HC Model Railroad Handheld Controller

User Manual

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www.RingEngineering.com   **Revision 2.00**

Introduction

Thank you for purchasing this RailPro Model Railroad Controller by Ring Engineering. We take pride in the products that we produce and hope you find this Model Railroad controller to be a great addition to your model railroad layout.

Please read all warnings and instructions before installation and use. For the latest information from Ring Engineering, please visit us on the web at www.RingEngineering.com.

Your handheld controller (HC) is a wireless controller with a color touch screen that can be used to operate your model railroad layout. The HC can control the speed, direction, lights, and sounds of locomotives and other accessories by simply touching the screen! Multiple HC's can be used at the same time to allow multiple users to control the locomotives and accessories. You will need to purchase RailPro ready products or install RailPro modules into the locomotives and accessories that you want to control.

Warnings

- To charge only use Ring Engineering recommended power adapter. The use of a non-approved power adapter may cause a fire.
- Do not leave handheld controller HC-2b or HC-2 plugged into the charger for more than four hours (HC-1 more than eight hours) . Only leave handheld controller plugged into a USB port when loading files. If you do not see activity on the charger screen when charging, disconnect handheld controller, and return to Ring Engineering for repair.
- This product is not recommended for persons under the age of fourteen (14).
- Only clean the HC with a soft cloth slightly dampened with water. Do not use any type of cleaning detergents or solvents.
- This product contains a chemical known to the state of California to cause cancer and birth defects (or other reproductive harm). This product contains lead.

Ring Engineering believes that our HC is compatible with most personal computers (PCs) for the purpose of getting information from Ring Engineering's Internet site to your HC. Because of the vast amount of different PCs and configurations possible Ring Engineering does not guarantee that our HC or software is compatible with your particular PC. We recommend backing up any important documents or pictures, etc. before installing or using Ring Engineering products. We make reasonable efforts to be sure that our software and hardware works well and does not interfere or damage any of the programs or data on your PC. We have an outstanding record of not having any issues with loss of data but because of the vast array of PCs, configurations, etc, it is impossible for any company to absolutely guarantee that you will never loose data from installing or using new software. Ring Engineering is not responsible for any damage to your PCs software programs or data that may occur from using our hardware or software.

Quick Start Guide

At a minimum, you will need at least one locomotive that is equipped with a RailPro locomotive module that is not included.

Step 1
Install a RailPro Locomotive Module into a Locomotive

If you purchased a locomotive with a RailPro locomotive module installed you can skip this step.

Remove the Shell

Connect speaker wires (Sound Units Only)

Plug in Locomotive Module
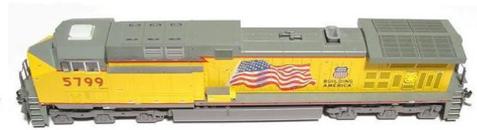
Reinstall Locomotive Shell

NOTE: Please see locomotive module instructions for complete details.

Step 2
Connect the Power Supply

Connect the PWR-56 Track (+) and (-) terminals to each rail of the track. If you only have one PWR-56, it does not matter which track rail is connect to the (+) terminal and which track rail is connected to (-) terminal. Next plug the PA-2 Power adapter into the PWR-56 module. Finally, plug the power cable into the PA-2 and into a wall power outlet. The light should come on green. If it is not please see the PWR-56 troubleshooting table. See power supply section for complete details.

Step 3
Find Products

1. Put the RailPro equipped locomotive on the track.
2. On the HC's Main Page press the "Find Product" button. You will see that the Locomotive or the Power Supply is detected by the HC.
3. Press the Find Products button a second time to find the product not detected the first time.
4. From the main page press the "Adjust Settings" button. Then press the "Save" button and wait until the save finishes. The HC will automatically set the PWR-56 as a repeater. Pressing the "Save" button will retain this setting until you change it.

Step 4

Set the Locomotive Motor Full Load Current
This is the only setting you should set before using your RailPro equipped locomotive. By setting the motor full load current, you setup the locomotive module to: 1) Allow multiple locomotives to run well when linked together and 2) Allow the module to detect and report motor faults if necessary.

1. On the HC's Main Page press the "Locomotives" button. Touch the picture of the locomotive to take control of the locomotive.
2. Press the Adjustments button (round button on the left side of the screen). Then press "Next Page" button until you see the "Motor Full Load Current" button. Then press the "Motor Full Load Current" Button then press the "Yes" button when it asks to "Use auto set?"
3. Press the "Start Test" button and wait until the test finishes.
4. Press "Exit Page" button and press the "Save" button.

SETUP COMPLETE! Control your Trains and Enjoy RailPro!

Operation

HC Main Page

To turn the HC on, press the Power On / Main Page button at the upper right hand corner of the HC. When you are finished using your HC, you should turn it off to keep from running the batteries down. To turn your HC off, press the Power Off button in the lower right hand corner of the Main Page. A great feature of your HC is the Main Page button. When the Main Page button is pressed, it always takes you to the Main Page. By touching the screen you can navigate to many different pages to control locomotives and much more. At any time, you can press the Main Page button and always get back to the Main Page. This great feature makes it quick and easy to navigate around the many pages on your HC. There is one exception to the Main Page button taking you to the Main Page, if the screen is displaying the "Wait" indicator the Main Page button will be locked out. The "Wait" indicator is usually only displayed when settings are being saved to memory.

Wait Indicator Symbol

When you get a new HC you should adjust some settings in your HC. The settings that are described below would typically only be set once, when your HC is new. Go to the Main Page and press the "Adjust Settings" button.

By touching the Keyboard layout button you can change the way the keys are drawn on the keyboard from "ABC…" to the format that is used on typewriters "QWERTY…" If you use a typewriter keyboard, be sure the Keyboard layout is displaying "QWE." If you do not use a typewriter keyboard, be sure the "Keyboard Layout" is set to "ABC". Setting the "Keyboard Layout" will make it easier for you to find the buttons to spell Passwords and other words.

Now give this HC a name. A good name is the name of the person that is going to use this HC. Touch the blue area under Name. A keyboard will appear. Type your first name then press enter. You can give your HC's any name. Each HC should be given a different name so you can tell them apart.

