PROGRAMMING

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

**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 speed slope, 1=slow increase at slow speed, 2=fast increase at slow speed | 0-2 | 0
--- | Page number | --- | ---
CV19 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
CV49 | Sound off | 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 nuble 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 | Rail wheel slack | 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
CV139 | User programable top value | 0-3 | 3
CV114 | Brake release volume | 0-3 | 3
CV115 | Auto brake squeal enable/disable | 0-1 | 1
CV116 | Auto bell with horn enable | 0-1 | 0
CV117 | light mode, 3 normal headlight on/off, dim, bright cycle | 0-2 | 0
CV118 | Mars light flashing off/on (F92) | 0-1 | 1
CV121 | Diesel notch mode, 0=auto-notch 3=manual notch | 0-3 | 0
CV123 | prime mover type | 0-3 | 2
CV125 | Program it to 1 will restore some the CV to factory 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 speed for all 28 speed steps. First, program CV29 to 18 for short addresses and 19 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 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**

This decoder should perform well with all DCC systems. The maximum DCC output should be less than 18 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. Whenever the decoder doesn’t work please use the program track to program CW 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**

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 $8.00 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 $26.00 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: rtech@modelrectifier.com

Send the decoder to: Model Rectifier Corporation
Altn: Parts & Service
80 Newfield Avenue
Edison, NJ 08837-3817 U.S.A

HO DC/DCC Synchronized Diesel Sound Decoder with 28 Accessory Functions for Proto 2000 PA/PB Locomotive

Item #0001803

Thank you for purchasing our most advanced DC/DCC ALCo sound decoder. Combined with any DCC System or MRC Blackbox, our true live capture digital ALCo sound decoder will bring your Proto 2000 PA/PB to life.

- Synchronized diesel prime mover with random associated locomotive sounds
- 1.5 amp capacity
- Programmable for either 2-digit (1-127) or 4-digit (1-9999) addresses
- Programmable start voltage and top voltage
- Programmable acceleration and deceleration rate
- Programmable 14, 28/128 speed steps
- Directional lighting, (FO),
- Programmable user selectable horns and bells
- Supports full read back
- 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 regulations
- Programmable individual sound volumes
- 28mm speaker included

Printed in USA
INSTALLATION

Refer to the instructions that came with your PA/PB locomotive for removal of the body shell. Remove the three screws that hold down the original circuit board. Don’t lose these screws, you will need two of them to install the decoder. Gently lift the original circuit board and note the locomotive wire colors and locations from where they originate inside the chassis. Remove the plastic clips that hold these wires to the original circuit board and remove the wires from the circuit board. You will use the clips to attach the wires to the decoder.

There are three red wires, (four red wires if the loco has a mars light), and four black wires, do not mix these up! Two red wires are from the right side wheel pickups, one red wire goes to the motor brush, and one red wire goes to the mars light if equipped. Two black wires are from the left side wheel pick ups, and one black wire goes to the motor brush. The other black wire goes to the headlight. The other wires are as follows:

- yellow to headlight
- white and blue to the mars light
- (if equipped), with the blue wire as the mars light common. The decoder is set up to use the bulbs that came with the locomotive, no change is needed. Install the wires to the decoder as noted in the following diagram. Make sure to twist the wire leads tightly as not to have a stray strand cause a short circuit on the decoder. Use the plastic clips to attach the wires to the decoder. You can also solder the wires to the decoder if you prefer instead of using the clips.

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

DC OPERATION

This decoder provides synchronized, true ALCo diesel rumble sounds 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.

<table>
<thead>
<tr>
<th>Function</th>
<th>Idle/Moving</th>
</tr>
</thead>
<tbody>
<tr>
<td>F0</td>
<td>Headlight on/off or cycle of dim, bright, off</td>
</tr>
<tr>
<td>F1</td>
<td>Bell on/off</td>
</tr>
<tr>
<td>F2</td>
<td>Horn</td>
</tr>
<tr>
<td>F3</td>
<td>Mars light on/off with air release</td>
</tr>
<tr>
<td>F4</td>
<td>Coupling 2</td>
</tr>
<tr>
<td>F5</td>
<td>Brake release (idle/brake squeue (moving)</td>
</tr>
<tr>
<td>F6</td>
<td>Dynamic brake on/off</td>
</tr>
<tr>
<td>F7</td>
<td>Air hose firing/uncoupling lever</td>
</tr>
<tr>
<td>F8</td>
<td>Click 3 times during idle will shut down/notch down while CV122=3</td>
</tr>
<tr>
<td>F9</td>
<td>Engine cooling fan / notch up while CV122=3</td>
</tr>
<tr>
<td>F10</td>
<td>Rail wheel clack (only moving)</td>
</tr>
<tr>
<td>F11</td>
<td>Traction air compressor</td>
</tr>
<tr>
<td>F12</td>
<td>Change prime diesel mover type, (4 types) including off</td>
</tr>
<tr>
<td>F13</td>
<td>Short air release</td>
</tr>
<tr>
<td>F14</td>
<td>Coupling 2</td>
</tr>
<tr>
<td>F15</td>
<td>Air pump</td>
</tr>
<tr>
<td>F16</td>
<td>Associated locomotive sound</td>
</tr>
<tr>
<td>F17</td>
<td>Flange noise 1</td>
</tr>
<tr>
<td>F18</td>
<td>Change bell type (use F1 to turn off bell after adjustment)</td>
</tr>
<tr>
<td>F19</td>
<td>Horn type select (total 34 different horns)</td>
</tr>
<tr>
<td>F20</td>
<td>Associated locomotive sound</td>
</tr>
<tr>
<td>F21</td>
<td>Change bell volume (use F1 to turn off bell after adjustment)</td>
</tr>
<tr>
<td>F22</td>
<td>Change horn type volume</td>
</tr>
<tr>
<td>F23</td>
<td>Change diesel rumble volume</td>
</tr>
<tr>
<td>F24</td>
<td>Air release</td>
</tr>
<tr>
<td>F25</td>
<td>Flange noise 2</td>
</tr>
<tr>
<td>F26</td>
<td>Flange noise 3</td>
</tr>
<tr>
<td>F27</td>
<td>Sand drop</td>
</tr>
<tr>
<td>F28</td>
<td>Mars light flash enable/disable with Air release (CV121)</td>
</tr>
</tbody>
</table>

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

ADDITIONAL INFORMATION

The MRC 1803 HO gauge synchronized diesel sound decoder should perform well when used with other brand command systems. See your DCC command station 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.