

PROGRAMMING

This decoder supports all program modes and read back features. With MRC Prodigy Advance DCC you can read its address and all CV values.

CV	Register	Description	Range	Default
CV1	R1	Short address	1-127	3
CV2	R2	Start voltage	0-32	0
CV3	R3	Acceleration	0-32	8
CV4	R4	Deceleration	0-32	8
CV5	---	Top voltage	0-32	32
---	R6	Page number	---	---
CV29	R5	Basic configuration	---	2
CV7	R7	Manufacturer version number	---	19
CV8	R8	Manufacturer ID	---	143
CV17	---	Long address upper byte	192-231	192
CV18	---	Long address lower byte	0-255	3
CV19	---	Advanced consist address	0-127	0
CV21	---	When CV21=0, all accessory function will follow its own address. When CV21=1, all functions will follow the consist address	0-1	0
CV49		Master volume control(0=off, 1=low, 2=mid,3=max)	0-3	2
CV50	---	Whistle type	0-33	4
CV51	---	Whistle volume	0-3	3
CV52	---	Bell type	0-7	3
CV53	---	Bell volume	0-3	3
CV54	---	Bell ring rate	0-50	10
CV55	---	Chuff type (12 types)	0-11	0
CV56	---	Chuff volume	0-3	3
CV57	---	Brake squeal volume	0-3	1
CV58	---	Air release volume	0-3	3
CV59	---	Blower hiss volume	0-3	3
CV60	---	Fire box door volume	0-3	3
CV61	---	Injector volume	0-3	3
CV62	---	Coupling volume	0-3	3
CV63	---	Air pump volume	0-3	0
CV64	---	Rail clack volume	0-3	3
CV67-94		28 speed steps table while CV29.4=1	1-255	linear
CV105	---	User identification number	0-255	0
CV106	---	User identification number	0-255	0
CV112	---	Conductor volume	0-3	3
CV114	---	Air pump type	0-3	3
CV115	---	Auto brake squeal enable/disable	0-1	1(enable)
CV118	---	Shoveling volume	0-3	3
CV119	---	Coupling fire volume	0-3	3
CV120	---	Chuff rate	0-30	12
CV121	---	Chuff start point	0-7	3
CV122	---	Double chuff enable	0-1	1(enable)
CV123	---	Back emf on/off(1=0n, you must have a motor load to get chuff sound)	0-1	0
CV125	---	Factory default setting, program it to 1 will restore all the CV to default setting	---	0

SPEED TABLE CV67-CV94 FOR 28 SPEED STEPS

When CV29's bit 4 is set to "1" it will use the speed table formed by CV67-CV94 to control speed (motor voltage). It allows you to setup each speed for all 28 speed steps. First, program CV29 to 18 for short addresses (1-127) or program CV29 to 50 for long addresses (128-9999) to enable speed table control. Then select throttle to 28 speed steps and run your loco at speed step 1. Use program CV on the main to change CV67's value (1-255) to adjust step 1's speed. The kick voltage, CV65 is only applied when the speed step changes from 0 to 1. You should switch between 0 to 1 many times to check step 1's speed. When done with CV67, select speed step 2 and program CV68. CV68's value must be greater than CV67's. When done with CV67-CV94, use read back CV to make sure their values are in increasing order.

Note: When using MRC Prodigy DCC to program addresses it will automatically disable the speed table (set CV29's bit 4 to "0"). Programming CV125 to 1 will also disable the speed table and re-program CV67-CV94 to a default linear speed setting.

TROUBLE SHOOTING

This decoder should perform well with all DCC systems. The maximum DCC output should be less than 21 V. If the locomotive does not respond to commands, it may have lost its address. Please re-program the address and program CV19 to 0 (disable consist). If it responds 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 its top speed is too slow, program top voltage CV5 to 31. 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. 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.

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.

