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 at slow speed, 2=fast increase at slow speed)	0-2	0
---	R6	Page number	---	---
CV29	R5	Basic configuration	---	2
CV7	R7	Manufacturer version number	---	2
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
CV49		Sound on/off- horn always on	0-1	1
CV50	---	Horn type	0-34	13
CV51	---	Horn volume	0-15	12
CV52	---	Bell type	0-8	3
CV53	---	Bell volume	0-15	12
CV54	---	Bell ring rate	0-50	3
CV55	---	Prime mover volume (0=diesel off)	0-13	12
CV56	---	Brake squeal volume	0-15	7
CV58	---	Air release volume	0-15	12
CV59	---	Air pump volume	0-15	12
CV60	---	Safety pop valve volume	0-15	12
CV61	---	Engine cooling fan volume	0-15	12
CV62	---	Coupling volume	0-15	12
CV63	---	Auto ditch lights flash with horn enable	0-1	1(enable)
CV64	---	Rail wheel clack volume	0-15	12
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	3
CV115	---	Auto brake squeal enable/disable	0-1	1(enable)
CV122		Diesel notch mode, 0=auto-notch 3=manual notch	0-3	3
CV123		prime mover type	0-2	0
CV125	---	Program it to1 will restore some the CV to factory default settng	---	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 then 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

Loco runing without sound click F12 or use CV 49 to turn on/off sound. 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. 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**.

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

This decoder carries a 6 month 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**. Please include 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 $9.00 to cover return shipping and handling. If the decoder is no longer considered under warranty, then please include a check or a money order for $35.00 to cover the cost of repair or replacement and return shipping and handling. **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: rrtech@modelrectifier.com

Send the decoder to:

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

Printed in USA

HO DC/DCC Diesel Sound Decoder

Drop in for Atlas Genset Locomotives
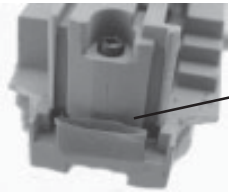### Item #0001906

Thank you for purchasing our most advanced DC/DCC locomotive sound decoder. Combined with any DCC System, MRC Blackbox or Tech 6, our true live capture digital sound decoder will make your model railroad come to life.

- Triple core processor generating three independent diesel genset prime mover sounds.
- 1.5 amp capacity
- 22 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 decelaration rates
- Programmable 14, 28, 128 speed steps
- Back EMF load control
- Supports read back address and CV value
- Selectable factory default speed curve
- Advanced speed table control CV67-CV94
- Kick start voltage control CV65
- Accessory strobe light effects included
- Replacement ditch light boards supplied for flashing front and rear ditch lights
- 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
- 16x36 mm speaker included
- Dimensions: 73.0mm x 17.6mm x 8.4mm

INSTALLATION

This decoder board completely replaces the PC Board in the Atlas Trainman GenSet Locomotive. Following the Atlas directions, slowly remove the body shell from the chassis of the locomotive. Be careful as the supplied headlight wires are very short and may break off from the LED's when you remove the body shell. We recomend using a dab of hot glue to secure the headlight wires close to the headlight location inside the long hood of the body shell, to avoid them breaking off. Use a 1" to 2" thin wire to connect two black wires from the headlights. Tape the joint to avoid short circuit. This thin wire will be connected to the tab marked "headlight com". Remove the original board with two Atlas ditch light boards.
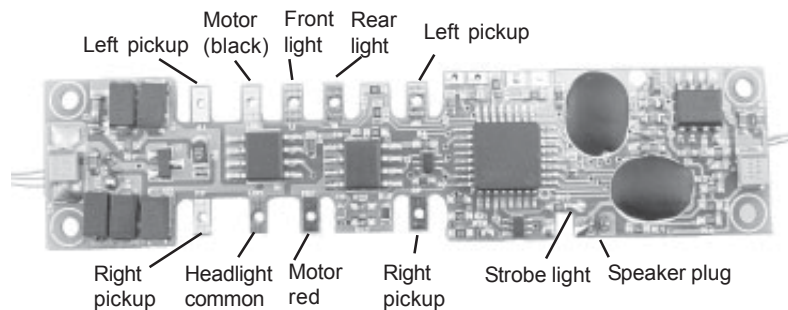
Remove the weight from the rear part of the chassis. Remove two capacitors hidden under the weight. They will not be used. The speaker supplied with your decoder fits snugly in place where you removed the two capacitors. We recomend using a small bead of glue to fully secure the speaker to it's location. Before installing the ditch light boards please use tape to completely wrap both front and rear ditch light board holders/slots to prevent the LEDs from touching the chassis, and shorting out.

