DN163M0

Fits MicroTrains FT Locomotive

N Scale
Mobile Decoder
DCC Plug 'N Play
1.5 Amp/2.0 Amp Peak
6 FX^3 Functions, 0.5 Amp

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.

- **Scalable Speed Stabilization (Back EMF)** with simple setup & 256 level resolution.

- **SuperSonic** motor drive for silent operation.

- **FX^3** Functions for prototypical lighting effects:

  Constant Brightness Lighting with directional or independent control.

  Realistic Effects like Ditch lights, Mars lights, strobes, and many more.

  Dynamic and Static Qualifiers operate functions based on direction, F0 on or off, loco direction and F0, and whether loco is moving.

  Function Remapping of 14 functions for custom function setup.

  Master Light Switch turns off all lights & functions with one keystroke.

  Advanced Consist Function Controls

- **Plug 'N Play** design makes installation quick and easy.

- **Golden-White LED** for added realism.

- **Transponder equipped** ready for transponding on your layout.

- **All Mode Programming with Operations Mode Read Back-**read back CV values right on the mainline.

- **Decoder Factory CV Reset** with or without speed table initialize.

- **Motor Isolation Protection** prevents damage to your loco and decoder.

- **Basic, Advanced & UniVersal Consisting**

- **2 Digit and 4 Digit Addressing**

- **DCC Compatible**

- **FCC Part 15, Class B RFI compliant**

Complete Train Control
Run Your Trains, Not Your Track!

Parts List

1 DN163M0 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 - MicroTrains FT Locomotive

1. Carefully remove the locomotive's shell from the frame. Notice the orientation of the shell for reinstallation. *Figure 1*.
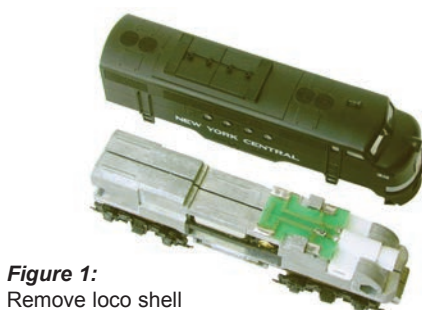
2. Carefully remove the plastic light shroud by gently prying up the tabs on either side of the frame and lifting the plastic piece off the frame. *Figure 2*.
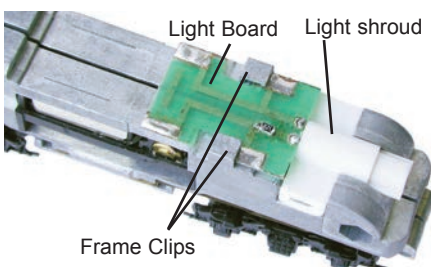
Figure 1: Remove loco shell

3. Slide the factory light board forward to release it from under the clips on the locomotive frame. Be careful not to distort the frame clips as you slide and lift the light board off the frame. *Figure 2.*

Figure 2: Remove plastic light shroud, slide board forward to remove board

4. Place the small piece of kapton tape provided with the decoder on the loco frame, wrapping it around the sides as indicated in the *Figure 3*. The tape should cover the side of the frame to insulate the motor clips from the frame. Trim the tape so it does not interfere with motor brush caps.
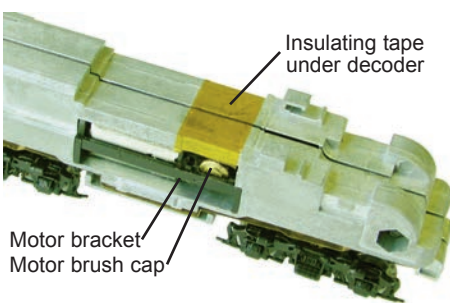
5. Align the notches in the sides of the DN163M0 decoder board over the frame clips. (See *Figure 3.*) Be careful to insert the brass motor clips inside the plastic motor bracket
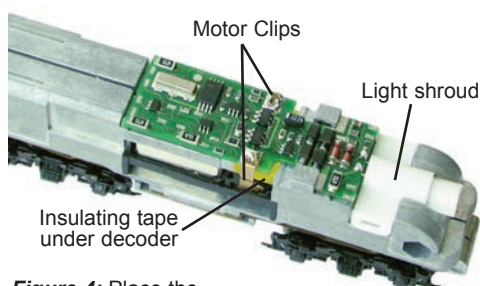
Figure 3: Place insulating tape on frame.

Press down and slide the board back and under the frame clips to lock the board in place. Be careful to keep the motor clips between the bracket and the motor brush caps on both sides of the locomotive and not bend them. Replace the light shroud. *Figure 4.*

Figure 4: Place the DH163M0 board on the frame.

6. Place the locomotive on the track, select address 03 on your throttle and apply power. If the motor does not respond but you can control the lights, check the installation for motor short circuits. For this installation, be sure the kapton tape is preventing contact between the frame and brass motor clips.

7. Digitrax decoders are set up with configuration variable (CV) default values so you can run your locomotive right away using address 03. See the Digitrax Decoder Manual for complete instructions on setting up the CVs for customizing your locomotive's performance characteristics.

Installation Notes:

1. Do not exceed the decoder's 500mA total function output rating.

2. 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.