RETURN PROCEDURE

If it should become necessary to return your decoder, unplug the decoder and return the decoder only. Include a letter (printed clearly) with your name, address, a daytime telephone number, and a detailed description of the problem you are experiencing. Please include a \$25.00 check to cover shipping and handling. **Be certain to return only the decoder.**

Warranty does not include abuse, neglect, or using this product for anything other than its intended purpose. Warranty coverage will be handled on a case by case basis, and other charges may apply for repair/replacement of the product.

Send the decoder to:

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



G Gauge DC/DCC Steam Sound Decoder with 12 different chuff sounds

Item #0001819

Thank you for purchasing our most advanced DC/DCC locomotive sound decoder. Combined with any DCC System or the MRC Blackbox, our true live capture digital sound decoder will make your model railroad come to life.

- Twelve types of synchronized chuff sounds
- Double chuff enabling
- 5 amp capacity
- 34 different types of whistles and 8 types of bells
- Programmable individual sound volumes
- Programmable either 2-digit or 4-digit addresses
- Programmable start voltage and top voltage
- Programmable acceleration and deceleration rates
- Programmable 14, 28, 128 speed steps
- Supports full read back of address and CV values
- Selectable factory default speed curve
- Advanced speed table control CV67-CV94
- Kick start voltage control CV65
- Directional Head lights
- Mars light and firebox flicker
- 28 accessory functions (F1-F28)
- Supports full read back of CV's
- Supports advanced consisting (CV19)
- Supports programming on the main (OPS mode)
- Compatible with NMRA DCC standards
- Complies with Part 15 of FCC Rules
- 40 mm speaker included
- Dimensions: 70.5mm x 34.0mm x 11.4mm

INSTALLATION

It is quite a challenge to install the decoder in your loco. You should have some basic electrical knowledge. If you do not have, please ask the dealer for help in installation.

Figure 1 shows the electrical circuit of most standard locos. The terminals of the motor and lights are directly connected to the wheel pickup. Each type of loco has its own method of electrical pickup and distribution. There is no standard rule for installing decoders. It is always better to consult the loco manufacturer on how to install a decoder in your particular loco. First, figure out your loco's electrical wiring and how to disconnect (isolate) the motor and light(s). Label all wires before you disconnect them.

Figure 1. Connection of standard locomotive. *Note: The 'X' marks indicate where to disconnect (isolate).*

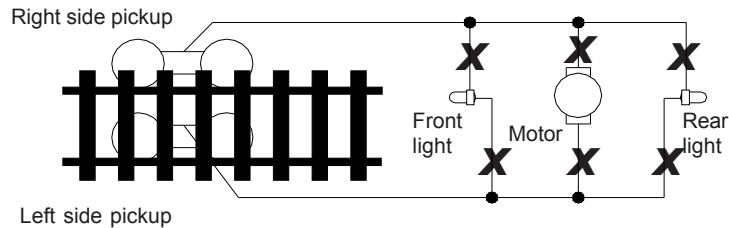


Figure 2. How to wire the decoder.

The decoder will be inserted between the wheel pickup and the motor. After disconnecting the motor terminals from the pickup, connect the right side pickup wires to the green terminal # 1. and connect the left side pickup wires to the green terminal # 4. Connect the right motor terminal to the green terminal # 2. Connect the left motor terminal to the green terminal # 3. The wires must be stripped 5 mm, well twisted, and tinned with solder before you connect them to the green terminals. Make sure there is no short circuit among these four terminals. Connect the front and rear lights to the headlight output. The middle terminal is common. Connect the accessory lights to the accessory output. Again the middle terminal is common. Use double-sided sticky tape to place the decoder in a safe place. The decoder can't touch any metal part or bare wires. The 40 mm speaker should have an enclosure made for a better sound quality.

If you have a 1.5V bulb or LED, you should connect a 2k ohm resistor in series to one of the leads to limit current.

