

## PROGRAMMING

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

CV	Register	Description	Range	Default
CV1	R1	Short address	1-127	3
CV2	R2	Start voltage	0-32	0
CV3	R3	Acceleration	0-32	0
CV4	R4	Deceleration	0-32	0
CV5	---	Top voltage	0-32	32
CV6		Speed curve select (0=linear, 1=slow increase, 2=fast increase at slow speed)	0-2	0
---	R6	Page number	---	---
CV29	R5	Basic configuration	---	2
CV7	R7	Manufacturer version number	---	32
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, functions follow its own address. CV21=1, functions follow the consist address	---	1
CV49		Sound on/off except horn that is always on	0-1	1
CV50	---	Horn type (34 types)	0-33	4
CV51	---	Horn volume	0-3	3
CV52	---	Bell type (8 types)	0-7	3
CV53	---	Bell volume	0-3	3
CV54	---	Bell ring rate	0-50	3
CV55	---	Diesel rumble volume	0-3	3
CV56	---	Brake squeal volume	0-3	3
CV57	---	Dynamic brake volume	0-3	3
CV58	---	Air release volume	0-3	3
CV59	---	Air pump volume	0-3	3
CV60	---	Safety pop valve volume	0-3	3
CV61	---	Engine cooling fan volume	0-3	3
CV62	---	Coupling volume	0-3	3
CV63	---	Auto ditch lights flash with horn enable	0-1	1(enable)
CV64	---	Rail wheel clack	0-3	3
CV65		Kick start voltage	0-63	63
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
CV113	---	Coupling fire volume	0-3	3
CV114	---	Brake release volume	0-3	0
CV115	---	Auto brake squeal enable/disable	0-1	1(enable)
CV116	---	Auto bell with horn enable	0-1	0(disable)
CV117		light mode, 0=normal headlight 1=off, dim, bright cycle, 2=rule 17	0-2	0
CV118		ACC1 light mode	0-6	0
CV119		ACC2 light mode	0-6	0
CV121		Ditch flash (=1) or stay on (=0)	0-1	0
CV122	---	Notch mode, 0=auto, 3>manual	0-3	0
CV123		Prime mover type (2=diesel off)	0-2	1
C124		Back emf load control on/off	0-1	0 (off)
CV125	---	Programming to "1" will restore some CVs to factory settings	---	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 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 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](http://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 \$15.00 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 Diesel Sound Decoder with Two Prime Mover sounds

Item #0001818

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

- Two types of synchronized diesel prime mover sounds: Morden large Diesel and Morden diesel switcher
- 5 amp capacity
- 34 different types of horns 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 read back address and CV value
- Selectable factory default speed curve
- Advanced speed table control CV67-CV94
- Kick start voltage control CV65
- 3 headlight effects: Directional / rule 17 /off-dim-bright cycle.
- 7 accessory light effects: ditch lights, mars light, gyra light, strobe light, prime strobe light and on/off
- 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
- 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).*

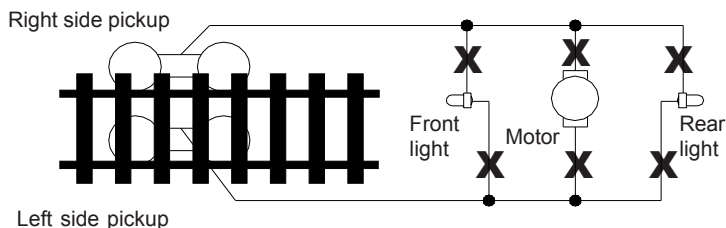


Figure 2. How to wire the decoder.

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 and 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.

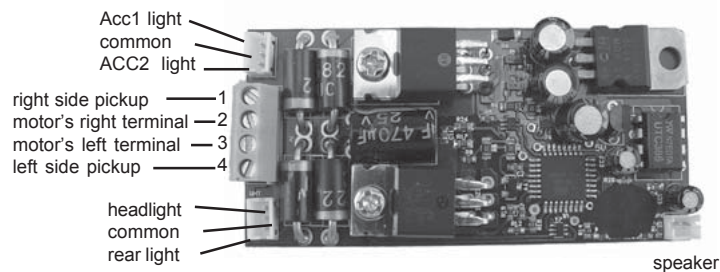


Figure 2. 0001818 decoder wiring diagram

## 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.

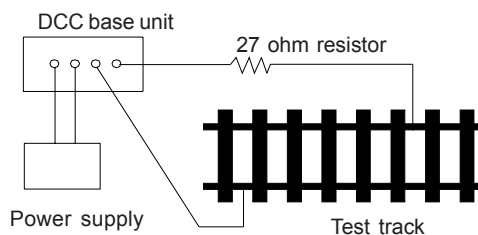


Figure 3. Diagram of test track

## 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 start up and shut down features. If the loco was previously shut down you have to start up the engine. Press any function key to start up the engine before operating the loco. To shut down the engine you must bring the loco to idle and then press F8 three times.

Double click F0 will turn on/off sound (CV49). You can't turn off horn which is always on. The decoder has two types of diesel prime movers. You can use F12 to select them or select diesel off (CV121). So it can be used in an Electric Type Traction Loco such as Trolley or GG-1. You can use F19 to select 34 different horn sounds and use F18 to select 8 different bell sounds. With MRC Prodigy Advance<sup>2</sup> DCC which has 28 functions, you can easily setup and access all the decoder's functions. If not, you may not be able to access all the features of the decoder. And you have to use the CV program to setup the decoder.

The decoder default is set to automatic notch. You can program CV122 to 3 for manual notch for realistic operation. And then use F9 to notch up and use F8 to notch down.

If your loco has flywheels you can turn on the back emf (load control) feature by programming CV124 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 or rule 17 or cycle of dim, bright, off
Double F0	Double click F0 within 1 second will turn on/off sound (CV49)
F1	Bell on/off
F2	Horn
F3	Ditch lightg on/off or Acc1 light on/off with air release
F4	Coupling 1
F5	Brake release (idle) / brake squeal (moving)
F6	Dynamic brake on/off
F7	Air hose firing/uncoupling lever
F8	Click 3 times during idle will shut down / notch down while CV122=3
F9	Engine cooling fan / notch up while CV122=3
F10	Rail wheel clack (only moving)
F11	Traction air compressor
F12	Change prime diesel mover type
F13	Acc2 light on/off/short air release
F14	Coupling 2
F15	Air pump
F16	Associated loco sound
F17	flange noise 1
F18	Change bell type (use F1 to turn off bell after adjustment)
F19	Horn type select (total 16 different horns)
F20	Associated loco sound
F21	Change bell volume (use F1 to turn off bell after adjustment)
F22	Change horn volume
F23	Change diesel rumble volume
F24	Coupling 3
F25	Long air release
F26	flange noise 3
F27	sand drop
F28	Ditch lights flash enable/disable (CV121) with Air release

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

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

Program CV117 to choose 3 different modes of headlight effects (0=normal directional, 1=off/dim/bright cycle, 2=rule 17). Both ACC1 and ACC2 has 7 different accessory lights effects. Program CV #118/119 to choose the desired light effect. CV118 for ACC1 and CV119 for ACC2. For ditch light both CV118 and CV119 must be 0. In ditch light mode, use F3 to turn on/off and use F28 to enable/disable flash. When you blow the horn the ditch lights will flash. The ditch lights will remain flashing for several seconds after horn is off.

CV118/119 value	ACC#1/ACC#2 Light effect
0	Ditch light
1	Gyra light
2	Marslight
3	Prime strato light
4	Single strobe light
5	Double strobe light
6	on/off