

HO Loco Genie™ Steam Universal DCC Sound Decoder Instruction Guide

Congratulations on the purchase of your new Loco Genie™ DCC Decoder with MRC state-of-the-art 16 bit dual-mode DCC/AC/DC Sound

- 2.4ghz bonding technology allows for multiple locos to operate on the same track.
- 20 types of synchronized chuff sounds
- 1.5 amp capacity
- 17 types of whistle and 8 types of bells
- Programmable individual sound volumes (64-levels)
- Programmable either 2-digit or 4-digit addresses
- Programmable starting, middle, and top-end voltage
- Programmable acceleration and deceleration rates
- Programmable 14, 28, 128 speed steps
- Back EMF load control w/adaptive PID control.
- User controlled service brake and dynamic brake with sound
- Supports read back address and CV values
- Advanced speed table control CV67-CV94
- Kick start voltage control CV65
- Easy function mapping
- 17 light effects: ditch lights, mars light, prime strobe...
- 28 accessory functions (F1-F28)
- Supports advanced consisting (CV19)
- Supports programming on the main (OPS mode)
- Compatible with NMRA DCC standards
- Complies with Part 15 of FCC Rules

WARNING: Do not use G scale power packs to operate this decoder. The maximum track voltage is 15 Volts.

DCC OPERATION

The module has a default address of #3. Select address #3 on your DCC system. Release service brake (F5). You will hear the brake release sound when you turn off (F5). Move the throttle up and the loco should start to move. If the loco does not move at speed 1, you can add more starting voltage by programming CV2 with a larger number. You can program the acceleration momentum with CV3 and deceleration momentum with CV4, in order to simulate a real train. This decoder has 20 types of chuff sounds (10 single and 10 double). You can use (F24) to select them or (F6) to turn the chuff off. With our unique double chuff enable, CV122, you can also have 10 articulated chuff sounds. Use (F19) or program CV50 to select 1 of 17 different whistles. Use (F18) or program CV52 to select 1 of 7 different bells. With an MRC Prodigy Advance² DCC system, you can easily setup and access all the decoder's 28 functions. With all other DCC systems you have to use CV programming to setup the decoder. To synchronize the chuff, you need to program CV48 to adjust the chuff rate. You may also need to adjust the start chuff rate, CV121 to get a perfect match at all speeds.

The decoder has an easy function exchange feature (re-mapping), which allows certain pairs of functions to be swapped. For example, program CV37 with a value of 1 will make (F3) and (F4) exchanged. For more information on "function re-mapping" please visit our website www.modelrectifier.com

DCC AND WIRELESS OPERATION AT THE SAME TIME

This decoder allows for DCC and wireless remote control simultaneously. It provides regular DCC users with an extra wireless throttle. Gain quick access to adjusting starting voltage. Add momentum control for tight turns, changes in gradients, and station approach. Speed setting will follow the last speed command from either DCC Throttle or Transmitter. Do more with your DCC!

LIGHT EFFECT PROGRAMMING CHART FOR CV#117/118/119

The decoder has 17 different lights effects. CV117 controls both the front and rear headlight effects. Use (F0) to turn on or off the Headlights. CV118/CV119 control ACC1/ACC2 light effect. Use (F3/F7) to turn on or off ACC1/ACC2. For ditch light operation, you must program CV118 and CV119 to the same ditch light type. In type A, the ditch lights will flash when (F2) (horn) or (F3) is on. In type B the ditch lights will flash when (F2) is on and stay on when (F3) is on.

SERVICE BRAKING

To apply the service brake (needs CV4 set to almost maximum) set throttle to zero and press (F5). The loco will slow down fast and you will hear the brake squeal. You can pump the brake by turning (F5) on and off to stop the loco at a desired location. The brake rate is proportional to deceleration rate that you program in CV4. If you forget to turn off (F5) and move the throttle up. The loco will move. However, when you release the throttle, the service brake will apply again. The service brake can only operate when throttle is at "0".

