ADDRESS CHANGER

Thank you for purchasing the Broadway Limited Address Changer. At Broadway Limited, we believe model railroading should be a fun experience and you should not have to fiddle with software and programming unless you want to. The Address Changer was designed to simplify the process of setting the address in your DCC equipped locomotive. We hope that by eliminating the frustration many of our customers experience with programming their locomotives, we can help make model railroading more fun. Enjoy.

Robert Grubba
President / CEO
Broadway Limited Imports, LLC

Instructions

You probably don't need to read these instructions. The Address Changer is very simple to use. A shortened version of the instructions are printed on the back of the Address Changer.

The Broadway Limited Address Changer will unlock, read, and change the address of every known Digital Command Control (DCC) locomotive or decoder that is compliant with NMRA (National Model Railroad Association) specifications for programming on the "program track".   It will also reset to factory defaults most decoders. It will work for any scale decoder including HO, N and Z, as well as other scales, as long as they do not draw more than the NMRA specified current during programming.

Setup:

1. Plug the Address Changer into a wall outlet using the supplied power cord.
2. Use 16-22 gauge wire to connect a short piece of track (not supplied) to the terminals labeled "Program Track". The track must be long enough for a locomotive and tender. **Do not connect the Address Changer to your layout's main line.**
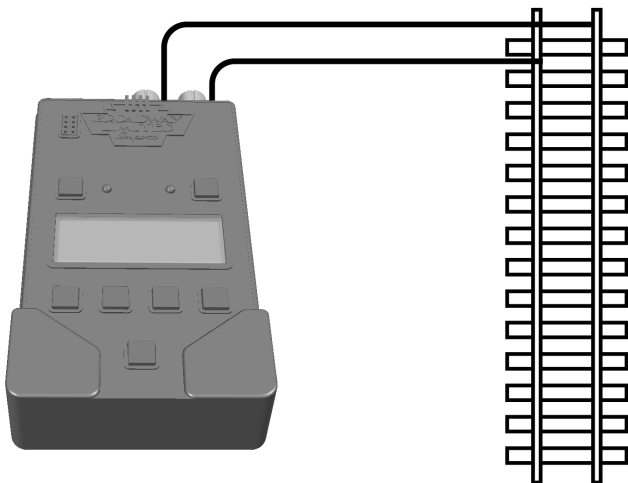
NOTE: To properly connect the wires to the wire terminals, unscrew each terminal to reveal the hole in the base of each terminal post. Insert bare wire ends into the holes (Match red wire to red terminal and black to black terminal). Tighten each terminal.

power cord

Insert wire here, then tighten knob (just snug, don't kill it)

Background

A decoder is a circuit board that receives instructions from a DCC controller to operate the motor, lights and/or sound system in a model train locomotive. Most DCC controllers can operate up to 9,999 locomotives, as long as they each have a unique digital address numbered 1-9999. Decoders come pre-installed on many models, including the Broadway Limited Paragon 2 models which contain the best sound and control features in the world. Other models require the user to install the decoder.

In either case, the decoders usually come with the address preset to number 3. If you operate more than one model at a time, you will want to set the address of each locomotive to a unique number that you can remember, typically the road number that is already printed on the locomotive. *We strongly recommend testing the locomotive by operating as number 3 before changing the address.*

Setting a New Address

To set the address of a decoder already installed in a locomotive, place the locomotive on the program track section.   Press the "PRESS TO SELECT ADDRESS" buttons to display the new address you want to use. (Each press of these buttons increases the digit directly above it by one.)   Then press the "PROGRAM" button.   The display will show a series of dashes while it is programming. This could take several minutes while the address changer programs the new address into the locomotive.

After programming, the new address will be read back for verification.

Note that pressing the "Program" button will simultaneously program a locomotive on the program track and a decoder in the "DECODER" socket and then display both addresses in an alternating pattern. The green light by the "READ DECODER" button indicates the address of the

6

decoder in the NMRA socket on the Address Changer is showing. The green light by the "READ TRACK" button indicates the address of the locomotive on the program track is showing. If there is no decoder in the socket, the display will read "NONE" while the decoder light is lit and then show the new locomotive address while the track light is lit.

If the locomotive address cannot be read back, the word "NONE" will be displayed while the track light is lit. In this case, try cleaning the wheels or pressing the locomotive firmly onto the track to improve the electrical connection and try pressing the "PROGRAM" button again. If the address still cannot be programmed, try reading the address back, or resetting the decoder. (See pages 8-9)

Note: When programming a steam locomotive, we recommend you always have the locomotive and tender connected.

