Modelismo del Tren

Digitrax Command Control
Run Your Trains, Not Your Track!

# DZ143

## Z Scale

**Mobile Decoder**
**1.25 Amp/2 Amp Peak**
**4 FX³ Functions, 0.5 Amp**

**Fits Many Z, N and HO Scale Locomotives**

## Features:

- **Digitrax LocoMotion™ System**-Your locomotives look like the real thing. The Digitrax LocoMotion™ System makes them run like the real thing, too!
  - **Torque Compensation** for smooth as silk silent operation.
  - **128 Speed Step** operation (14 or 28 steps can also be used).
  - **Momentum** with acceleration and deceleration.
  - **Normal Direction of Travel** is user selectable.
  - **Switching Speed** feature for easier and faster access to yard speeds.
  - **3 Step Speed Tables** set start, mid and max voltage for custom control.
  - **28 Step Speed Tables** with 256 level resolution for precise control.
- **Scaleable Speed Stabilization (Back EMF)** with simple setup & 256 level resolution.
- **SuperSonic™** motor drive for silent operation.
- **FX³** Function outputs for prototypical lighting effects and on/off control:
  - **Constant Brightness Lighting** with directional or independent control.
  - **Realistic Effects** like Ditch lights, Mars lights, strobes, and many more.
  - **FX³ & Standard Function Qualifiers** operate functions based on direction, F0 on or off, direction and F0, and whether loco is moving.
  - **Function Remapping** for custom function setup.
  - **Master Light Switch** turns off all lights & functions with one keystroke.
  - **Advanced Consist Function Controls**
- **Transponder equipped** ready for transponding on your layout.
- **All Mode Programming with Operations Mode Read Back** reads back CV values right on the mainline.
- **Decoder Reset CV** with or without speed table reset.
- **Motor Isolation Protection** prevents damage to your decoder.
- **Basic, Advanced & UniVersal Consisting**
- **2 Digit and 4 Digit Addressing**
- **Works with most DCC-ready Z, N, and HO scale locomotives up to 18V track voltage**
- **DCC Compatible**
- **FCC Part 15, Class B RFI compliant**

## Parts List

1 DZ143 Decoder 1 Instruction sheet

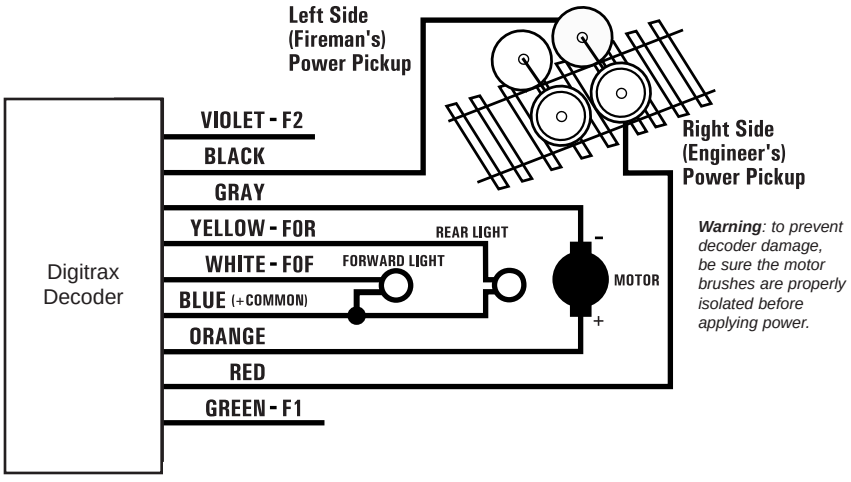
## Installation Information

See the Digitrax Decoder Manual for complete decoder test procedures, installation instructions, programming and technical information. Digitrax manuals and instructions are updated periodically. Please visit www.digitrax.com for the latest versions, technical updates and additional locomotive-specific installation instructions.