TROUBLE SHOOTING

Whenever the decoder doesn't work, please use the program track to program CV# 125 with value 1 to restore the decoder to factory settings. This should bring the decoder to life with address #3. If it does not generate sound the sound may be turn off. Use F12 or press ■ & ⌘ at same time to turn on the sound. This decoder should perform well with all DCC systems. If it responds to slowly, you should clear its momentum by reprogramming CV3 and CV4 to zero. If step 1's speed is too high, you should program start voltage, CV2 to zero. If it's top speed is too slow, program top voltage CV5 to 255. You should also clean the track to improve electrical pickup. Read your DCC system manual to learn how to program and operate the decoder. For more information about registers/CVs and their functions, please refer to the NMRA DCC Standard & Recommended Practices, RP-9.2.2. This is available directly from the NMRA or their website at www.nmra.org.

LIGHT EFFECT CHART

Light Effect CV117, CV118, CV119			
Value	Light effect	Value	Light effect
0	Normal on/off	9	Prime strato light
1	Dynamo effect (fading)	10	Single strobe light
2	Dim, bright, off cycle	11	Double strobe light
3	Rule 17	12	Rotating beacon
4	Both headlights on	13	Flashing Rear End Device
5	Ditch Light type A	14	Firebox Flicker A
6	Ditch Light type B	15	Firebox Flicker B
7	Gyalrite	16	Engine Exhaust Flicker
8	Mars Light		

DCC FUNCTION CHART

Function	Idle/Moving
F0	Headlight on/off
F1	Bell on/off
F2	Whistle
F3	Accessory lights on/off, Long air release
F4	Coupling
F5	Brake handle: brake when moving, brake release when idle
F6	Chuff sound on/off (Drifting) -all other sounds on
F7	Fire box open/close
F8	Water injector
F9	Metal crank sound on/off (moving), steam associated sound (idle)
F10	Water filling
F11	Blower hiss
F12	Toggle between max master volume and sound off (CV49)
F13	Reduce master volume by 2 / air release when reach minimum
F14	Increase master volume by 2 / air release when reach maximum
F15	Flange noise
F16	Shoveling
F17	Coal auger
F18	Change bell type CV52 (use F1 to turn off bell after adjustment)
F19	Change horn type CV50
F20	Air hose firing/uncoupling lever
F21	Associated loco sound
F22	Flange noise
F23	Flange noise
F24	Chuff type select
F25	Long air release
F26	Sand dropping
F27	Associated loco sound
F28	Associated loco sound

See Other Side for Installation Instructions, DC & AC User Guides
Visit us on the web @ www.modelrectifier.com for more information on DCC and Loco Genie™ by MRC

CV	Description	Range	Default
CV1	Short address	1-127	3*
CV2	Start voltage	0-255	60*
CV3	Acceleration	0-255	20*
CV4	Deceleration	0-255	40*
CV5	Top voltage, 255=full speed, 0=half of the top speed	0-255	255*
CV6	Adaptive back EMF control enable, 1=enable, 0=disable	0-1	0
CV29	Basic configuration	---	6*
CV7	Manufacturer version number	---	0
CV8	Manufacturer ID	---	143
CV9	Adaptive back EMF control enable, 1=enable, 0=disable	0-1	1
CV10	EMF feedback cutout	1-128	128
CV17	Long address upper byte		192
CV18	Long address lower byte		3
CV19	Advanced consist address	0-127	0*
CV21	CV21=0, all accessory function will follow its own address. CV21=1, all functions will follow the consist address	0-1	0
CV37	0=normal, 1=F3 and F4 exchange	0-1	0*
CV39	0=normal, 1=F5 and F6 exchange	0-1	0*
CV42	0=normal, 1=F8 and F12 exchange	0-1	0*
CV48	Chuff rate	0-100	64*
CV49	Master sound volume	0-63	63*
CV50	Whistle type	0-17	2
CV51	Whistle volume	0-63	63
CV52	Bell type	0-7	3
CV53	Bell volume	0-63	63
CV54	Bell ring rate	0-255	50
CV55	Chuff volume	0-63	63
CV56	Brake squeal volume	0-63	63
CV57	Safety valve type	0-2	0
CV58	Air release volume	0-63	63
CV59	Blower hiss volume	0-63	63
CV60	Fire box door volume	0-63	63
CV61	Water injector volume	0-63	63
CV62	Coupling volume	0-63	63
CV63	Water filling volume	0-63	63
CV64	Coal auger volume	0-63	63
CV65	Kick start voltage	0-255	255*
CV67-94	28 speed steps table while CV29.4=1	1-255	linear*
CV112	Metal crank, [side rod], volume	0-63	63
CV113	Back EMF Load control proportional gain Kp	0-31	20*
CV114	Back EMF Load control integral gain Ki	0-31	10*
CV115	Associated loco sound volume	0-63	63
CV116	Brightness of dim light, [dim, bright, off feature]	0-255	120*
CV117	Headlight light effect	0-16	0
CV118/119	Accessory light mode	0-16	8
CV120	Light brightness	0-255	255*
CV121	Chuff start point	0-7	0
CV122	Double chuff enable	0-1	0
CV123	'Chuff type (10 types)	0-9	2
CV124	Back EMF Load control intensity (0=off)	0-255	0*
CV125	Set it to 1 to restore key CV (with *) to default settings	0-1	0