Press the blue area under "Password". Type in a password on the keyboard and press the Enter button. You can give all your RailPro products the same password. However, you may want to use different passwords. See the Passwords section for more information on Passwords.

You could also set the brightness of the backlight (screen brightness) if you would like to. Keep in mind the brighter the screen, the less time the battery will last. The dimmer the screen backlight is set, the longer the battery will last.

Be sure to read the "Repeaters" section to know how to setup the repeaters in the Advanced Settings.

Press the "Save" button. Wait until the "Wait" indicator is no longer displayed. Your settings are saved in your HC. Even if the battery dies, your HC will remember these settings. You can change them at any time.

Find Products

Before you can control any products you will first need to "Find a Product."   This is a process where your HC will use Direct Radio to detect new RailPro products. Then the product picture is loaded onto your HC. If the product found is a locomotive, then that locomotive picture can be located on the Locomotive Page. Below is a sample locomotive page after only one locomotive has been detected.

Likewise, if the product found is a Turnout controller module, you will be able to locate its picture on the Turnouts page. All other products found can be located on the Accessories page. The three buttons across the top of the Main Page take you to the pages to control locomotives, turnouts, and accessories.

It is best to move within a few feet of the product you want to find. Next be sure your new product is powered up.   If you are not already on the Main Page, press the Main Page Button. Now press the "Find Product" button. Your HC will need only a few seconds to search for your new product. If the product you are finding does not have a password set, your HC will find and load the product. All products shipped from Ring Engineering do not have a password set. If the product you are detecting has a password, then you will need to press the 'Search with Password' button then your HC will display the keyboard for you to enter a password. If you enter the proper password, your HC will load the new product.

Control, Setup and Monitor Products

After you detect a product you can now touch the picture of that product then you will be able to control, setup or monitor that product. For example, if your HC found a Locomotive module, then you can press the 'Locomotive' button and you will see pictures of the locomotives that this HC has found. By touching the picture of the locomotive you want to control, you will see the 'Locomotive Control' screen. The same is true for turnout modules, and accessories. See the Locomotives, Turnouts, and Accessories sections for a more in depth description of each.

Charge Indicator

On most pages, there is charge indicator in the upper right hand corner. The charge indicator displays the approximate amount of charge left in your HC battery. If the charge indicator is all white, the battery in your HC is at full charge.   As the battery is used, the charge indicator has less white area displayed. When you have less than one hour of charge remaining, the charge indicator turns red. When there is no more charge, your HC's charge indicator starts flashing. When the flashing starts, there is only two minutes left before your HC will turn itself off.

TIP: If you see the charge indicator flashing, you should stop all running locomotives because after the HC turns off, you will no longer be able to control your locomotives. If the batteries go dead on your HC, you could stop locomotives by turning off the power supplies.

Help

On most pages you will find a Help button in the upper right corner. When you press the Help Button you will see a page(s) of information that describe each control on the current page. Press the "Exit Page" Button to return to the page before you pressed the Help button.

Stop All

The "Stop All" button is used to stop all of the locomotives on your layout quickly by pressing the screen just a few times. Because you can set many locomotives in motion using a single HC, it is possible that things get out of control if you are not paying attention. If you find that a locomotive is going on an unexpected track, you may have a need to stop all the locomotives quickly to prevent a wreck. This is a good situation to use the "Stop All" function.

TIP: To quickly get to the Stop All Page from any page, press the Main Button first. Pressing the Main Button will take you to the Main Page. Secondly, Press the Stop All Button. Finally, either press the "Set all Speeds to Zero" button, or the "Power Off Stop Button." Basically, from any page you are only three screen touches away from commanding all your moving locomotives to stop. Using this technique, you can issue a "Stop All" in less than 2 seconds from any page.

There are two different types of "Stop All". The first type is a "Set All Speeds to Zero." When the "Set All Speeds to Zero" button is pressed, your HC will send Direct Radio commands to all of your locomotives to set their speeds to zero. If you have more than one HC in your system, then the other HC's will display a message informing them that someone pressed the "Stop All" button. The "Set All Speeds to Zero" will not work with multiple HC's unless each HC has detected the other HC's. For example if you have two HC's, and you named them "Bob and Mike" then Bob needs to press his "Find Product" button when Mike is turned on and on the Main Page. Bob will detect and load a picture of Mike into the accessories page. Mike also needs to detect Bob by pressing his "Find Product" button. It would be wise to check the Accessories Page and be sure all other HC's are listed there. This is why giving each HC a unique name is important.

The second type of "Stop All" is a "Power Off Stop." When the "Power Off Stop" button is pressed, your HC will send commands to each power supply to turn the output off. Since the power will be cut to the track, the locomotives will stop abruptly. Since this "Stop All" is more difficult on the drive components of locomotives, this stop all should only be used when necessary. Each power supply must have been detected and visible in the Accessories Page for this type of "Stop All" to work. In other words, you must press the "Find Product" button for each power supply you have so this HC knows what power supply to send the "Stop All" commands to.

IMPORTANT: After a "Stop All – Power Off", you will need to select each power supply and enable its output to restore power to your layout.

Reset Button

The HC has a reset button on the back. The reset button should <u>not</u> be used for normal operation. In the unlikely event that your HC stops responding, pressing the reset button may restore your HC to normal operation. On the back of your HC is a recessed button. To press the reset button, you will need a thin long <u>non-metallic</u> object to stick into the hole in the back of the HC. We recommend using a round wooden toothpick or similar non-metallic object.

