PROGRAMMING

This decoder supports all programming methods including: register, paged CV, direct CV, and programming on the main (ops mode programming).

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 at slow speed, 2=fast	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, all accessory functions will follow its own address. When CV21=1, all functions will follow the consist address	---	0
CV50	---	Horn type	0-16	4
CV51	---	Horn volume	0-3	3
CV52	---	Bell type	0-6	3
CV53	---	Bell volume	0-7	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	---	Random noise volume	0-3	3
CV64	---	Rail wheel clack	0-3	3
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	see chart	0
CV115	---	Auto brake squeal enable/disable	0-1	1(enable)
CV116	---	Coupling sound type	0-2, 0=off	1
CV122	---	Diesel notch mode, 0=auto-notch 3=manual notch	0-3	0
CV123	---	Prime mover sound (2- types)	0-1	0
CV125	---	Factory default setting: Programming to 1 will restore all CV's to default setting	---	0

Note: Due to limitations in older DCC systems, some of the sound functions or light effects functions may not accessable. ALSO, you might be limited to factory default CV values.

TROUBLE SHOOTING

The MRC 0001645 N diesel sound decoder should perform well with all DCC systems. See your DCC system manual to learn how to program and operate the decoder. For more information about register/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.**

Due to the nature of all sound decoders, the CV read back is not 100% correct. So this feature is not supported in the decoder. This is not a defect of the decoder or your DCC system.

Whenever the decoder doesn't work please use program track to re-program the loco address or program CV# 125 with value 1 to restore the decoder to factory setting. This should bring the decoder to life.

FCC COMPLIANCE

This device complies with the part 15 of FCC rule. 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 cause undesired operation.

RETURN PROCEDURE

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

Send the decoder to:

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

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80 NEWFIELD AVENUE
EDISON, NJ 08837-3817

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MODEL RECTIFIER CORPORATION

N Gauge DCC/DC Synchronized Diesel Sound Decoder with 28 Accessory Sound Functions

Item #0001645

Thank you for purchasing our highly advanced dual mode DCC/DC locomotive sound decoder. Combined with any DCC System or the MRC BlackBox, our new decoder with authentic diesel sounds will truly make your model railroad come to life.

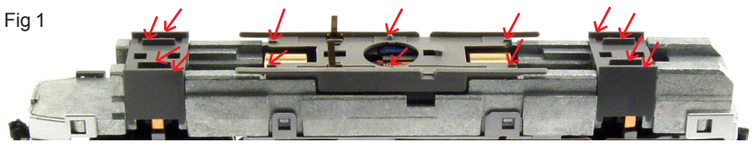
- Two selectable diesel prime mover types with randomly associated locomotive sounds
- User selectable 16 different horns and 8 bells
- 28 accessory functions allowing more sound control than ever
- Programmable individual sound volumes
- 1.0 amp capacity
- Programmable for either 2-digit (1-127) or 4-digit (1-9999) addresses
- Programmable start voltage
- Programmable acceleration rate
- Programmable deceleration rate
- Programmable top voltage
- Programmable 14, 28, 128 speed steps
- Selectable factory default speed curve
- Supports advanced consisting (CV19)
- Supports programming on the main (OPS mode)
- Compatible with NMRA DCC standards
- Complies with Part 15 of FCC
- 13mm speaker included
- PCB size: 90 x 14 x 4.2mm
- Directly replaces Kato GE P42 and EMD E8/9 PC Boards

INSTALLATION

It is easy to install this decoder into a Kato GE P42 or EMD E8/9 diesel locomotive. Remove the original circuit board by very carefully removing the plastic clip (fig 3), and sliding the circuit board out. Remove the copper contact strips. The 0001645 sound decoder is installed in the same location. However, you will have to use a hobby knife to trim some plastic “bumps” before installing the decoder. (See fig 1 & 2) You must apply tape on the chassis (as shown) to prevent it from touching the decoder. Make sure the four spring contacts (fig 3) properly sit on the wheel pickups. Spring contacts under decoder board should be angled approx 20 deg. to provide correct contact tension. After installing the decoder apply tape as shown to hold the PCB straight.

