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OPERATORS GUIDE

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

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 and non-sound locomotives have a LokPilot V4.0 DCC.

Operational and Decoder Functions:

Sound Equipped Locomotive Only-

With nothing more than your Digital Command Control (DCC) System you have the option of multiple horns, prime movers, bells, and brake squeals. All are changeable with one CV. 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 .

Sound On / Sound Off (F8 Function Key):

Sound Equipped Locomotive Only-

The F8 function key used with the LokSound Select allows for 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. Sound decoders draw more current on the initial start-up than non-sound decoders. The F8 function key can be changed to become a "mute" button for the prime mover sound by setting CV32 to 2, and then CV403 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 (F8 may or may not need to be pressed), 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.

Default Function Key Assignments & Effects Table:

Function Key	F-Units	U18B	SD40-2(W)	ES44AC/DC
F0*	Direction Headlights	Direction Headlights	Direction Headlights	Direction 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	Nose MARS Light	Ditch Lights
F7*	Dimmer	Dimmer	Dimmer	Dimmer
F8	Prime Mover Sound On/Off	Prime Mover Sound On/Off	Prime Mover Sound On/Off	Prime Mover Sound 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	Auto-Spitters on Shutdown	Auto-Spitters on Shutdown	N/A
**LokPilot*	(off)	(off)	(off)	

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 ********						
Diesel 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
Dryer	331	0-128	N/A	N/A	N/A	128
Brake Set / Brake Release	347	0-128	40	40	40	347
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
Random Sounds	451	0-128	90	90	90	100

ESU LokSound Select & ESU LokPilot V4.0 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 overload 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 load
Speaker impedance 4-8 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 primer mover, the horn, the bell, and the brake squeal selection desired using the charts below. As an example, the ES44AC/DC default value would include: Prime Mover = 16, Horn = 5, Bell = 0, Brake Squeal = 0.
Total = 16 + 5 + 0 + 0 = 21 (***Default***)

	F-Units	**U18B**	**SD40-2(W)**	**ES44AC/DC**
DEFAULT	**14**	**71**	**7**	**21**
Prime Movers	**F-Units**	**U18B**	**SD40-2(W)**	**ES44AC/DC**
0	EMD 567 16 Cyl. Non-Turbo w/Manual Transition - (***Default***)	GE FDL 8 Cyl. "U18B" - (***Default***)	EMD 645E 16cyl – No Smart Start - (***Default***)	GE GEVO-12 – No Smart Start
16	EMD 567 16 Cyl. Non-Turbo w/Normal Transition	N/A	EMD 645E 16cyl – 1 Minute Smart Start	GE GEVO-12 – 1 Minute Smart Start – (***Default***)
32	N/A	N/A	EMD 645E 16cyl – 2 Minute Smart Start	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 - (***Default***)
6	Leslie A200	Leslie A200	Leslie A200	Nathan M3H
7	Leslie S3L	Leslie S3L - (***Default***)	Leslie S3L - (***Default***)	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	Hancock Air Whistle	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 - (***Default***)	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 - (***Default***)	Slow Bell	Slow Bell - (***Default***)	E-Bell - (***Default***)
64	Fast Bell	Fast Bell - (***Default***)	Fast Bell	Air Bell
Brake Squeals	**F-Units**	**U18B**	**SD40-2(W)**	**ES44AC/DC**
0	Brake Squeal Ver. #1 - (***Default***)	Brake Squeal Ver. #1 - (***Default***)	Brake Squeal Ver. #1 - (***Default***)	Brake Squeal Ver. #1 – (***Default***)
128	Brake Squeal Ver. #2	Brake Squeal Ver. #2	Brake Squeal Ver. #2	Brake Squeal Ver. #2

Locomotive Minimum Recommended Turn Radius:

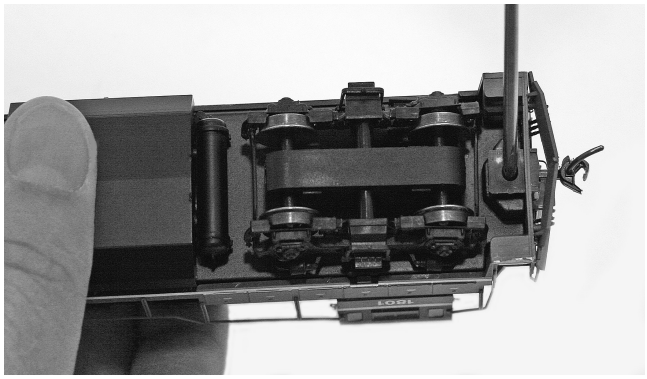
F-Units	**U18B**	**SD40-2(W)**	**ES44AC/DC**
18 inches	18 inches	22 inches	22 inches

Direct Current (DC) Only Operation:

Your ESU decoder equipped locomotive operates in a DC environment but may not operate like an old style DC locomotive. For those folks that operate exclusively in a DC environment 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.

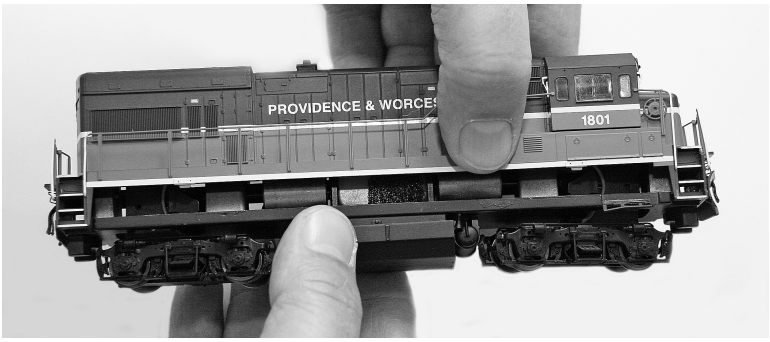
SHELL REMOVAL INSTRUCTIONS

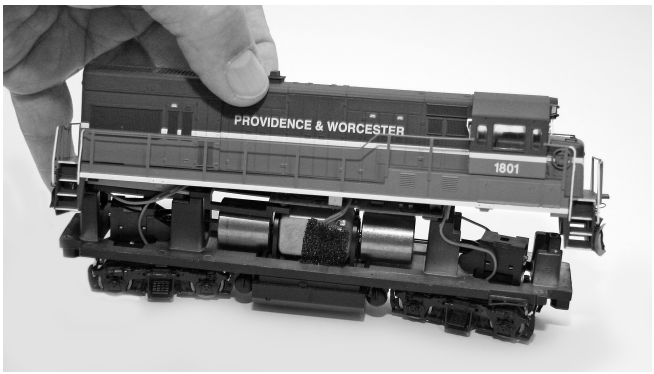
U18B units:



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 may be attached to the shell and can be easily broken if pulled on to 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.