Locomotives

Basic Control
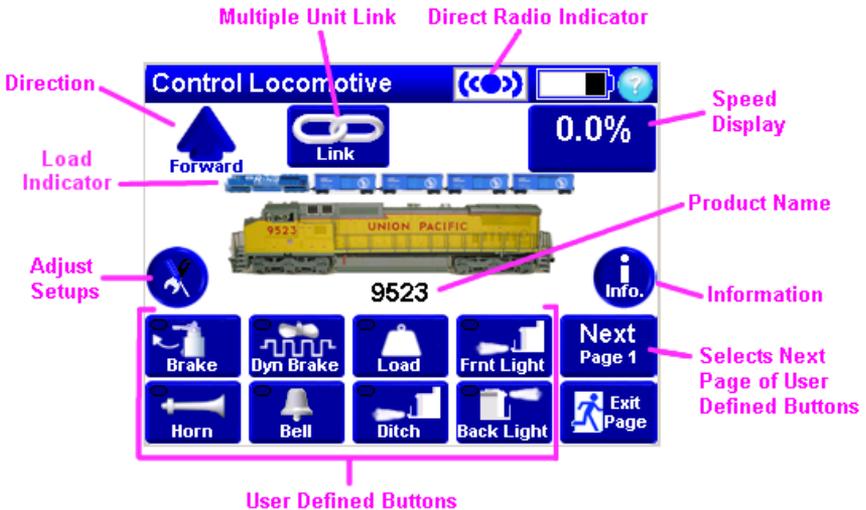
To control a locomotive that you have already detected, you need to press the 'Locomotive' button on the main page. You will be shown a list of pictures of locomotives to choose from. Touch one of the locomotive pictures. Then you will see a screen similar to the one above. Touch the "Direction" button to change the direction of the locomotive. Turning the large knob clockwise will increase the speed of your locomotive. Turning the large knob counterclockwise will decrease the speed of your locomotive. Press the user defined buttons to activate the lights and sounds.

There are more than eight User Defined buttons. Press the "Next" button to change the eight User Defined buttons to a new set of eight User Defined buttons. The "Page 1" under the "Next" button text will display "Page 2." Continue pressing the "Next" button to cycle back to the User Defined buttons on Page 1.

TIP: To quickly select another locomotive touch the picture of the locomotive in the center of the screen. The select locomotive screen will be displayed for you to choose a different locomotive. In as few as two screen touches, you can change form controlling one locomotive to another!

The Direct Radio symbol informs you if there is a good connection or not from your HC to your product. In this case, the product is your locomotive. If the Direct Radio symbol is blue, like in the picture above, the connection is good. The Direct Radio symbol will turn red if your HC cannot communicate to the product.

Load Button

TIP: When you press the 'Load' button you can select a load from 0 to 100%. You should select 100% for the heaviest train you pull. Example: Your longest train is 20 freight cars then when you connect 20 freight cars to your locomotive choose 100% for the load. If you connect 10 freight cars choose 50% and if there are no freight cars connected choose 0%. With the load set as you operate the throttle you will hear the sounds that are appropriate for the load and the motion will operate like a real train!

WARNING: Setting the load makes your 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).

Load Indicator
The graphic of a train above the main image shows the approximate amount of Load that is currently set. If you see no train or freight cars then the load is at 0%. If you see a locomotive and four freight cars the the load is set at 100%.

Brake Button

TIP: You must set the speed to 0.0% before operating the brake button.
TIP: The longer you hold the brake button down the more the brakes are applied. Release the brake button to release the brakes.

Multiple Units

You can link more than one locomotive together to be able to pull more freight cars. This is sometimes referred to as Consisting or MU'ing (Multiple Unit). When locomotives are linked together, the linked locomotives will all change their speed and direction at the same time. To link multiple units, first be sure that the direction of each locomotive is set. This allows you to link locomotives with the Cab in the forward or reverse direction. If you are going to link the locomotives in the picture below you should select the Lead locomotive and make its direction forward. Then select the 1st and 2nd followers and make their directions reverse.

Now press the "Link" button. You will see a list of locomotive pictures. Note at the top of the screen it displays Select #1. So touch on the picture of the Locomotive that you want to be the lead locomotive. The top of the screen now displays Select #2. Select the second locomotive, 1st follower; continue selecting locomotives until all of the locomotives that you want to run together have been selected. Then press the "Done" button. The screen will now show that your locomotive is linked like below.
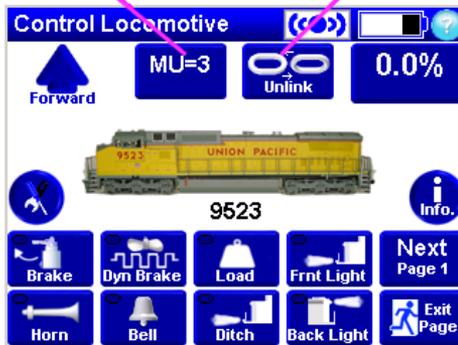
You can view the locomotives linked to this locomotive by pressing the "View Linked Locomotives" button. You will see a list of pictures showing the linked locomotives.

 It would be wise to review this list before taking off. For example: If the lead locomotive and the 1st Follower have a forward direction, then if you increase the speed they will be pulling against each other instead of pulling with each other! If this is the case, press the direction buttons next to each locomotive to fix the directions.

On the View Linked Locomotives Page you can change the direction of an individual locomotive in a consist by simply touching the direction arrow next to the locomotive

picture. Therefore, if you notice that the follower's direction is not correct after you link the locomotives, you can just touch the direction arrow next to the followers picture to correct the situation.

TIP: It is important that you pick each locomotive to link in order. First select the lead locomotive, then the 1st follower, 2nd follower, etc. The linked locomotives will not work as well if they are selected in any other order.

To stop your HC from sending speed and direction to multiple locomotives at the same time press the "Unlink" button.

The way RailPro controls linked locomotives allows you to easily mix different types of locomotives. Even locomotives with very different gear ratios and electric motor characteristics can run well together because of RailPro's advanced technology. However, you do need to set one parameter on the locomotive before they will run well linked together. You need to set the Motor Full Load Current. There is an automated method to set this parameter. See Advanced Setup for more information.

TIP: Increasing the Acceleration and Deceleration time on the lead locomotive can result in better operation of linked locomotives. A minimum of 2.5 Seconds is recommended and higher numbers may yield better results.

TIP: Although linked locomotives can work well without pulling any freight cars, it is more likely that linked locomotives will work better if you pull many freight cars.

Setup

From the "Control Locomotive" page you can press the "Adjust Setups" button to view the "Locomotive Setup" page. As with most RailPro products you can give this product a name and a password from this screen.

TIP: Notice the name we gave the locomotive on the page above is UP 9523. Although you can name your locomotive anything, it is wise to give them good names. It is helpful to put the road number in the locomotive name.

Please see the passwords section for more information on passwords.