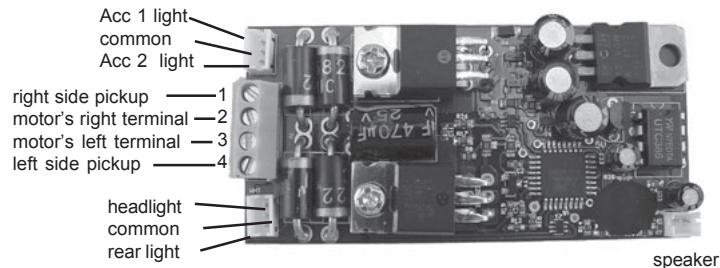


Figure 2. 0001819 decoder wiring diagram

MAKING A TEST TRACK

We strongly recommend building a test track with a 27 ohm resistor to limit current. Only test your installed decoder on the test track. The test track will reduce the chance of damaging your decoder due to an incorrectly installed decoder. Note- The test track is not your program track.

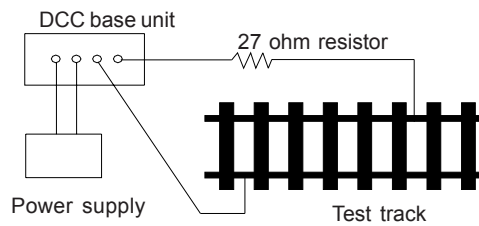


Figure 3. Diagram of test track

TESTING

The decoder has been programmed to address #3, 28/128 speed steps. To test, place the loco on the test track. Select address #3 and 28 speed step. Move up the throttle and the loco should move. Push the light button [F0] and headlight should come on. Change the direction of the loco and the loco should change direction. The loco cannot reach full speed, due to the resistor. If all the above occurs, you passed the test. Congratulations! Do not run the loco for an extended period of time on the test track or the resistor will overheat. If your installed decoder does not pass the test, find the problem, correct it and test it again. As long as you test the decoder on the test track there is little chance of damaging the decoder. This is why the test track is so important.

OPERATION

The decoder has twelve types of chuff sounds. You can use F24 to select them or F12 to turn the chuff off, with the whistle always remaining on. With our unique double chuff enable, (CV 122), you can also have 12 articulated chuff sounds. You can use F19 to select 34 different whistles, and use F18 to select 8 different bell sounds. With MRC Prodigy Advance² DCC which has 28 functions, you can easily setup and access all the decoder's functions. With all other DCC systems you have to use CV programming to setup the decoder.

If your locomotive has a Mars Light, use acc 1 light for hook up. The Mars Light flash rate can not be changed. If you want your locomotive to have a firebox flicker, use acc 2 light for hook up. The firebox flicker rate can not be changed.

If your loco has flywheels you can turn on the back emf (load control) feature by programming CV123 to 1. Otherwise don't turn on back emf.

There are many more program features available with this decoder. Please refer to the CV Chart to explore other features of the decoder.

The decoder can also be operated by a regular DC power pack. This will give you synchronized engine sounds only. If you wish to enjoy the full array of sound functions using your DC power pack, the unique MRC Blackbox (item #0001050) for DC operation will allow you to control all of the sounds in your sound equipped locomotives. And, the MRC Blackbox is easy to setup and use.

Function	Idle/Moving
F0	Headlight on/off
F1	Bell on/off
F2	Whistle
F3	Air release/ mars light on/off
F4	Coupling
F5	Brake release (idle) / brake squeal (moving)
F6	Conductor w hile idle/Rail w heel clack w hile moving
F7	Fire box open and close
F8	Injector
F9	Metal crank sound on/off (moving), steam associated sound (idle)
F10	Water injector
F11	Blow er hiss
F12	Sound on/off
F13	Short air release/ firebox flicker on/off
F14	Air hose firing/uncoupling lever
F15	Flange noise
F16	Shoveling
F17	Coal auger
F18	Change bell type (use F1 to turn off bell after adjustment)
F19	Whistle type select (total 34 different ones)
F20	Bell rate change (use F1 to turn off bell after adjustment)
F21	Change bell volume (use F1 to turn off bell after adjustment)
F22	Change w histle volume
F23	Change chuff volume
F24	Chuff type select (total 12 types)
F25	Air release
F26	Sand dropping
F27	Associated loco sound
F28	Associated loco sound

Note: Bell, Dynamic Brake, and Rail Wheel Clack cannot play at the same time.