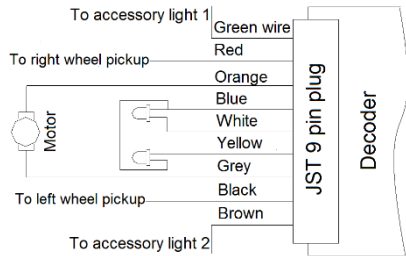


Loco Genie™
Wireless Locomotive
Control System Steam
#021500
Receiver/Transmitter
Installation & User Guide

WARNING: Do not use G scale power packs to operate this product. The maximum track voltage is 15 Volts.

INSTALLATION

If your loco has a 9 pin JST plug or NMRA 8 pin socket, you can simply unplug the original connector and plug in the decoder. If not, you will have to cut off the 8 pin plug hard wired to the 9 pin JST plug. After disconnecting the motor terminals from the pickups, connect the right side pickup wires to the red decoder wire, and connect the left side pickup wires to the black wire. Connect the right motor terminal to the orange wire, then connect the left motor terminal to the grey wire. The motor will no longer receive power from the electrical pick-ups directly. The motor will be controlled by the decoder. **The motor terminals must be isolated from the wheel pickups. Failing to do so will destroy the decoder.** The white wire is for the front headlight and the yellow wire is for the rear light. The green wire (ACC1) and brown wire (ACC2) are for the accessory lights. The blue wire is the common wire for lighting. If you use an LED or 1.5V bulb, you must use a series 750 Ohm resistor to limit the current. The decoder can't touch any metal parts or bare wires. Do not wrap the decoder, as this will increase heat and potentially harm the decoder. Instead use tape to cover all the metal parts and weights that the decoder may touch. Otherwise it will burn your decoder out. Remember to use good soldering techniques, and shrink wrap to isolate the connections. The decoder comes with a 28mm speaker and baffle. We recommend securing the speaker baffle side down to the surface.



POWERING LOCO GENIE™

Use an existing DC Power Supply (12-14v), or use a Loco Genie™ AC/DC Wallpack. #025201 – 1 amp (2-3 locomotives) or #020200 – 3 amp (6-8 locomotives).

Connect the lead wires to your terminal track.

NOTE: Do NOT use more than one power supply without proper block wiring on your layout. Doing so will short/burn any decoder and power supply.

BOND THE LOCO GENIE™ RECEIVER AND TRANSMITTER

1. The Loco Genie™ receiver and transmitter must bind prior to operation. Make sure all power is off to the track.
2. Install two AAA batteries into the transmitter. If batteries are already installed, remove and re-install. The LED on the transmitter will begin to flash.
3. Plug in wall adaptor or turn on DC Power Supply. DC power supply should be set to 70% or higher.
4. Bonding is complete when the LED has stopped flashing. If bonding fails, repeat the above procedure.
5. Press the horn key to verify the bonding process is complete.

NOTE: Do NOT use throttle control from DC Power Pack with Loco Genie™ installed.

Loco Genie™ is now operational. The receiver and transmitter will remain bonded until the batteries are removed. If you have multiple Loco Genie™ sets, repeat the above steps. Be sure to bring all other locomotives to an idle position or simply remove them temporarily from the track.

COMMAND LOCO GENIE™ RECEIVER AND TRANSMITTER

Loco Genie™ will now grant you wireless locomotive control using its 2.4 GHz remote. **Press and immediately release** any button on the transmitter to control your locomotive. The horn button may be held for longer operational use.