From the Locomotive Setup page you can adjust the sound volume in real time! To adjust the sound volume, touch the speaker symbol. A control appears on the screen that lets you turn the knob on your HC to increase or decrease the value. Turn the knob clockwise to increase the value. Turn the knob counter-clockwise to decrease the value. When you have the value adjusted satisfactorily, press the exit button.

IMPORTANT: All the adjustments that you make are temporary unless you save the adjustments. To save the adjustments, you need to press the save button. All the adjustments are like this, including the Advanced Setups, User Defined Button Setups, and Sounds Setup.

IMPORTANT: You will not be able to save the locomotive setup unless the locomotive's speed is 0.0% and there are no sounds playing.

You can change the picture that the locomotive module and your HC is using. Please see the section on 'RailPro Software' section for details.

User Defined Buttons

Because there are so many different types of locomotives and engineers, we decided to allow you to setup the buttons any way you want. For example, you can make the first button turn on and off the front headlight. Or you can make the first button play a bell sound. How the user-defined buttons are setup is completely up to you.
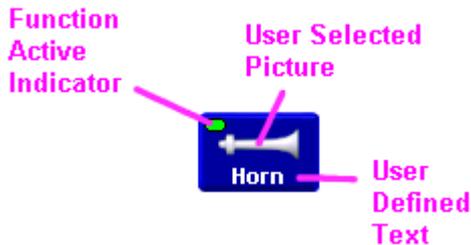
There are 8 buttons per page. For any of the 8 positions you can:
- Select a picture from a list.
- Change a text description of the button
- Select a Type (Light, Sound, Action, or Not Used)
- Select the Action (Momentary or Maintained)

For light buttons, you can select from On/Off, Dim, or any of the light effects files that you copied to your locomotive module. Further, depending on the selection, you will be allowed to select the physical output on the locomotive module. If you choose Dim for the light function, you will be able to adjust the brightness.

For Sounds you can select from the sound files that you have copied to the locomotive module.

TIP: The lower left button on page 1 is a good position for the horn button. This position tends to be easier to locate by feel and can be pressed by your thumb.

To change the buttons you need to press the "Buttons Setup" button from the Locomotive Setup page.
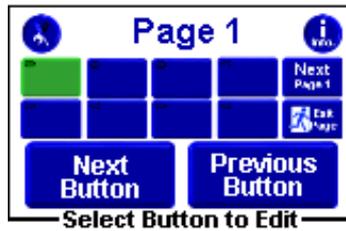
The first step is to select the button to edit. Press the 'Next Button' or 'Previous Button' to select one button location to edit. Note that if you go through all eight buttons, the page number changes. The green button is showing you the currently selected button position.

Select the "Type" of button. The button can be a type "light", "sound", "action", or "not used."

You will see a button showing you how your completed button will look. Touch that button to change the picture. Touch the "Edit Text" button to enter the text you would like displayed for the button.

Select the button action. The action can be either "Maintained" or "Momentary."

If the button action is "Maintained," then if you touch the button once, the action will start and continue until you touch the button again.

If the button action is "Momentary," then when you touch down on the button the action will start and continue until you let up from the button.

The button function will dictate if the choice of "Maintained" or "Momentary" makes more sense. For example if you were going to make the button a horn button, it would be sensible to use the "Momentary" action. In this case, the horn would play while you held down on the button and stop when you let go. On the contrary, if the button was going to be the front light, it would be sensible to make this button a "Maintained" type. When you pressed the button, the light would come on and stay on. Then if you touched the button again, the light would go off.

Engine Sounds
For engine sounds to play, such as the revving sound of a diesel or the chuff sound of a steam engine, you <u>must</u> setup a button to start and stop the engine sound. The required steps are as follows:

1) Be sure you loaded at least one engine sound file to your locomotive module. Please see the 'RailPro Software' section for more information on how to work with files.
2) In the buttons setup page, choose a button location and make it a type sound button.
3) Choose this picture for diesel engine sounds or choose this picture for steam engine sounds.

4) Select a sound file that is of engine sounds.

IMPORTANT: In the Buttons Setup you must use the above picture for diesel engine sounds.
IMPORTANT: If the above picture is selected, you must select a sound file that is for Diesel engines for the sounds to play correctly.

IMPORTANT: In the Buttons Setup you must use the above picture for steam engine sounds.
IMPORTANT: If the above picture is selected, you must select a sound file that is for Steam engines for the sounds to play correctly.

IMPORTANT: To get the most from Ultimate Series Sound files set the primemover button sound volume to 59%.

Please see the Sounds Setup section for more information on engine sounds.

Load Button

To use our True Motion Technology you need to setup one of the User Defined Buttons as a Load Button. Choose the load picture (shown above). Set the button to Type Action, Select "Set Load" in the name Field. Choose Button Action - Momentary. Press the 'Edit But. Text' button and type "Load".

TIP: When you press the 'Load' button you can select a load from 0 to 100%. You should select 100% for the heaviest train you pull. Example: Your longest train is 20 freight cars then when you connect 20 freight cars to your locomotive choose 100% for the load. If you connect 10 freight cars choose 50% and if there are no freight cars connected choose 0%. With the load set as you operate the throttle you will hear the sounds that are appropriate for the load and the motion will operate like a real train!

WARNING: Setting the load makes your 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).

Brake Button

To use our True Motion Technology you need to setup one of the User Defined Buttons as a Brake Button. Choose the Brake picture (shown above). Set the button to Type Action, Select "Brake" in the name Field. Choose Button Action - Momentary. Press the 'Edit But. Text' button and type "Brake".

TIP: You must set the speed to 0.0% before operating the brake button.
TIP: The longer you hold the brake button down the more the brakes are applied. Release the brake button to release the brakes.

Advanced Setup

In the Advanced 1 setup page you can adjust the locomotives start speed, top speed, acceleration and deceleration.

The "Top Speed" will set the maximum speed that your locomotive will run at. If you set the top speed to 70%, then when the control knob sets the speed to 100%, the locomotive module will send 70% power to the motor.