To set the address of a decoder not yet installed in a locomotive, plug the decoder into the NMRA standard 8 pin socket on the face of the address changer. The orientation does not matter. We only put a "1" near the socket because some people like specific instructions. Press the "PRESS TO SELECT ADDRESS" buttons to display the new address you want to use. (Each press of these buttons increases the digit directly above it by one.) Then press the "PROGRAM" button. The display will show a series of dashes. This could take several

minutes while the address changer programs the new address into the decoder.

After programming, the new address will be read back for verification. If there is no train on the program track, the display will read "NONE" while the track light is lit and then show the new decoder address while the decoder light is lit.

If the decoder address cannot be read back, the word "NONE" will be displayed while the decoder light is lit. In this case, try making sure the decoder fits snugly enough in the socket to make a good electrical connection. You may need to bend the decoder pins slightly outward to ensure a good connection. If the address still cannot be programmed, try reading back the address or resetting the decoder. (See READING ADDRESSES below)

If your decoder does not have an 8 pin plug, you can either purchase an adapter, or install the decoder into the locomotive and then use the program track section. Adapters are readily available from your local hobby store and include:

SoundTraxx 810135 NMRA Compatible 8-Pin to 9-Pin DCC Wiring Harness
TCS 1365 Wire Harness
Digitrax DHWPS Plug Wire Harness

Reading Addresses

To read the address of a decoder already installed in a locomotive, place the locomotive on the track section and press the "Read Track" button. The display will show a series of dashes. This could take several minutes. The address will then be displayed, and the green light near the "Read Track" button will light to indicate the displayed address if that of the locomotive on the track . If the address cannot be read, the word "NONE" will be displayed. In this case, try cleaning the wheels or pressing the locomotive firmly onto the track to improve the electrical connection and try to read again. If the address cannot be read, try resetting the decoder. (See RESETTING TO FACTORY DEFAULTS below)

To read the Address of a decoder not yet installed in a locomotive, plug the decoder into the NMRA standard 8 pin socket on the face of the address changer. Press the "Read Decoder" button. The display will show a series of dashes. This could take several minutes. The address will then be displayed, and the green light near the "Read Decoder" button will light to indicate the displayed address if that of the decoder. If the address cannot be read, the word "NONE" will be displayed. In this case, try making sure the decoder fits snugly enough in the socket to make a good electrical connection. You may need to bend the decoder pins slightly outward to ensure a good connection. If the address cannot be read, try resetting the decoder.   (See next section)

Resetting to Factory Defaults

To reset the address of a decoder already installed in a locomotive, place the locomotive on the program track section. Press and hold one of the "SELECT ADDRESS" buttons, and while holding it down, press the "READ TRACK" button. Release both buttons. The display will show a series of dashes. This could take several minutes. The default address of "3" will then be displayed, and the green light near the "Read Track" button will light to indicate the displayed address if that of the locomotive on the track . If the locomotive cannot be reset, the word "NONE" will be displayed. In this case, try cleaning the wheels or pressing the locomotive firmly onto the track to improve the electrical connection and try to reset again. If the locomotive still cannot be reset, it may be damaged or incompatible with this address changer.

To reset the address of a decoder not yet installed in a locomotive, plug the decoder into the NMRA standard 8 pin socket on the face of the address changer. Press and hold one of the "SELECT ADDRESS" buttons, and while holding it down, press the "READ DECODER" button. Release both buttons.   The display will show a series of dashes. This could take several minutes. The address will then be displayed, and the green light near the "Read Decoder" button will light to indicate the

displayed address if that of the decoder. If the address cannot be read, the word "NONE" will be displayed. In this case, try making sure the decoder fits snugly enough in the socket to make a good electrical connection. You may need to bend the decoder pins slightly outward to ensure a good connection. If the decoder still cannot be reset, it may be damaged or incompatible with this address changer.

Extremely Simple Consist Programming

Operating several locomotives together in one train is called a consist. The most basic example might be two similar locomotives operating back to back, called an A-A set. To operate multiple locomotives together, simply program each of them to the same address. The number typically chosen is the road number printed on the lead locomotive. If one or more of the locomotives is to operate facing backwards, then it must be programmed as a "reverse" engine. To do this, program the decoder address as described in the **"Setting a New Address"** section, except when you press the "PROGRAM" button, hold it down for 5 seconds. After holding the button down for 5 seconds, the display will read "REV" (which looks like "AEU.") Release the button, and that locomotive or decoder will be programmed to run in reverse.