Operation

Press **▲** the loco should start to move slowly. This will increase the speed one step at a time. For a faster increase in speed, press **x4**. To improve your locomotives responsiveness, adjust the starting voltage to make the locomotive start faster by pressing **x4 & Bell (together)** and start slower by pressing **■ & Bell (together)**.

Momentum Control

Tight turns, slight decline, or approaching a station, Loco Genie™ provides the unique feature of momentum control. Press **■** to put the brakes on, the locomotive will begin to slow with momentum. Press **▲** or **▼** any time during the brake process, and maintain speed or simply allow the locomotive to come to a stop. Press the **■** twice for an immediate stop.

Be sure to stop the locomotive before turning off the power, at the end of your session.

PROGRAMMING LOCO GENIE™ WITH TRANSMITTER

Loco Genie™ comes with a lot of advanced features that can be unlocked with your transmitter. Press the **▼ & ▲** simultaneously. The locomotive will come to a stop if moving. You will hear an audible “program” confirming that you are in program mode. Once in program mode, follow the transmitter function chart to change features such as prime movers/chuff, horns/whistles, bells, volume, lighting effects and more.

Loco Genie™ can only perform 30 program commands in each program session. To exit program mode press **▼ & ▲** simultaneously.

Chuff Rate Adjustment

Depending on the locomotive you have, the motor/engine performance may vary based on brand, age, and mechanics of the engine. While you may adjust starting voltage & acceleration rate, your loco's general speed to the corresponding chuff rate may not match. Loco Genie™ allows you to calibrate the chuff rate to match your locomotives performance. The rate can be adjusted with a range of 0-100. Each time it is set, you must exit program mode to see the performance change.

Note: The Loco Genie™ transmitter can only allow you to increase the momentum and reduce the top voltage. If you over adjust these settings, you must set the decoder back to factory default settings and start over again.

Loco Genie™ Transmitter Function Table		
Key	Operation Mode	Program Mode
Bell	Bell On/Off	Change Bell
Whistle	Whistle	Change Whistle
◀▶	Change Direction	Change Chuff (10 Types)
▲	Increase Speed by One Step	Increase Master Volume
▼	Reduce Speed by One Step	Decrease Master Volume
X4	Adjust Speed by Four Steps	Increase Chuff Rate
■ /Double	Stop / Emergency Stop	Reduce Chuff Rate
⊙	Turn On/Off All Lights	Change Headlight Light Effect
X4 & ⊙**	Accessory Light On/Off	Back To Factory Default
■ & ⊙**	Sound On/Off	Reduce Top Voltage
X4 & Bell**	Increase Start Voltage	Increase Acceleration Rate
■ & Bell**	Reduce Start Voltage	Increase Deceleration Rate
▲ & ▼**	Enter Program Mode	Exit Program Mode
** Keys Must Be Pressed Simultaneously. These two keys functions are labeled on the back of the transmitter for your quick reference.		

FCC COMPLIANCE

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) This device must accept any interference received, including interference that may cause undesired operation. **WARNING:** Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment. **NOTE:** 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. **RF WARNING STATEMENT:** The device has been evaluated to meet general RF exposure requirement. The device can be used in portable exposure condition without restriction.

RETURN PROCEDURE

This decoder carries a 1 year limited warranty against factory defects. This warranty **does not** include abuse, misuse, neglect, improper installation, or any modifications made to this decoder, including but not limited to the removal of the NMRA plug if applicable. If it should become necessary to return the decoder for warranty repair/replacement, **please include a copy of the original sales receipt.** A letter (printed clearly) with your name, address, daytime phone number, and a detailed description of the problem you are experiencing. Please also include a check or a money order for \$12.50 to cover return shipping and handling. If the decoder is no longer considered under warranty, then please contact Model Rectifier Corp. for a price quote to cover the cost of repair or replacement of the decoder, and return shipping and handling. **Customers outside the continental United States, including; Hawaii, Alaska, Canada and Mexico, have to contact MRC for exact return shipping rates for both warranty and non-warranty repairs. Contact rtech@modelrectifier.com.** Be certain to return the decoder only. Any questions regarding Warranty Policy can be directed to our Customer Service Department by calling 732-225-6360 between the hours of 8:30am and 6:00pm EST, or by emailing: rtech@modelrectifier.com

Send the decoder to:

Model Rectifier Corporation
 Attn: Parts & Service
 80 Newfield Avenue Edison, NJ
 08837-3817