The start speed will allow you to get a locomotive moving faster. Some locomotives will not move until 20%, 30%, or more is sent to the motor. When you set the speed of a locomotive above 0.0%, the HC can output the user start speed to the motor. For example, if the user "Start Speed" is 20% then when you are controlling a locomotive and set the locomotive speed to 0.1% the HC will actually send 20.0% to the locomotive motor. This can allow you to get your locomotive moving when the Control Locomotive screen is only showing a few percent.

The acceleration and deceleration settings adjust how quickly the locomotive changes its motor speed. This can be used to simulate a train's momentum. Real trains start and stop slowly. As you increase these values your train will react more slowly to your speed commands.

In the Advanced 2 setup page you can adjust the locomotives Full Load Motor Current, Low Speed Enhance and motor forward direction and more!

⚠ **Before you begin to use your locomotive you need to set the Motor Full Load Current!**

Setting the Motor Full Load Current is easy with your HC. There is an automated page to help you perform this important task. Press 'Adjustments' button from the 'Control Locomotive' page. Press Next Page until you see the "Full Load Motor Current" button. Press it. You will be asked to use auto set. Press the "Yes" button.

You will need to press the start button then restrain your locomotive like it shows in the picture above. In a few seconds, the auto feature will finish and display the measured motor full load current.
IMPORTANT: You must go back to the Locomotive Setup page and press the "Save" button. If you do not, then the new Full Load Motor Current value will be lost when the power to the locomotive is turned off.

TIP: If you purchase a locomotive that was equipped with a RailPro decoder, this step should have already been done for you.

Low Speed Enhance is a RailPro feature that can help your locomotive roll more smoothly when running at low speeds. This option can be turned on or off by pressing the Low Speed Enhance button.

Motor Direction sets the forward direction of your locomotive. If your locomotive goes backward when the Control Locomotive page displays the direction as forward, your locomotive motor wires are reversed. Instead of rewiring the motor, you can simply press the "Motor Direction" button to flip the motor direction.

Directional Lighting
The Directional Lighting option will automatically turn on and off the locomotive front and rear lights when the direction of the locomotive is changed. You must setup two buttons and enable this option for it to work.

You <u>must</u> select the proper button pictures in the Buttons Setup. One Front Light Button and one Rear Light button as shown above.

Auto Ditch Lights on Horn
This option will cause the ditch lights to start cycling for some amount of time after you press the horn button.

The above button pictures must be used for this option to work. Also, you can setup a button for each independent ditch light (as type On/Off). If you setup buttons to independently control the left and right ditch lights, then these buttons MUST be located after the Ditch Light Button that is setup for the Ditch Light Effect. For example, if the Ditch Light button with the ditch light effect is in button position 4, then the Ditch Left and Ditch Right buttons must be in locations 5 and 6 or higher.

TIP: Each advanced setup page has a default button. If you press the default button, all the settings on that page will be set to the values that they were when the module was manufactured.

Sounds Setup

You can select Auto or Manual notching for the engine sounds if you set a User Define Button up for Diesel Sounds.

IMPORTANT: In the Buttons setup you must use the above picture for diesel engine sounds.

If you setup a User Defined Button up for Steam Engine sounds you will be able to adjust the chuff rate.

IMPORTANT: In the Buttons setup you must use the above picture for steam engine sounds.

If Auto notching is selected, then the engine sound will rev up as you increase the speed of your locomotive and slow down when the locomotive is slowed down. If you choose Manual Notching, then the engine will rev up or down when you press the User Defined buttons.

The button for the engine sounds should be "Action type" "Maintained." When you press the engine sounds button, your locomotive module will produce the sounds of the diesel engine starting up. The engine sounds will not rev until the start up sounds finish. When you press the engine sound button again, your locomotive module will produce the sounds of the diesel engine turning off.

If you choose Manual Notching, then you will need to create two more user-defined buttons so you can control the revving of the engine sounds. In the User Defined buttons, you will need to create two buttons that are type Action. For one select action equal to Notch up and the other Notch down. "Action type" for the Notch buttons should be "Momentary". It would be a good idea to choose the engine picture with the "+" sign for notch up button and the engine picture with the "-" for notch down button in order to make recognizing the buttons easy.

Information Page

By pressing the Information button on the Control Locomotive Page, you will be taken to the Locomotive Information page. On the Information page, you can monitor your locomotive operation. You can see the amount of current (power) that the motor is using, the voltage the module is sensing and temperature of the module. You can also see the Software and Hardware revision information of the locomotive module.

The voltage is a good indication of how well your track is wired. If you go to a section of track and see the voltage is low, near the yellow on the graph, the wiring or connections to that section of track should be improved. Keep in mind that the locomotive can also be a problem. The wheels and other electrical pickups should be clean because voltage can be lost in the connection from the track to the locomotive module.

You can check on the temperature of the module. For most locomotives the temperature is very unlikely to get hot. But if your locomotive is drawing a large amount of power, the locomotive module may heat up. In the unlikely event that your locomotive module gets to the warm temperature, you will see a warning symbol on your Control Locomotive page.

You will see a symbol on your Control Locomotive page when your locomotive is reporting a warning or a fault. By going to the Locomotive Information screen, you can read a message that will describe the warning or fault.
Your locomotive module can report the following warnings and faults:
- Motor Over Current
- Motor Overload
- Module Over Temperature
- Output shorted
- Module Over Temperature Warning
- Track Over Voltage
- Track Under Voltage
- And more

TIP: If a warning or fault is displayed on the Information screen, you can touch the fault and a help box will appear with more information on that fault!

TIP: If you see "Track Under Voltage" warnings, you should be sure your locomotive wheels and track are clean!

NOTE: RailPro's Direct Radio technology two communication is what makes it possible for you to see information, faults and warnings in real time!

NOTE: Your RailPro's locomotive module has a significant amount of protection to prevent accidental wiring errors and other problems from damaging the module. Your RailPro locomotive module can detect errors, shut down, and report problems to prevent permanent damage to your locomotive module.

NOTE: Your RailPro's locomotive module and your HC software can be upgraded. It is possible that more settings are available than described in this manual. Please go to www.RingEngineering.com for the latest manual.