## Installation Instructions

1. Carefully remove the locomotive's shell from the frame. Notice the orientation of the shell to the frame so that you can reinstall correctly.
2. The DZ143 has 6" wires that you will solder directly to the appropriate connections inside the locomotive. The smaller size allows the decoder to be easily installed in a variety of locomotives. The bare ends of the wires are wired to the motor connections, power pickup connections and the lights according to the following diagram. (***Figure 1***)
   Note: Avoid stressing the solder connections of the wires to the decoder board. If a connection is broken, carefully solder the wire to the board, making sure not to contact any other parts or pads where it might cause a short circuit.
3. You are now ready to run your locomotive. The DZ143 is factory programmed to address 03. You can easily customize the address and other features. See section "Customizing Your Decoder" that follows.

***Figure 1.*** DZ143 Wiring Diagram



450 Cemetery Street
Norcross, GA USA 30071
www.digitrax.com
T 770-441-7992
F 770-441-0759
E sales@digitrax.com

**Installation Notes:**

1. Do not exceed the decoder's 500mA total function output rating.
2. We recommend that the Blue wire, also called +Common or Lamp Common, be connected as shown. If you wish to omit the Blue wire in your installation, consult the Digitrax Decoder Manual for more information.
3. The head lamp should be hooked up using the Blue/+Common wire for optimal Digitrax transponding operation.
4. To use a function output with an inductive (coil) type load, see the Digitrax Decoder Manual for more information to avoid damage to the decoder.
5. See the Digitrax Decoder Manual for full details of wiring 12-16V lamps, 1.5V lamps, and LEDs. Lamps that draw more than 80 mA when running require a 22 ohm 1/4 watt resistor in series with the directional light function lead to protect the decoder.
6. Some locomotives employ filter capacitors for RFI suppression in the locomotive wiring. These may cause problems with Supersonic decoders and non-decoder analog operation on DCC. This capacitor should be removed for safe operation.

## Customizing Your Decoder

Your Digitrax decoder is ready to run and will operate using address 03 with no additional programming. For a more prototypical railroading experience, your decoder can be customized for your specific locomotive by programming some of the Configuration Variables, or CVs, available. See the Digitrax Decoder Manual or the Digitrax web site for more information.

## Changing the Decoder Address

The first CV most people change is the decoder address. This allows you to independently control each loco with a unique address. Digitrax decoders are shipped with CV01 (AD2), the two digit address, set to 03. Following is a brief description of how to change the decoder address with a Digitrax DT series throttle. See your Starter Set Manual for complete programming instructions.

1 Place the loco on the programming track. Go into Program Mode on your system. On DT400 press **PROG**. On DT300, DT100 & DT200 press **RUN/STOP** & **FN/F0**.

2. Choose AD2 for 2 digit addressing or AD4 for 4 digit addressing (DT300 & DT400). (Ad for DT100 & DT200, see your Starter Set manual for 4 digit instructions).
3. Use your throttle to choose the address you want to set up for the decoder.
4. Complete address programming. On DT400 press **ENTER**. On DT300, DT100 & DT200 press **SEL**.

**Note:** CV29 must also be programmed to enable 4 digit addressing, this is done automatically by the DT300 & DT400 but not on earlier throttles.

©2004 Digitrax, Inc

## Digitrax LocoMotion™ System

Your locomotives look like the real thing, now you can make them run like the real thing, too. Digitrax decoders incorporate torque compensation for smooth as silk operation. You can also program CVs that control momentum, 3 step and 128 step speed tables, switching speed, normal direction of travel, scaleable speed stabilization and more to take full advantage of the Digitrax LocoMotion™ System.

## Momentum-CV03 & CV04

Momentum is part of the LocoMotion™ System. Acceleration is controlled by CV03 and deceleration by CV04. Both come from the factory set to 000/x00. A range of 000/x00 to 031/x1F is available for both accel and decel. We recommend that you try CV03:003/x03 and CV04:000/x00 as a starting point for experimenting with momentum.

