Complete Train Control
Run Your Trains, Not Your Track!

DN135PS

N / HO Scale

Plugs into Many DCC-Ready N/HO Locomotives with 8-pin Medium Socket.

Mobile Decoder with DCC 8-pin Medium Plug 'N Play 2" Harness
1 Amp/1.25 Amp Peak
3 FX3 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.
- **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** 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 compact** design makes installation quick and easy in many smaller locomotives.
- **Plug and Harness arrangement** for economic decoder-sharing options.
- **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**
- **FCC Part 15, Class B RFI compliant**

Parts List

1 DN135D Decoder
1 DNWHPS Digitrax Easy Connect 8-pin 2” Harness
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 shell (***Figure 1***). Note the orientation to the frame for correct reinstallation.
2. Remove the jumper plug from the locomotive’s DCC-ready socket. (***Figure 2)*** The jumper plug allows the loco to operate on a standard DC track or in analog mode on a DCC track.
3. Insert the DCC plug end of the harness into the socket. The pin with the orange wire plugs into the hole marked 1. (***Figure 3)*** Seat the decoder firmly in the socket.
4. Plug the Digitrax 8-pin connector end of the harness into the DN135PS Decoder. The plug is notched for proper orientation of plug and socket.
5. Output for F1(Green) can be wired to additional function if desired.
6 Replace the loco shell on the frame. The loco is now ready to run on your DCC system using the factory set address 03. See next page for customizing some of the functions of the DN135PS decoder.

Figure 1. Remove loco shell

Figure 2. Carefully remove jumper plug

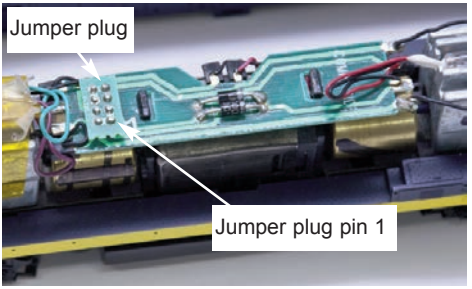
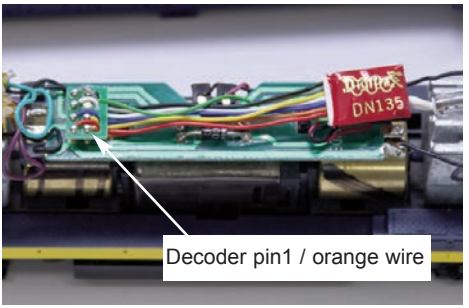


Figure 3. Carefully plug in decoder



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 DT400/402 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 & DT400/402). (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 DT400/402 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 & DT400/402 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.

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.

Scaleable Speed Stabilization (Back EMF) intensity, or droop, 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.

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.

Function Outputs on the DN135PS

The DN135PS is set up at the factory to control three function outputs. The DN135PS is configured to control the lights on the factory light board through the DCC medium plug using Function 0 (FOF-forward and FOR-reverse) for directional lighting. Function F1(Green) is part of the harness for easy hookup.

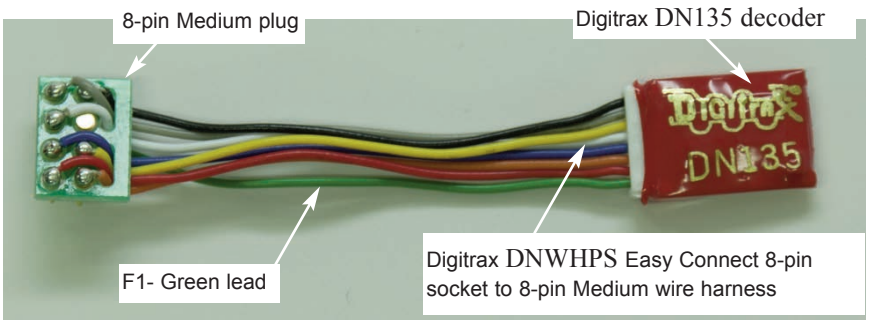
All three function outputs can be easily set up with Digitrax FX^3 lighting effects or as standard on/off functions with the following operational qualifiers:

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.

Figure 2. DN135PS Decoder and harness



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 FX & FX³ Effects of Function Outputs.*

Digitrax Easy Connect Harness System

Your DN135PS comes with the Digitrax Easy Connect system – an socket on the decoder board and an approximately 2" wire harness to connect to your locomotive. The DNWHPS harness has a DCC Medium plug on one end that plugs into a DCC ready locomotive and a Digitrax 8-pin plug on the other end that plugs into the decoder.

Once you have installed the harness in your locomotive, it's easy to unplug the decoder from the loco. This is useful if you have many locos to equip and a limited budget. It also makes it easy to unplug a decoder and try a different one if you suspect a problem. And, if you need to return the decoder for service, you won't have to remove the wiring from the loco, just unplug and send in the decoder.

Simply install harnesses in your locos and share decoders among your locos. To run your harness equipped locos on DC, just add a shorting plug, DNDP. The wire harnesses and shorting plugs are sold separately by your dealer. Clubs often use this approach so that their members who don't run DCC at home can still enjoy it at the club.

Your decoder can also be used with one of the other Digitrax Easy Connect Harnesses. This is also available in a 4.5" long (DNWH) wire length version with the Digitrax 8-pin plug on one end and bare wires on the other end.

Warranty & Repair

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

That's it! A simple, straightforward warranty with no tricky language!

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.

DN135PS

Fits a Variety of DCC-Ready HO Locomotives

Go Beyond DCC With Digitrax® Complete Train Control

Main Station

Starter Sets
LocoNet®
Power Supplies

DUPLEX 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 xtra™

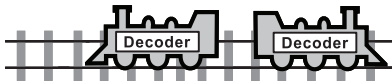
Super Empire Builder xtra™

Zephyr™

LocoNet®
The Digitrax Difference

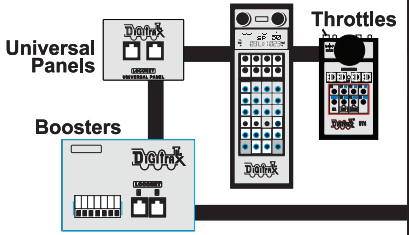
Locomotive Shops

Mobile Decoders
Function Decoders
SoundFX™ Decoders



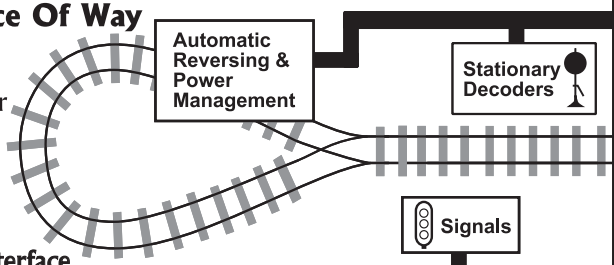
More Fun For Everyone

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

Computer Interface
Decoder Programmer
Sound Programmer

It All Adds Up To Complete Train Control

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