Turnouts

Basic Control

When you press the Turnouts button from the Main Page, you will see a list of the detected turnout modules. Please see the section on "Find Products" for more information on detecting your RailPro turnout modules. If you select a AM-1, you will see a page similar to below:
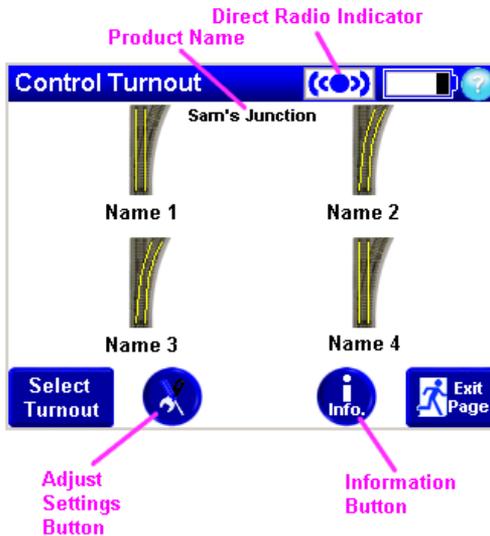
To change the direction of a turnout, just touch the picture of the turnout. You will see a warning symbol ⚠ while the turnout changes direction. Notice how the yellow lines clearly show you the current direction of the turnout.

The Direct Radio symbol informs you if there is a good connection or not from your HC to your product. If the Direct Radio symbol is blue, like in the picture above, the

connection is good. The Direct Radio symbol will turn red if your HC cannot communicate to the product.

Setup

Press the "Adjust Settings" button to enter the Setup screen. As with all RailPro products, you can enter a name and a password. You should give each turnout controller a unique name so you can tell one from another.   You should also set a password. Please see the Password section for more information on RailPro passwords.

For each turnout you can select the turnout style: Right, Left, etc.   Also you can give each turnout a name, so you will know which turnout you are operating. You can choose the turnout type. Turnout types include: Snap 3 wire, Motor Operated etc.

Advanced Setup

From the Setup page, you can touch the "Advanced" button to enter the "Advanced" page.

If your turnouts support feedback (wiring that makes connection when the turnout is in one or the other position) select Feedback Enabled. Otherwise, select feedback disabled.

Activation Time is the amount of time that power will be applied to your turnout to cause it to change direction. You should set this to the lowest value that allows your turnout to dependably change direction.

Set Position on Power Up is an option where your turnout controller will power up each switch to be sure each switch is set in a direction and not in between directions each time the power is applied.

⚠️ If this option is enabled, it is possible that a turnout is moved while a train is over the turnout when you first power your layout up. You would want to be careful to park your trains in other areas than over the turnouts.

The Power Up Delay Time adjustment is the amount of time the turnout module will wait before it starts to activate turnouts after the power is applied. It is important that each turnout controller has a different Power Up Delay Time. You do not want all the turnout controllers to move all the turnouts at the same time because the amount of power could be more than your power supply can deliver.

TIP: Each advanced setup page has a default button. If you press the default button, all of the settings on that page will be set to the values that they were when the module was manufactured.

Information Page

By pressing the Information button on the Control Turnout Page, you will be taken to the Turnout Information page. On the Information page, you can see details of any

warnings or faults and see the Turnout module's software and hardware revision information.

You will see a ⚠️ symbol on your Control Turnout page when your Turnout is reporting a warning or a fault. By going to the Turnout Information screen, you can read a message that will describe the warning or fault.

Your Turnout module can report the following warnings and faults:
- Output shorted
- Under voltage
- Over voltage
- And more

TIP: If a warning or fault is displayed on the Information screen, you can touch the fault and a help box will appear with more information on that fault including possible solutions for the warning or fault!

NOTE: RailPro's Direct Radio technology with two way communication is what makes it possible for you to see information, faults and warnings in real time!

NOTE: Your RailPro's Turnout controller and your HC software can be upgraded. It is possible that more settings and features are available than described in this manual. Please go to www.RingEngineering.com for the latest manual.

Accessories

PWR-56 Basic Control

When you press the Accessories button from the Main Page, you will see a list of the detected products. Please see the section on "Find Products" for more information on detecting your RailPro modules. If you select a PWR-56, you will see a page similar to below:
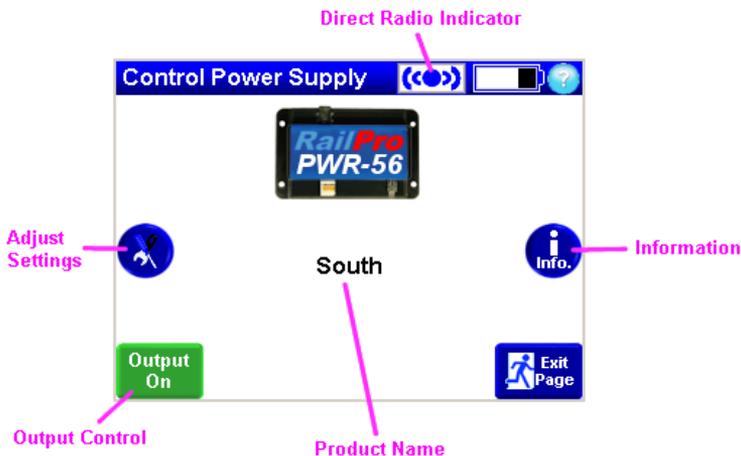
To turn the output of the power supply on and off, touch the Output Control button. The button will be green when the output is on and will be blue when the output is off.

The Direct Radio symbol informs you if there is a good connection or not from your HC to your product. If the Direct Radio symbol is blue, like in the picture above, the connection is good. The Direct Radio symbol will turn red if your HC cannot communicate to the product.

PWR-56 Setup

Press the "Adjust Settings" button to enter the Setup screen. As with all RailPro products, you can enter a name and a password. You should give each power supply a unique name so you can tell one from another. You should also set a password. Please see the Password section for more information on RailPro passwords.

PWR-56 Information Page

By pressing the Information button on the Control Power Supply Page, you will be taken to the Power Supply Information page. On the Information page, you can monitor your power supply operation. You can see the amount of power that is being used from your power supply and the temperature. You can also see the software and hardware revision information.

You can check on the temperature of the power supply. In the unlikely event that your power supply gets too hot, you will see a warning symbol on your Control Power Supply page.