How to install 0001645 decoder:
Carefully trim 14 raised plastic areas (shown) so they are level. (see fig 1 & fig 2)

Fig 1



CAUTION:
Wrap the chassis with tape (as shown in figure 2) to prevent the electrical contacts from touching the chassis. Otherwise, the decoder will be destroyed if the decoder contacts touch any unwrapped part of the chassis.
Carefully seat the sound decoder as shown in Fig 3. Reinstall plastic “clip” securing motor contact springs to the top of the decoder board (fig. 2 & 3)

Fig 2

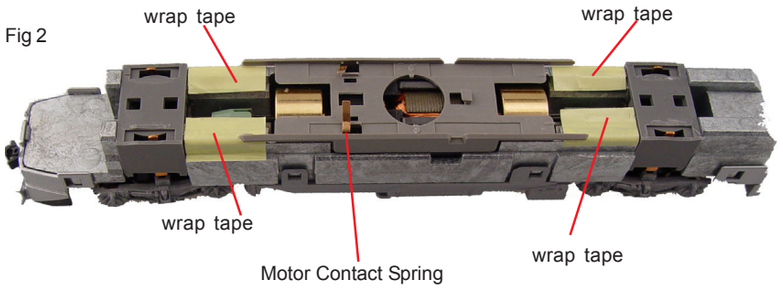
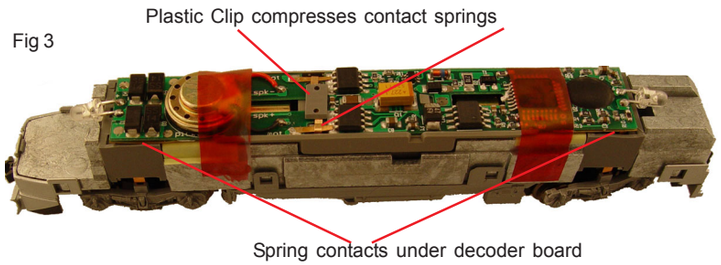


Fig 3



MAKING A TEST TRACK

Before you begin decoder installation, 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 may prevent damage from an incorrectly installed decoder.

Note: The program track is NOT a test track. The program track does not use a current limiting resistor. So it can’t protect an incorrectly installed decoder.

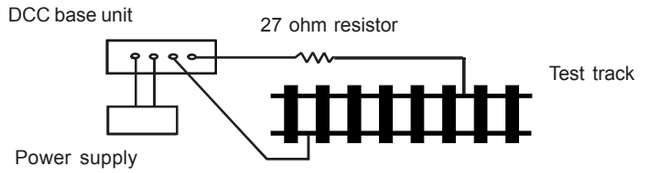


Figure 4. Diagram of test track

TESTING

All MRC decoders have been factory programmed with address #3, 28/128 speed steps and maximum top voltage. **Never run the installed decoder on your layout without first successfully running on test track.** Otherwise, you may damage the decoder if it is not wired correctly or if you have not properly isolated the motor, chassis and lights.

To test, place the loco on the test track. Select the “Run” mode of your DCC system and select or acquire address #3. Move up the throttle and the loco should move forward. Push the light button [F0] and the front headlight should come on. Change the direction of the loco and the loco should change direction and the rear headlight (if equipped) should come on. The loco cannot reach full speed, due to the resistor. If all 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.

DCC OPERATION

This decoder has start up and shut down feature. You must 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 3 times.

This decoder can also be used in an Electric Type Traction Loco such as Trolley or GG-1 by turning off diesel sounds. To turn off the diesel prime mover sounds, program CV #122 with value 0.

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

DC OPERATION

The 0001645 decoder provides synchronized diesel rumble sound with DC operation. Bells, horns, etc., cannot be accessed. Use of the MRC BlackBox will enable the full range of sounds on a DC system.

DIESEL SOUNDS FUNCTION CHART

Function	Idle/Moving
F0	Headlight on/off
F1	Bell on/off
F2	Horn
F3	Air release
F4	Coupling
F5	Brake release (idle) / brake squeal (moving)
F6	Dynamic brake on/off
F7	Air hose firing/uncoupling lever
F8	click 3 times w ill shut dow n
F9	Engine cooling fan
F10	Rail w heel clack (only moving)
F11	Traction air compressor
F12	Change diesel prime mover (2-types)
F13	short air release
F14	Coupling crash
F15	Air pump
F16	Associated loco sound
F17	flange noise
F18	Change bell type (use F1 to turn off bell after adjustment)
F19	Horn type select
F20	Reverse Gear
F21	Change bell volume (use F1 to turn off bell after adjustment)
F22	Change horn volume
F23	Change diesel rumble volume
F24	Coupling
F25	air release
F26	flange noise
F27	Air hose firing
F28	short air release

Note2: when CV122=3 (manual notch up/down, F8 will notch down and F9 will notch up.

Bell, Dynamic Brake and Rail Wheel Clack cannot play at the same time. If you activate the Bell sound [F1], while either the Dynamic Brake or Rail Wheel Clack sounds are in use, the Bell sound will override the other 2 sounds. Rail Wheel Clack cannot play while the loco is in idle. When you turn off Dynamic brake and Rail Wheel Clack sound there will be one second delay.