Use tape to completely wrap both front and read ditch light board holders to prevent LEDs from touching the chassis

The ditch light boards are already soldered to the decoder for your conveniance. Be very careful with these wires as they are very fragile.

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Using the supplied wiring diagram, attach the four pickup, two motor and three headlight wires to the decoder board and secure using the plastic clips or by soldering the wires to the tabs on the decoder. Use all the wire channels in the chassis to route the wires going to the decoder and use scotch tape in these locations to keep the wires from moving. If you wish to add a roof top strobe light to your loco, use the tab marked for strobe light and the headlight common tab on the decoder.

Left pickup, Motor (black), Front light, Rear light, Left pickup

Right pickup, Headlight common, Motor red, Right pickup, Strobe light, Speaker plug

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

DCC base unit
27 ohm resistor
Power supply
Test track
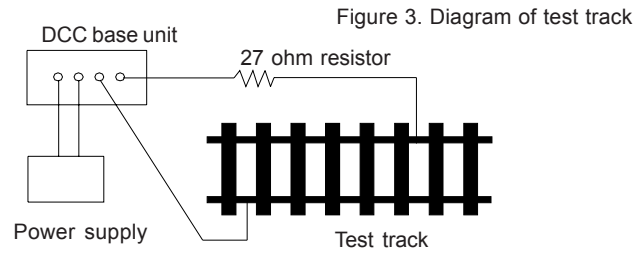
TESTING

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. This decoder is default to manual notch setting (CV122=3). F9 will notch up and F8 will notch down. It has three independent diesel genset prime mover sounds. The second engine will turn on at notch 4 and the third will turn on at notch 6. This decoder also mimics the real GenSet, and if left idling for a long period of time will shut down and re start automatically at specific intervals to conserve fuel.

Shutting off the sound in CV49 will not disable the horn. The decoder has two types of diesel prime movers. You can use F12 or CV 123 to select the desired prime mover sound. You can use F19 to select 34 different horn sounds and use F18 to select 8 different bell sounds. With MRC Prodigy Advance[2] 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.

If you want automatic notching enabled set CV 122 = 0

The decoder can also be operated by a regular DC power pack. This will give you engine sounds only. The DC operation is not recommened. If you wish to enjoy the full array of sound functions using your DC power pack, the unique MRC Blackbox (item #0001050), or the tech 6 2.0, (#0001200), will allow you to control all of the sounds in your sound equipped locomotives.

Function	Idle/Moving
F0	Lights on/off
F1	Bell on/off
F2	Horn
F3	Ditch Lights on/off
F4	Coupling 1
F5	Brake release (idle) / brake squeal (moving)
F6	Strobe Light on/off
F7	Air hose firing/uncoupling lever
F8	3 times will shut down when in idle / Manual notch down
F9	Engine cooling fan / Manual notch up
F10	Rail wheel clack (only moving)
F11	Traction air compressor
F12	Change prime mover type, (2 types and off)
F13	Short air release
F14	Coupler crash
F15	Air compressor
F16	Flange squeal
F17	Air release
F18	Change bell type (use F1 to turn off bell after adjustment)
F19	Horn type select (total 34 different horns)
F20	Associated loco sound
F21	Change bell volume (use F1 to turn off bell after adjustment)
F22	Change horn volume
F23	Change prime mover volume
F24	Safety valve pop
F25	Air release
F26	Flange noise
F27	Sand drop
F28	Ditch Lights flash when F3 is activated