You will see a symbol on your Control Power Supply page when your Power Supply is reporting a warning or a fault. By going to the Power Supply Information screen, you can read a message that will describe the warning or fault.
Your Power Supply module can report the following warnings and faults:
- Output shorted
- Over current
- Over temperature
- And more

TIP: If a warning or fault is displayed on the Information screen, you can touch the fault and a help box will appear with more information including possible solutions for the warning or fault!

NOTE: RailPro's Direct Radio technology is what makes it possible for you to see information, faults and warnings in real time!

NOTE: Your RailPro's Power Supply and your HC software can be upgraded. It is possible that more settings and features are available than described in this manual. Please go to www.RingEngineering.com for the latest manual.

Repeaters

Repeaters are important to a RailPro with Direct Radio system. Your controlling devices, such as your HC, can send commands directly to your products or your controlling device can send the commands to a Repeater first and the Repeater can send the command on to your locomotive. By using Repeaters, your RaiPro system can have multiple paths for communication providing dependable communications to your locomotives, accessories, etc.

TIP: Most stationary RailPro products like your RailPro PWR-56 Power Supply can be a Repeater.

If you have more than one Repeater, it is best to equally space the Repeaters and centrally locate them like in the figure below. It is recommended to space multiple Repeaters 15 ft apart or less. It is very possible that much greater spacing will work well. With 4 repeaters, the effective control area is over 2000 sq ft (45 ft x 45ft).
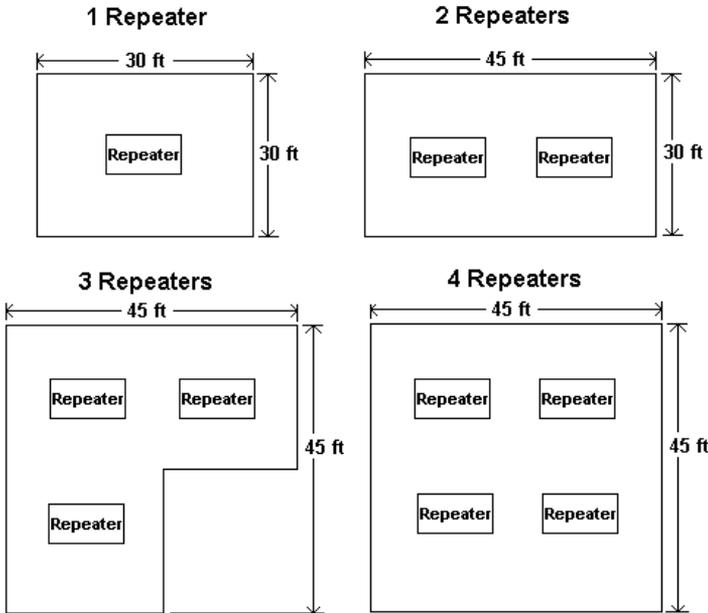
Recommended placement for 1-4 Repeaters. Note: The distance between repeaters or the edge of your model railroad layout is recommended to be 15ft or less.

IMPORTANT: In the Advanced Settings of your HC you need to specify which RailPro products will be repeaters.

Your HC can use from one to four repeaters. To Setup the Repeater from the Main Page, press the "Adjust Settings" Button and then the "Advanced Setup" button. To add a Repeater, touch the "Press Here to Select Product" button. Select a product to use as

a repeater. To remove a repeater, touch the "Remove" button under the product you want to remove.

TIP: It is a good idea to have at least one repeater in your system.

TIP: It is best if you only use the number of repeaters that are required for the size of your model railroad layout. For instance, do not use four repeaters if your layout is only 30 ft x 45 ft. You would only need four repeaters if your model railroad layout was 45ft x 45ft in size.

TIP: If you stay within about 20 ft of your train you DO NOT need a RailPro repeater. You can use only a HC and a RailPro locomotive. RailPro is often used this way when members run on a club layout that is DCC.

Charging

Your HC has built in rechargeable batteries. To charge your HC:
1. Turn your HC off by pressing the "Power Off" button on the Main Page.
2. Place your HC on a flat surface with the screen pointing up. Be sure your HC is not in direct sunlight or any cooling or heating vent is blowing directly on your HC while it is charging.

For HC-2b only
3. Plug the PA-3 power adapter into a wall outlet. Plug the supplied USB cable into the PA-3 and then into the HC. If your HC is charging properly, you should see "Charging" on the screen. When your HC is done charging the display will show "Done."

For HC-2 and HC-1 only
3. Plug your PA-1 power adapter into the left side of your HC. If your HC is charging properly, you should see "Charging" on the screen. When your HC is done charging the display will show "Done

4. Unplug the power adapter after the screen displays "Done." The HC will automatically turn off shortly after displaying "Done."

To charge your HC, only use a Ring Engineering recommended power adapter! The use of a non-approved power adapter may cause a fire. Do not leave the HC-2b or HC-2 plugged into the charger for more than four hours (HC-1 more than eight hours). Only leave the HC connected to a computer USB port while you are loading files form the computer. Otherwise it should be disconnected.

IMPORTANT: You must use the supplied USB cable for charging your HC-2b. The supplied cable has larger gauge wires than a regular USB cable. The charger may not be able to supply enough power to the batteries when using a regular USB cable and may display a fault or take much longer to charge. **The HC-2b will not charge from a PC USB port.**

IMPORTANT: The room temperature, where your HC will be charged, should be between 60 and 85 degrees Fahrenheit.

TIP: It is best if you allow the batteries to discharge most of the way before recharging your HC.

IMPORTANT: Always charge your batteries when you are finished using your HC if the battery charge indicator is red. Further, charge your HC at least once a month even if you do not use it. If you allow the batteries to discharge to a very low level, it may take several hours for the display to light up and show that your HC is charging.

IMPORTANT: Your HC rechargeable batteries should provide years of service. In the event that the batteries need replaced, return your HC to Ring Engineering for service.

Passwords

Your RailPro system is equipped with Direct Radio Technology. It is possible for Direct Radio to transmit over 100 ft to control products. Therefore, it is possible that your neighbor could control your equipment from their nearby location. The solution that RailPro provides is Password protection. Products can only be controlled if you know the password. Therefore, if you set a password in each of your RailPro products, and do not share your password with anyone, then you will be the only person that can control your system.

