RailPro DCC User Manual

User Manual

Ring Engineering Inc.

(219) 322-0279

www.RingEngineering.com   **Revision 1.01**

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Introduction

This manual contains the basic information to setup and use a RailPro locomotive module with a typical DCC control system. A RailPro locomotive module can easily be setup by using our Computer Interface module and our HC Simulator software. Our HC Simulator software is a easy to use program that has a graphical interface to help you easily setup a RailPro locomotive module. Because you can use our graphic oriented program, you do not need to program any CVs. Add outstanding features to your DCC locomotive like RailPro Direct Radio + NET, RailPro Ultimate Series Sounds, and our True Motion Technology and so much more!

US Patent 8,807,487 and Patent Pending

STEP 1 - Install a RailPro Module into a Locomotive

Please see the RailPro Locomotive Module installation instructions to install a RailPro module in a locomotive.

Locomotive module instructions are online at:
http://ringengineering.com/RailPro/Documents/LM-3Instructions.pdf

If you use a DCC Ready locomotive, follow the easy installation instructions below.

1) Plug the RailPro module into the locomotive DCC connector (loco with 9 pin DCC connector)
TIP: Before you take the shell off, run your DCC Ready locomotive on an analog controller and be sure it runs well.
TIP: If the locomotive has an 8 pin or 21 pin connector, you can get an 8 pin or 21 pin to 9 pin adapter wiring harness (available from many DCC suppliers) and plug the wiring harness into the locomotive and the RailPro locomotive module into the 9 pin plug.

2) Install a speaker (usually purchased separately) and connect the two brown wires on the supplied 6 pin connector to your speaker as shown in the locomotive instruction sheet.
IMPORTANT: For best results use the largest speaker (high bass type is preferred) and be sure it is in an enclosure (baffled).

Locomotive Module installation is complete!

STEP 2 - Setup Computer Interface and HC Simulator Software.

1) Load the HC Simulator software to your PC.

Direct link to HC Simulator Software is below:

http://ringengineering.com/RailProHcSimulatorSoftware.htm

Be sure to read the HC Simulator User Manual for tips to install and use the HC Simulator Program.

http://ringengineering.com/RailPro/Documents/RailProHcSimulatorUserManual.pdf

2) Plug a Computer Interface module into your computer's USB port.

3) Start the HC Simulator software.

STEP 3 - Find the Product

1) Power up the locomotive. Put the locomotive on a track powered by a DCC booster to power it up.
TIP: You can use a laptop computer so you can take the laptop computer to your layout. If you use a desktop computer that is not near your layout, you can run bus wires up by your computer and place a couple feet section of track by your computer to power up and setup your locomotive near your computer.
2) Start the HC Simulator software and on the Main Page press the Find Product button.
3) You will see a Product Found message.

STEP 4 - Set the RailPro Module Name

1) Touch the Locomotives picture. Then select the locomotive (No Name)

2) Press the Adjustments button.

3) In the name field, type the road number of the locomotive. (This is the RailPro module name for the locomotive not the DCC address).

STEP 5 - Set the Motor Full Load Current

1) Press the Next Page button to cycle through the Adjustments until the top of the page displays "Loco Setup Advanced 2"

2) Press the Motor Full Load Current button.

3) Answer yes to the question "Use Auto Set?"

4) Follow the onscreen directions to set the motor full load current.

IMPORTANT: This must be set correctly so the locomotive module will send the proper amount of power to the motor. This is necessary so the module can monitor the motor for faults and is necessary for radio consisting to work well. If this is not set you can get false motor overload faults.

STEP 6 - Enable DCC and set the DCC Address

1) Press the Next Page button to cycle through the Adjustments until the top of the page displays "Locomotive Setup DCC"
5) Press the DCC Disable button so it changes to DCC Enable.
6) In the DCC Address field, type in the DCC Address.

STEP 7 - Save the New Settings

1) Press the Exit Page button to get to the main Adjustments screen.
2) Press the Save button and wait until the wait indicator goes out and Exit Page button comes back onto the screen.

Your Locomotive is now ready to use with a DCC System

Dial in the address on your DCC controller and run the locomotive as you would any DCC locomotive.

Operating with DCC Controller

IMPORTANT: You cannot control a RailPro locomotive with a DCC system that is being actively controlled by RailPro Radio Control. To release control of the locomotive to take control by a DCC system you must 1) Set the speed of the locomotive to 0.0% on the RailPro controller. 2) Press the Main Page button on the HC Simulator to go to the Main Page. You need to leave any HC Simulator locomotive page, such as Control, Setup, or Information, to release RailPro Radio Control and allow DCC control.

IMPORTANT: Your DCC system must be set to 127 speed step mode of control.

IMPORTANT: You must set the speed on your DCC system to speed step 0 to acquire control of the RailPro locomotive after it was controlled by RailPro Radio Control.