TIP: After setting the addresses of all the locomotives, place them on your DCC equipped

layout but do not couple them together. Instead leave a few inches between each locomotive. Operate them to make sure they all move in the same direction, then couple them together.

Programming BlueLine Locomotives

Broadway Limited's BlueLine series of locomotives are unique in that the models come from the factory with a pre-installed sound system that has its own DCC address. In order to run the locomotive on a DCC layout, a second after-market DCC decoder must be installed to operate the motor. **To operate properly, it is critical that both the motor decoder and the sound system be programmed to the same address.**

The best way to program BlueLine locomotives is to set the address of both the sound system and the motor decoder, and then install the decoder in the locomotive. Before placing the locomotive on the program track, remove the jumper board that comes in the DCC socket on the locomotive. Place the locomotive on the Address Changer program track section and then plug the decoder into the NMRA socket on the Address Changer. Program both addresses at the same time and then install the decoder.

If it becomes necessary to reset or change the address of the engine later, it is recommended to do so on the main line of your layout using the

"Operations" mode programming of your DCC system, or remove the decoder from the engine and program with the Address Changer. This is necessary because having multiple decoders on the program track at the same time can cause the communications to become corrupted.

If you do program a BlueLine locomotive using the Address Changer with the motor decoder already installed, the address may be changed, but the address changer may be unable to read or verify the new address. In this case, the Address Changer display will read "NONE", but the address may still be properly set. Test by running the locomotive. If the locomotive will not operate properly using the new address, you will need to remove the motor decoder, program the locomotive and the motor decoder separately, and the re-install the motor decoder.

How Does It Work?

While many people believe the Broadway Limited Address Changer works by magic, it is actually just good engineering.

If you want to know the specifics:
When reading, the Address Changer always displays the active address by first reading CV29. "CV" stands for "configuration variable". It is one of the many parameters used in the NMRA standard to vary the way models operate.

Addresses 1-127 are designated short addresses.
Addresses 128-9999 are designated as long
addresses.

When programming to run backwards, the Address
Changer reads CV 29 and adds 1 to the existing value.

During the reset procedure, the following codes
are sent as the reset command for various types of
decoders:

BLI CV8=8
DigiTrax CV8=8
LokSound (ESU) CV8=8
SoundTraxx CV8=8; CV30=2
TCS CV8=8; CV30=2
Lenz CV8=33
MRC 125 = 1
MRC CV1 = 3, CV 29 = 6 (Some do not respond to
CV 125 =1)
NCE CV30=2
QSI CV49=128, CV50=255, CV56=113

(Lenz, Digitrax, Loksound, SoundTraxx, MRC, TCS,
QSI and NCE are probably trademarked by their
respective owners.)
While reading information from your decoder, the
dashes on the display move from right to left. While
writing information to your decoder the dashes
move from left to right.

The program track outputs and the NMRA socket
are short circuit protected. The display will say

"OOPS" if current exceeded.

Before resetting any decoder, the Address Changer first checks to make sure it is not locked using CV's 15 and 16. If it is locked, the Address Changer unlocks it using a proprietary multiplex phase interconnecting quantum code breaking algorithm developed by the British government during the cold war.

When reading, the Address Changer first tries to read in Direct Mode. If this is unsuccessful, it tries Physical Mode and then Page Mode. Page mode can take a long time to read, so be patient, especially with older decoders that do not operate in Direct Mode.

We hope this product makes your model railroading experience more enjoyable.

Troubleshooting

Problem: The display reads "OOPS" when changing the address:

Likely cause: The decoder or locomotive is drawing too much current.

Solution: Try setting the address several times in rapid succession. Some decoders have big capacitors that draw a lot of current when first powered up. These capacitors may be charged by the Address Changer on the first attempt, and will allow the Address Changer to work on a second or third attempt. Note: After market "keep alive" capacitor packs may need to be unplugged to enable setting address.

Problem: The display reads "NONE" when changing the address:

Likely cause: The Address Changer cannot read the decoder or locomotive.

Solution: The address may have been set, but the Address Changer is unable to read back the new address. Try running the locomotive to see if the new address works.

Problem: Locomotive cannot be programmed to run in reverse (when setting up a consist).

Likely cause: Some decoders will not allow the Address Changer to modify CV 29.

Solution: Set the address, then move the locomotive to your main line. Use your DCC system's operations mode programming to change CV 29 to a value of 7.

Broadway Limited Imports, LLC
9 East Tower Circle
Ormond Beach, FL 32174
United States of America
TEL: 386.673.8900
FAX: 386.673.8080
E-mail: info@broadway-limited.com

www.broadway-limited.com
www.facebook.com/BroadwayLimited