## Speed Tables-How the Loco Responds to the Throttle

With Digitrax LocoMotion™, there are two types of speed tables: 3 Step Tables and High Resolution 28 Step Tables. Please see your Digitrax Decoder Manual for a discussion of the 28 Step Tables. The 3 Step Tables are set up by programming 3 CVs: Start Voltage (CV02), Mid point Voltage (CV06) and Max Voltage (CV05). These values are set at 000/x00 at the factory. All have a range of values from 000/x00 to 255/xFF. We recommend the following CV values as a starting point for experimenting with speed tables.

| Loco Type | V Start CV02 | V Mid CV06 | V Max CV05 |
|---|---|---|---|
| **Switcher** Concentrated low speed. Limited top speed | 002/x02 | 038/x26 | 064/x50 |
| **Road Switcher** Prototypical top speed w/evenly distributed curve from 0 to top speed | 002/x02 | 048/x30 | 098/x62 |
| **Mainline Loco** Quick increase to cruising speed then levels off to prototypical top speed. | 002/x02 | 128/x80 | 154/x9A |

450 Cemetery Street
Norcross, GA USA 30071
www.digitrax.com

T 770-441-7992
F 770-441-0759
E sales@digitrax.com

## Other LocoMotion™ Features: Switching Speed, Normal Direction of Travel & Scaleable Speed Stabilization (Back EMF) Features

**Switching speed** is controlled by CV54. The factory setting is 000/x00 for OFF. To turn on the switching speed feature, program CV54 to a value of 001/x01. When this feature is on, use F6 to activate and deactivate switching speed. When switching speed is ON and F6 is ON, the switching speed feature is on. With the feature ON, the throttle's target speed is effectively reduced by about 50% and the effects of accel and decel programmed into the decoder are reduced by 1/4. This is useful for yard switching operations.

**Normal Direction of Travel** is controlled by CV29. See your decoder manual for additional information on the settings for CV29.

The intensity, or droop, of **Scaleable Speed Stabilization (Back EMF)** is controlled by CV57. The factory setting for this feature is 006/x06 which is suitable for most locos. You can adjust this value in the range of 000/x00 for OFF to 015/x0F for the maximum effect. Consult your Digitrax Decoder Manual for info about CVs 55 & 56 and their effects on scaleable speed stabilization.

## SuperSonic™ Silent Operation and Torque Compensation

The factory settings in the decoder provide silent, smooth operation of your locomotive under most conditions. For more information about these settings, please see the Digitrax Decoder Manual or our website.

## Digitrax Transponding CV61

**Digitrax Transponding** is controlled by CV61. The initial factory set value is 000/x00 for **OFF**. To turn **ON** transponding, program CV61 to a value of 002/x02. This allows you to use Digitrax transponding to keep track of your rolling stock. When transponding is enabled, the front light of the locomotive will flicker slightly to indicate transponding signal is being communicated. For optimal transponding operation, we recommend that you hook up the forward and rear lights as shown in the wiring diagram (***Figure 1***).

## Decoder Reset CV08

**Decoder reset** lets you reset all CV values to the initial factory settings. To reset all CV values, program CV08 to a value of 008/x08. You also have the option of resetting all values except the 28 speed step tables. To do this, program CV08 to a value of 009/x09.

## Function Outputs on the DZ143

The DZ143 is set up at the factory to control four function outputs. The DZ143 is configured to control the forward and reverse lights on the locomotive through the white lead and yellow lead using Function 0 (F0F-forward and F0R-reverse) for directional lighting. Functions F1(Green) and F2 (Violet) are part of the harness for easy hookup. The wire colors indicated are the standard color code used in the industry. These colors are important if you plan to use function remapping.

All four function outputs can be easily set up with Digitrax FX$^3$ lighting effects or as standard on/off functions with the following operational qualifiers:

1. Forward or Reverse direction of travel, or
2. Whether F0 is on or off, or
3. Both direction of travel and whether F0 is on or off, or
4. Whether the locomotive is stopped or moving.

## Function Remapping

Function remapping allows you to program the function outputs of your decoder to be controlled by selected function keys on your throttle. Please consult the Digitrax Decoder Manual or website for information on function remapping.

## Master Light Switch

Each of the four function outputs can be programmed to turn on and off with the F0 ON/OFF key on your throttle, creating a Master Light Switch. The CV values for creating this effect are listed in the Digitrax Decoder Manual in the section: *Setting Up FX & FX$^3$ Effects on Function Outputs.*

450 Cemetery Street
Norcross, GA USA 30071
www.digitrax.com

T 770-441-7992
F 770-441-0759
E sales@digitrax.com

## Warranty & Repair

All warranties on Digitrax products are limited to refund of purchase price, repair or replacement at Digitrax's sole discretion. Except as expressly stated in the full warranty statement, there are no warranties, express or implied, including but not limited to any warranties of merchantability or fitness for a particular purpose. For complete warranty details see www.digitrax.com.

