitter Valve | Slow Spitter Valve | Air Dryer |
| F13 | Switching Mode | Switching Mode | Switching Mode | Switching Mode |
| F14 | Sanding Valve | Sanding Valve | Sanding Valve | Sanding Valve |
| F15 | Short Air Let Off | Short Air Let Off | Short Air Let Off | Short Air Let Off |
| F16 | Radiator Fan | Radiator Fan | Radiator Fan | Radiator Fan |
| F17 | Brake Set / Brake Release | Brake Set / Brake Release | Brake Set / Brake Release | Brake Set / Brake Release |
| F18 | Fast Spitter Valve | Fast Spitter Valve | Fast Spitter Valve | Slow Spitter Valve |
| F19 | Auto-Spitters on Shutdown off | Auto-Spitters on Shutdown off | Auto-Spitters on Shutdown off | N/A |
| F20 | N/A | N/A | Handbrake Wheel Style | N/A |
| F21 | N/A | N/A | Handbrake Ratchet Style | N/A |

**if applicable

Diesel Sound Volume CV Defaults Table:

| Function | CV # | Range | F-Units | U18B | SD40-2(W) | ES44AC/DC |
|--|------|-------|---------|------|-----------|-----------|
| Master Volume Control | 63 | 0-192 | 128 | 128 | 128 | 96 |
| ***** SET CV32 to 1 BEFORE CHANGING CV 257 THROUGH CV 511 ***** | | | | | | |
| Prime Mover Volume Control | 259 | 0-128 | 100 | 100 | 100 | 96 |
| Horn Volume Control | 275 | 0-128 | 110 | 89 | 89 | 103 |
| Bell Volume Control | 283 | 0-128 | 96 | 70 | 70 | 45 |
| Coupler Sound Volume Control | 291 | 0-128 | 128 | 128 | 128 | 128 |
| Dynamic Brake Volume Control | 299 | 0-128 | 86 | 65 | 65 | 70 |
| Air Compressor Volume Control | 307 | 0-128 | 90 | 90 | 90 | 100 |
| Radiator Fan Volume Control | 315 | 0-128 | 90 | 90 | 90 | 128 |
| Automatic E-Bell w/Horn (F2) | 323 | 0-128 | N/A | N/A | N/A | 0 |
| Air Dryer | 331 | 0-128 | N/A | N/A | N/A | 128 |
| E-Bell Volume | 339 | 0-128 | N/A | N/A | 70 | N/A |
| Brake Set / Brake Release | 347 | 0-128 | 40 | 40 | 40 | 128 |
| Sanding Valve Volume Control | 355 | 0-128 | 128 | 128 | 128 | 128 |
| Short Air Let Off Volume Control | 363 | 0-128 | 128 | 128 | 128 | 128 |
| Fast Spitter Valve | 371 | 0-128 | 80 | 80 | 80 | 128 |
| Slow Spitter Valve | 387 | 0-128 | 80 | 80 | 80 | 128 |
| Automatic Spitters On Shutdown | 395 | 0-128 | 80 | 80 | 80 | 128 |
| Wheel Handbrake Volume | 403 | 0-128 | N/A | N/A | 100 | N/A |
| Ratchet Handbrake Volume | 411 | 0-128 | N/A | N/A | 100 | N/A |
| Random Sounds | 451 | 0-128 | 90 | 90 | 90 | 100 |

Decoder Reset: CV8 = 8

ESU LokSound Select & ESU LokPilot Technical Data:

Operational Modes:

NMRA/DCC with 14,28, 128 Speed Steps
 2-digit(short) or 4-digit(long) addressing
 Analog DC (Dual mode, de-selectable)
 Automatic recognition of operational mode and DCC speed selection
 Supports ALL NMRA programming modes
 Switching speed and acceleration & deceleration key selectable

Power:

Runs all DC and Core-less motors
 1.1 A continuous load
 Silent, safe 40/20 kHz pulse width frequency BEMF
 Motor output protection; Fifth generation back EMF (de-selectable)

Function Outputs:

Free function allocation (function mapping)
 6 Outputs Rated @ 250mA load per Output
 500mA total load of all function outputs short-circuit-proof

Dimensions:

LokSound Select: 1.02 x 0.62 x 0.18 inches (25.5 x 15.5 x 4.5 mm)
 LokPilot: 0.84 x 0.62 x 0.22 inches (21.3 x 15.5 x 5.5 mm)