It is recommended that you set a password in each RailPro product that you buy right after you receive it. When shipped from the factory, your RailPro product's password is blank. When the password is blank any RailPro controlling device can detect and control your product.

To set your HC password, touch the "Adjust Settings" button from the Main Page. Touch the blue area under Password and enter your new password. Remember to press the "Save" button to permanently save your password.

IMPORTANT: Be careful changing your password after products have been detected. When you change your password only the controllers that know the password will be able to control the products.

Example 1:
You have two HC's (named Bob and Mike) and a locomotive module.
1. You set a password "Ring" in the locomotive module.
2. You detect the locomotive module with Bob's HC. Now Bob's HC thinks the locomotive password is "Ring".
3. You use Mike's HC to change the password in the locomotive module to "Engineering".
4. Bob's HC can no longer control the locomotive module.
5. To fix the problem, Bob needs to remove the locomotive module and detect it (Find Product) again. At first no product will be detected. Then Bob will enter password "Engineering" and Bob's HC will detect, load, and be able to control the locomotive module again.

Example 2:

You have two HC's (named Bob and Mike).

1. Bob sets his password in his HC to "Ring".
2. Mike detects Bob's HC and remembers that Bob's password is "Ring".
3. Bob changes his password to "Engineering".
4. Mike presses his stop all "Set all Speeds to Zero" and it sends a message to Bob's HC to zero speed with password "Ring". Bob's HC does not respond because the password is not correct.
5. To fix the problem, Mike needs to remove Bob's HC from his HC and detect (Find Product) Bob's HC again. At first no product will be detected. Then Mike will enter password "Engineering" and Mike's HC will detect, load, and be able to communicate with Bob's HC.

You can reset the password to no password on any product. On the HC you simply go to the "Adjust Settings Page" and change the password. To reset the password on products that do not have a touch screen, you need to use a HC and cycle power on the product.

TIP: If you are going to use your RailPro products in a train club, then you may want to give each RailPro power supply the same password. Therefore, when a club member gets a new controller, they can detect each power supply so their controller can send a Stop All - Power off and cause this power supply to turn its output off. Also, the controlling device will need to load this product so this Power Supplies repeater can be used by the controlling device.

Reset Password

To reset a password on a product, touch the "Tools" button on the "Main Page," then touch the "Reset Password" button. Turn the power off and then on again on the product that you want to reset the password. Within 10 seconds of turning the power on, touch the "Reset Password" button on the HC screen. The HC will display the product that it detected. If the detected product is the product that you want to reset its password, then turn the products power off and back on again. Within 10 seconds of turning the power on, press the second "Reset Password" button. The password in your product should now be cleared.

IMPORTANT: If you do not save the settings in your product, the next time the power is cycled the product will restore its old password.

TIP: It is easy to cycle the power on a locomotive by pushing high on the side of the locomotive. This will cause the wheels on one side of the locomotive to lift off the track and effectively turn the power off to the locomotive. Letting go of the locomotive will effectively restore power to the locomotive.

Update Software

Introduction

An outstanding feature of RailPro products is the ability to update their software. By updating software, you can change pictures, add more sounds, and add light effects to

locomotive modules, change other modules and much more. Besides adding files to your RailPro products, you can even update the RailPro products main program! By updating the main program, you can add completely new features to your RailPro system. For example, if you purchased a locomotive module that did not have acceleration adjustment, you could update the software and add this feature.

Your HC can be connected to a personal computer with Internet access and you can download new files to your HC. Additionally, you can send the files you loaded to your other RailPro products using Direct Radio!   From Ring Engineering's Internet site, you can download picture files, sound files, light effect files, and much more!
Please use your computers browser and go to:
www.RingEngineering.com/RailProSoftware.htm
to load the RailPro software to your computer and get the RailPro Software User Manual. The RailPro Software User Manual describes how to load pictures, sounds, light effects, make user Accessory Projects, and much more!

Remove Product

If you no longer want a product to show up on the selection screens, you can remove a product from your HC. To remove a product, touch the "Tools" button on the "Main Page." Then touch the "Remove Product" button. Select a category and touch the picture of the product you would like to remove. Then all you need to do is touch the "Remove" button and your HC will remove the product from its memory. If you want to, you can detect the product again by using the "Find Product" button.

Warranty

Limited One Year Warranty

Ring Engineering, Inc. (Ring Engineering) warrants that for a period of one year from the date of purchase, this product will be free from defects in material and workmanship. Ring Engineering, at its option, will repair or replace this product or any component of the product found to be defective during the warranty period. Replacement will be made with new or remanufactured product or component. If the product is no longer available, replacement may be made with a similar product of equal or greater value. This is your exclusive warranty.

This warranty is valid for the original retail purchaser from the date of initial retail purchase and is not transferable. Ring Engineering dealers, distributors, or retail stores selling Ring Engineering products do not have the right to alter, modify, or any way change the terms and conditions of this warranty.

The warranty does not cover normal wear of parts or damage resulting from negligent misuse or modification of the product. Further, the warranty does not cover Acts of God, such as fire, flood, hurricanes, and tornadoes.

Ring Engineering shall not be liable for any incidental or consequential damages caused by the breach of any express or implied warranty or condition. Except to the extent prohibited by applicable law, any implied warranty of merchantability or fitness for a particular purpose is limited in duration to the duration of the above warranty. Ring Engineering disclaims all other warranties or conditions, express or implied statutory or otherwise. Some states or jurisdictions do not allow the exclusion or limitation of incidental or consequential damages or limitation on how long an implied warranty lasts, so the above limitation or exclusion may not apply to you. This warranty gives you specific legal rights, and you may also have other rights that vary from state to state.

> To obtain warrantee service contact Ring Engineering at:
> Email: info@ringengineering.com
> or Phone (219) 322-0279
> to get a return authorization and return instructions.

If your Ring Engineering product is not covered by warranty, or has been damaged, an estimate of repair costs or replacement costs will be provided to you for approval prior to servicing or replacement.

FCC Statement

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:
• Reorient or relocate the receiving antenna.
• Increase the separation between the equipment and receiver.
• Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
• Consult the dealer or an experienced radio/TV technician for help.