3. 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.

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 so that the loco can be independently controlled with it's own unique address. All Digitrax decoders are shipped with CV01 (AD2), the two digit address, set to 03. See your Starter Set Manual for complete programming instructions. Following is a brief description of how to change the decoder address with a DT series throttles.

1. Place the loco on the programming track. Go into Program Mode on your system. On DT400/DT402 press **PROG**. On DT300, DT100 & DT200 press **RUN/STOP & FN/F0.**

2. Choose AD2 for 2 digit addressing or AD4 for 4 digit addressing (DT400/DT402 and DT300). (Ad for DT100 & DT200, see set manual for 4 digit instructions).

3. Choose the address you want to set up for the decoder.

4. Complete address programming. On DT400/DT402 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 DT400/DT402 & DT300 but not on earlier throttles.

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. A range of 000 to 031 is available for both accel and decel. We recommend that you try CV03:003 and CV04:000 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 at the factory. All have a range of values from 000 to 255. We recommend the following CV values as a starting point for experimenting with speed tables in the MicroTrain FT locomotive.

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

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 for OFF. To turn on the switching speed feature, program CV54 to a value of 001. 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 which is suitable for most locos. You can adjust this value in the range of 000 for OFF to 015 for the maximum effect. Consult your Digitrax Decoder Manual for info about CVs 55 & 56 and their effects on scaleable speed stabilization. The factory setting for both CV55 & CV56 is 000.

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 for OFF. To turn on transponding, program CV61 to a value of 002. 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 above.

Function Outputs on the DN163M0

The DN163M0 is set up at the factory to control six functions. The unit is prewired with one golden-white LED (shown in Figure 5) for the headlight and set up as Function 0 (F0F-forward).

Function outputs F0F/Yellow, F1/Green, F2/Violet, F3/Brown and F4/White/Yellow are available on the decoder and can be used by soldering wires from the pads indicated to the lights (or other functions) you wish to control.
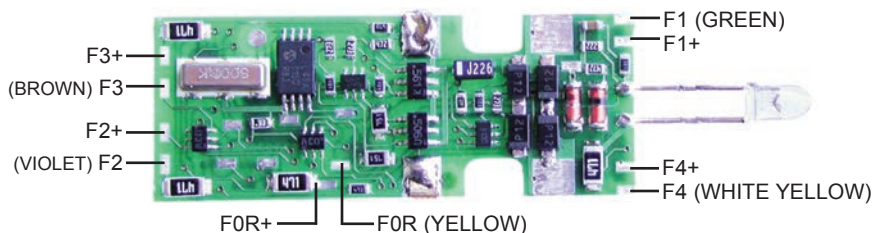
CAUTION: When adding function wires, be very careful that the wires you add do not come into contact with any other pads or components on the board where they might create a short circuit.

All six function outputs can be easily set up with Digitrax FX^3 lighting effects or as standard on/off functions.

All function outputs can be qualified based on:

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.

Figure 5: Connecting More Functions to Your DN163M0

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f 850-872-9557

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. 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.

Master Light Switch

Each of the six 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 & FX³ Effects On Function Outputs*.

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.

Warranty & Repair

Digitrax gives a one year *"No Worries" Warranty* against manufacturing defects and accidental customer damage on all Digitrax products.

Visit www.digitrax.com for complete warranty details and instructions for returning items for repair.

Damaged decoders should be returned directly to Digitrax for repair.

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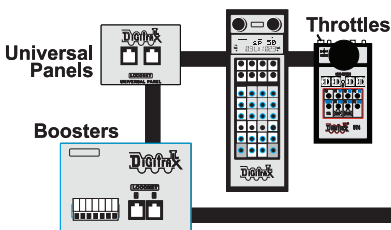
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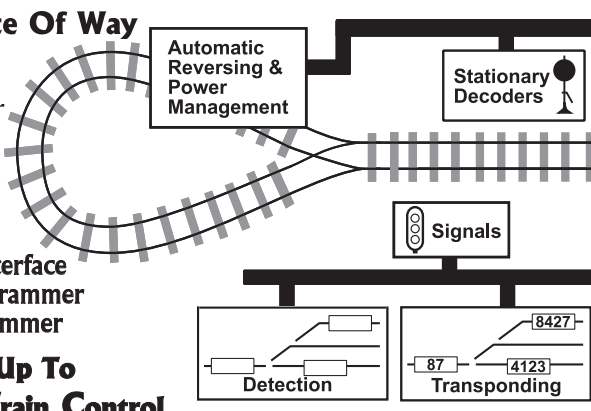SoundFX™ Decoders

Decoder   Decoder
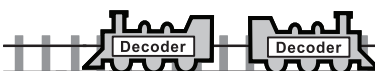
More Fun For Everyone

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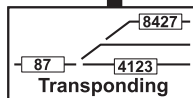Universal Panels,
IR and/or Radio
for more trains and operators.

Universal Panels

Boosters

Throttles

Maintenance Of Way

Make your
layout more
fun & simpler
to operate!

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Computer Interface
Decoder Programmer
Sound Programmer

It All Adds Up To
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Signals

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Transponding

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