Sound (ESU LokSound Select Only):

Audio amplifier: 2W @ 4 Ohms - Useable speakers 4, 8, 16 Ohms
 Memory Capacity 32MBit
 8 Sound Channels, All playable at once!
 Over 20 different sounds

CV48 Sound Selection Table:

This factory equipped LokSound Select sound decoder was programmed specifically to be correct for the prototype of the model it is installed within. You may desire to have different sounds. All sounds can be changed with CV48 and your DCC System. The value for CV48 is calculated by adding the values for the prime mover, the horn, the bell, and the brake squeal selection desired using the charts below. As an example, the EMD SD40-2 default value would include: Prime Mover = 0, Horn = 6, Bell = 0, Brake Squeal = 0.
 Total = 0 + 6 + 0 + 0 = 6 (*Default*)

| | F-Units | U18B | SD40-2(W) | ES44AC/DC |
|--|--|---|---|--|
| DEFAULT | 14 | 71 | 6 | 21 |
| Prime Movers | F-Units | U18B | SD40-2(W) | ES44AC/DC |
| 0 | EMD 567 16 Cyl. Non-Turbo w/Manual Transition - (<i>Default</i>) | GE FDL 8 Cyl. "U18B" - (<i>Default</i>) | EMD 645E 16cyl - (<i>Default</i>) | GE GEVO-12 - No Smart Start |
| 16 | EMD 567 16 Cyl. Non-Turbo w/Normal Transition | N/A | N/A | GE GEVO-12 - 1 Minute Smart Start - (<i>Default</i>) |
| 32 | N/A | N/A | N/A | GE GEVO-12 - 2 Minute Smart Start |
| Horns | F-Units | U18B | SD40-2(W) | ES44AC/DC |
| 0 | Nathan K5LA | Nathan K5LA | Nathan K5LA | Nathan K5LA |
| 1 | Nathan K3L | Nathan K3L | Nathan K3L | Nathan K3LA |
| 2 | Nathan M5 | Nathan M5 | Nathan M5 | Nathan M5 |
| 3 | Nathan P3 | Nathan P3 | Nathan P3 | Leslie S5T |
| 4 | Nathan P5A | Nathan P5A | Nathan P5A | Leslie S3L |
| 5 | Nathan Single Chime | Nathan Single Chime | Nathan Single Chime | Nathan K5HL - (<i>Default</i>) |
| 6 | Leslie A200 | Leslie A200 | Leslie RS3L - (<i>Default</i>) | Nathan M3H |
| 7 | Leslie S3L | Leslie S3L - (<i>Default</i>) | Leslie S3L | N/A |
| 8 | Leslie S5T | Leslie S5T | Leslie S5T | N/A |
| 9 | Nathan M3 | Nathan M3 | Nathan M3 | N/A |
| 10 | Hancock Air Whistle | Hancock Air Whistle | Leslie RS3K | N/A |
| 11 | Wabco E2 | Wabco E2 | Wabco E2 | N/A |
| 12 | Leslie Supertyfon | Leslie Supertyfon | Leslie Supertyfon | N/A |
| 13 | Nathan/Holden M3H | Nathan/Holden M3H | Nathan/Holden M3H | N/A |
| 14 | Dual Single Chimes - (<i>Default</i>) | Dual Single Chimes | Dual Single Chimes | N/A |
| 15 | Nathan 3-Chime | Nathan 3-Chime | Nathan 3-Chime | N/A |
| Bells | F-Units | U18B | SD40-2(W)* | ES44AC/DC |
| 0 | Slow Bell - (<i>Default</i>) | Slow Bell | Slow Air Bell - (<i>Default</i>) | E-Bell - (<i>Default</i>) |
| 64 | Fast Bell | Fast Bell - (<i>Default</i>) | CNW Style Gong Bell | Air Bell |
| *This locomotive has the option to use the E-bell. If you want to use the E-Bell with F1, change the following CV's, in order: CV31 = 16, CV32 = 2, CV302 = 0, CV303 = 4 | | | | |
| Brake Squeals | F-Units | U18B | SD40-2(W) | ES44AC/DC |
| 0 | Brake Squeal Ver. #1 - (<i>Default</i>) | Brake Squeal Ver. #1 - (<i>Default</i>) | Brake Squeal Ver. #1 - (<i>Default</i>) | Brake Squeal Ver. #1 - (<i>Default</i>) |
| 128 | Brake Squeal Ver. #2 | Brake Squeal Ver. #2 | Brake Squeal Ver. #2 | Brake Squeal Ver. #2 |