**Damaged decoders should be returned directly to Digitrax for repair.**

**Caution: To prevent damage to your decoder and locomotive, track voltage used during operation must not exceed the operating parameters of the locomotive and its lighting system in which the decoder is installed (typically this is 12V DC). For most N scale layouts, Digitrax recommends using 14 volts DCC or less for operation to avoid damage to the locomotive shell, lamps and decoder.**

***Digitrax, Inc. is not responsible for unintentional errors or omissions in this document.***

# DZ143

**Fits a Variety of Z, N and HO Scale Locomotives**

## Movin' Down The Tracks With Digitrax Command Control

### Main Station

Starter Sets
LocoNet
Power Supplies

RADIO EQUIPPED Available

Your Digitrax LocoNet® Starter Set is just the beginning of an exciting trip! Pick the one that's right for you!

Super Chief™ Super Empire Builder™ Zephyr™

LocoNet® The Digitrax Difference

### Locomotive Shops

Mobile Decoders
Function Decoders

### More Fun For Everyone

Add More Boosters, Advanced & Simple Throttles, Power Supplies, Universal Panels, IR and/or Radio for more trains and operators.

### Maintenance Of Way

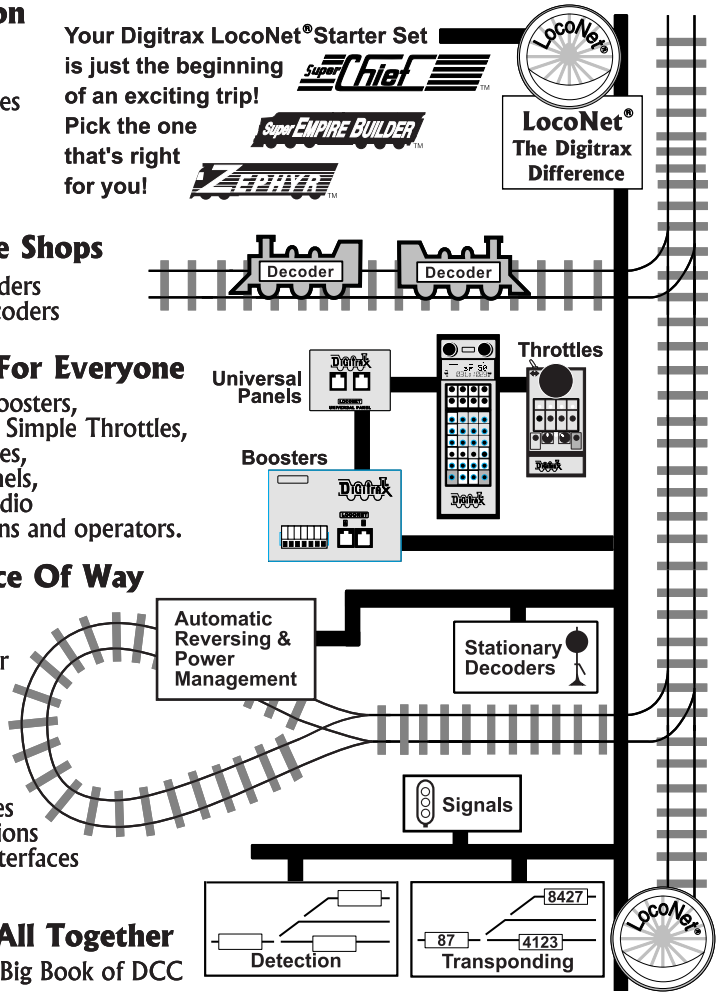
Make your layout more fun & simpler to operate!

### Computer Controls

PDA Throttles & Applications
Computer Interfaces
Programmer

### Putting It All Together

The Digitrax Big Book of DCC





450 Cemetery Street
Norcross, GA USA 30071
www.digitrax.com
T 770-441-7992
F 770-441-0759
E sales@digitrax.com


Made in U.S.A.

CE

DZ143

6 52667 05019 7

1k/10/03

307-4001-0000