To change speed and direction use your DCC controller speed knob and direction button. You can also use the function buttons. Below is a table for the default settings of the function buttons.

Default DCC Function Button Assignments

F0	Front Headlight Bright
F1	Bell
F2	Horn
F3	Rear Light Bright
F4	Dynamic Brake
F5	Brake
F6	Load
F7	Coupler Clank
F8	Primemover Start Stop (Engine Sounds)
F9	Ditch Lights
F10	Handbrake Set
F11	Handbrake Release
F12	Sanding
F13	Front Headlight Dim
F14	Rear Headlight Dim
F15	

TIP: You can go into the Adjustments (Button Setup Page) and set the RailPro buttons to any DCC function button that you would like. For example, the bell defaults to DCC function button F1, but if you want the bell to go on and off when you press F15 just change DCC Fx in the button setup from '1' to '15'.

TIP: You can change any RailPro button to any button that you want. You can add or remove buttons. You can select from buttons that are sound, light, or action! If there is a button your loco does not use, remove it or replace it. If there is a button you want (like for a beacon light), then add it and assign it a DCC Function button of your choice.

Using the 'Load' Button

A great feature of RailPro is its True Motion Technology (TM). True Motion Technology (TM) is easy to use. You just set the load from 0 to 100% and the RailPro locomotive module will perform a mathematical model on your locomotive to implement static friction, dynamic friction and more to produce results like a real locomotive.   You set the load to the amount of loaded train cars you want to simulate. So if your longest train is 20 freight cars then set the load to 100% when you have 20 freight cars coupled to the locomotive. If you have no freight cars coupled to the locomotive, set the load to 0%. If your longest train is 100 freight cars then set the load to 100% when you have 100 freight cars coupled to the locomotive and to 0 when there is no freight cars coupled to the locomotive.

To set the load you press the DCC function button (F6 is the default).   Pressing and releasing the button once a number of times sets the load value. See table below.

# of Presses	Load Value
1	0%
2	25%
3	50%
4	75%
5	100%

IMPORTANT: The button press should be no more than one second apart. After no presses for about two seconds the new value will lock in.

TIP: If you are not sure how many times you pressed the button, just wait a couple seconds and start again.

WARNING: Setting the load makes you model react like a real train. Real trains accelerate and decelerate very slowly. When the Load is set high it can take dozens of seconds to stop after you turned the speed command to 0. Therefore you need to be sure there is plenty of clear track (not obstructed by locomotives, freight cars, or other obstacles) in front or behind your train. If there is not, you may not stop in time and you can wreck your train. By holding the brake button down, you can stop the train faster but a fully loaded train with the brake applied still can take a significant amount of time to stop (like a real train).

Using the 'Brake' Button

On a typical DCC controller you press the Brake button once (DCC function buttons normally latch) to begin setting the brake. Depending on the amount of load, the time it takes to apply the brake varies. To release the brake press the DCC function button again. When the brake is applied the train will slow down.

IMPORTANT: The throttle must be at speed step 0 before the brake will work.

Consisting

You can consist a RailPro equipped locomotive with other DCC locomotives by using Basic or Universal consisting.

Using locomotives from the same manufacturer that have the same motors and gear ratios:
May run ok in a consist with no further adjustments.

Using locomotives with different motors and gear ratios:
If your locomotives have different motors and gear ratios, you will need to speed match them. You can try by setting Start Speed and the Top Speed and see if they run ok together. If not, then you will need to set the speed tables in both locomotives. The RailPro speed table is from 0 to 100% in 5% increments for a total of 21 values. For speed 5% you should set the locomotive for 5 scale MPH and 10% for 10 scale MPH and so on.

DCC Limitation: Since other DCC decoders do not have Direct Radio+NET you cannot radio consist with other DCC decoders.

DCC Limitation: The use of speed tables for speed matching (i.e. not using Radio consisting) is a limitation of current typical DCC systems and current DCC decoders.

You can use a RailPro Computer Interface module and do Radio consisting with true load sharing with multiple locomotives with RailPro modules installed. However, as of the time this document was created, you cannot use a typical DCC controller even with multiple RailPro locomotives and do Radio consisting. The RailPro controller has capabilities that regular DCC controllers do not have, and the RailPro controller is an important part of the Radio networking used during Radio consisting. In the future, we will look into offering a program update for the RailPro locomotive module that may be able to add Radio Consisting between locomotives equipped with RailPro modules while using a typical DCC control system.

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Use the RailPro Assistant Software to Change Sounds, Light Effects, Load your own Custom Sounds, Light Effects and much more.

Link to load RailPro Assistant Computer Program
http://ringengineering.com/RailProAssistantSoftware.htm
Link to load RailPro Assistant User Manual
http://ringengineering.com/RailPro/Documents/RailProAssistantUsersManual.pdf