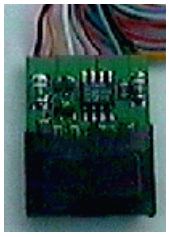
LE100/101US Decoder



Size: Length = 1", Width = 0.75", Depth = 0.27
User Setable Addresses: 1-99; Adjustable Starting Voltage

The LE100US is the least expensive DCC decoder on the market at this time. It is an improved version of the LE100 which was the standard Lenz decoder for several years. It features 14 speed steps (with averaging you can control 28 speeds), and has front and rear directional headlights that can be controlled by function FL. This basic controller is rated at 1 amp. The LE101 comes with an NMRA RP-9.1.1 Medium Plug while the LE100 comes with normal wires.

Characteristics:

- Compatible with NMRA DCC Standards S-9.1 and S-9.2
- Operation on conventional DC layouts is possible.
- Provides 1A continuous motor current: **Motor output does not have thermal overload protection**
- Directional Headlights with each output overload protected.
- Programmable loco address, and start speed
- 64 internal decoder speed steps, implements both NMRA 14 speed and 28 speed averaged modes.
- Compatible with all NMRA DCC systems
- Size: Length = 1", Width = 0.75", Depth = 0.27

Preparing to Install the LE100/101US Decoder

The locomotive must be tested for excellent operation on normal DC power before installing the decoder. Clean any dirt or oxidation from the wheels and pickups, and make sure that electrical contact is smooth. Install extra pickup wipers if necessary. The decoder cannot correct for electrical pickup flaws! Take note which motor brush is connected to the right rail and which to the left; this information should be saved as it will be needed later on the installation process.

Make Sure Locomotive does not exceed decoder current Capability of 1.0 Amps continuous. The LE100/101US does not have overload protection and will overload and cease operation should the current exceed 1.5 amps.

All of the decoder outputs are protected by internal current limiting circuitry, up to a maximum 1.2A permitted. It is never permitted for the total of the motor load plus all function outputs to exceed 1.2A. Of course, each individual load must be less than the total. For example- suppose the motor may require as much as 1.0A continuously. Then the light outputs combined must not exceed 0.2A.

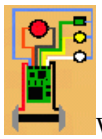
- **Notice**
  You must not allow any metal part of the locomotive to touch the surface components of the decoder. This could cause a direct internal short circuit and the decoder will be destroyed.
- **DO NOT WRAP decoder with electricians tape or shrink wrap!**
  Doing so will impede air circulation and degrade the performance of the decoder. Instead, put electrician tape over any part of the locomotive frame or body that might touch the decoder. Take special note that metal contact might occur only when the loco body is reinstalled.

After disconnecting the wiring to the motor brushes, the brushes MUST be isolated from the rail pickup. Achieving isolation may require some different approaches on different locos, perhaps unsoldering wires, placing a thin piece of insulation plastic between brush terminal and contact spring, or whatever. In other words, after isolation there must be NO electrical contact between the motor and the rail pickup. If you

have a VOM, check for infinite resistance between the motor and all the wheels.

- **Caution**
  The LE100/101US can not be set up for simultaneous use for 2-rail pickup and overhead catenary or trolley operation. If the loco is turned the wrong way, the decoder could get double-voltage which would destroy it!

Wiring Options

 With the LE101 you simply install the plug in the locomotives socket. The direction of the locomotive under digital control can be reversed by plugging in the plug in the other direction.

There are two important wiring options with the LE100, depending on how the locomotive is constructed. If the lamps are grounded to the frame, follow diagram 1. If the lamps are isolated from the frame (or you make them isolated) then follow diagram 2 which is the preferred installation approach.

Step by Step Installation
The following example show the directional headlight option being used)

1. Connect the decoder to the track pickups thus:
   - Red wire to right rail pickup
   - Black wire to the left track pickup
2. Connect the decoder to the motor brush terminals thus:
   - Orange wire to the terminal which originally to the right rail
   - Gray wire to the terminal which was originally to the left rail
3. Now connect the headlights thus:
   - White wire to the forward headlight
     If the bulb is isolated, then connect the Blue wire to the other bulb terminal.
   - Yellow wire to the rear headlight
     If the bulb is isolated, then connect the blue wire similarly.

Check Your Installation

Place the loco on the programming track, with out the body, and read back the loco address from the decoder. If the decoder is properly installed, you will be able to read back the factory-set address 03. If you cannot read back the address then you will have to double-check the wiring. You can not damage a Lenz decoder using the Lenz Digital Plus programming track because of the reduced current during programming.

Now you are ready to program the loco address and begin test running.

Programming the LE100/101US Decoder

(programming the LE100US and the LE101US is identical)

To program the decoder you will need the LH100 and the LZ100 properly wired to a programming track. The program values installed by the user are stored in "positions" internal to the decoder and will be saves even when the layout is switched off or the loco taken off the tracks. It is never necessary to take the loco apart to program or re-program it.

The LE100/101 has only 2 storage positions.

In the following descriptions, the position numbers is shown on the left and the allowable values are shown on the right followed by an explanation of the purpose of the position.

1. Loco Address (Values: 1-99): The number for calling up this loco on your cab
   (Caution: Never try to program the decoder with an address greater than 99)
2. Start Speed (Values: 1-15): This is the relative starting speed used for step 1

Factory Installed Standard Values

The LE110 is shipped from the factory with the following values set in the various positions.

1. Loco Address: Value: **03**
2. Start Speed: Value: **08**