Locomotive Minimum Recommended Turn Radius:

| F-Units | U18B | SD40-2(W) | ES44AC/DC |
|----------------|-------------|------------------|------------------|
| 18 inches | 18 inches | 22 inches | 22 inches |

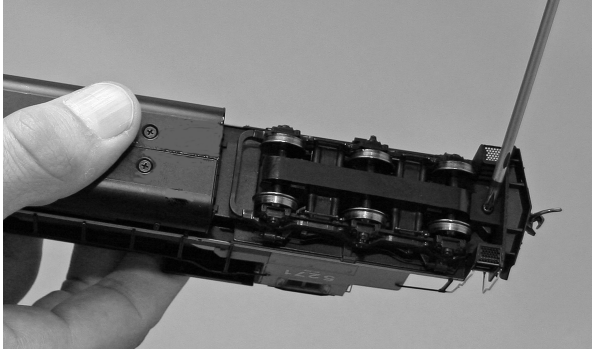
Decoder Reset: CV8 = 8

Direct Current (DC) Only Operation:

Your ESU decoder equipped locomotive operates on standard DC, but does not operate like an old style DC locomotive. For those folks that operate exclusively on standard DC, we have a DC plug available that will replace the decoder in your locomotive. This is available by contacting InterMountain at the email address or the telephone number listed above. Ask for the 21-Pin DC Circuit Board Plug.

SHELL REMOVAL INSTRUCTIONS

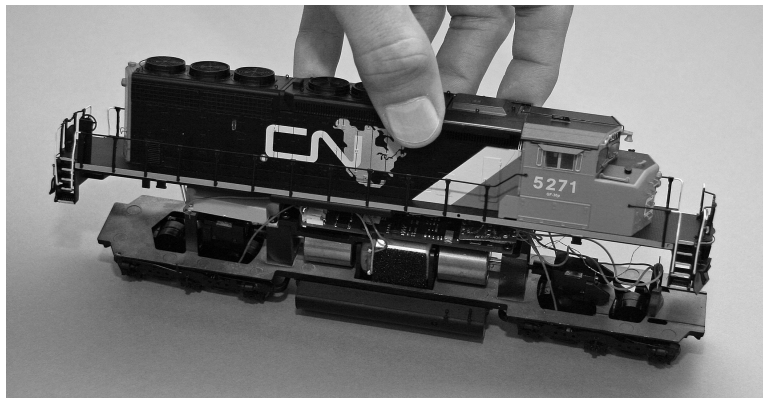
SD40-2(W) units:



1. Place the locomotive on a soft surface or foam cradle. Remove the front and rear couplers from the locomotive. Utilize a Philips head screw driver to unscrew the coupler from the frame. Gently slide the coupler box from the shell and frame. The coupler box may need to be disassembled in place and removed as separate pieces. Keep the pieces together for re-assembly.

2. To remove the shell, gently lift up on the plastic skirting on both sides of the unit while holding the fuel tank. Be gentle and take your time to avoid damaging any of the locomotive details.

3. Please note the lighting wires are attached to the shell and can be easily broken if pulled on too firmly – use care.



4. The chassis should drop out of the shell to reveal the mechanism and electronics.

5. To reassemble the locomotive, place the shell over the drive mechanism and gently press downward and evenly until the shell goes in place. Then reinstall the couplers.

MAINTENANCE TASKS

Your InterMountain locomotive is designed to provide hours of enjoyment with little or no maintenance. On occasion the drive gear mechanisms should be lubricated. Utilize a plastic compatible lubricant such as Labelle® 107 Oil. To lubricate your locomotive place a few drops on the gears of the drive mechanism. Only a small amount is required.

Service Needs: Although rare, at some time you may require service for your locomotive. Please contact InterMountain Railway Company service department by either email (service@intermountain-railway.com), or telephone (800-472-2530), whenever you have a question or need a repair.

Resetting the decoder solves 95% of the decoder related issues we handle.

Decoder Reset: CV 8 = 8