PROGRAMMING

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

With 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

Reset: Whenever the decoder doesn’t work, please use the program track to program CV125 with value 1 to restore the decoder to factory settings.

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 $35.00 to cover the cost of repair or replacement and return shipping and handling. Be certain to return the decoder only.

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.

N Gauge DC/DCC Electric Traction Sound Decoder

Item #0001952 drop-in for Kato GG-1

Thank you for purchasing our most advanced DC/DCC 16 bit 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.

• Realistic Electric Locomotive Traction Motor Sounds
• 0.75 amp capacity
• 22 different types of horns and 8 types of bells
• Programmable individual sound volumes (16 levels)
• 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
• Ultra slow motion control
• Back EMF load control
• Supports full read back of decoders
• 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
• Supports advanced consisting (CV19)
• Supports programming on the main (OPS mode)
• Compatible with NMRA DCC standards
• Complies with Part 15 of FCC Rules
• 10 mm speaker included

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.

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.

- CV1: R1 Short address 1-127 3
- CV2: R2 Start voltage 0-32 10
- 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=follow increase, 2=fail increase at slow speed) 0-2 0
- CV6: --- Peak number --- ---
- CV29: R6 Basic configuration --- ---
- CV7: R7 Manufacturer version number 27 1
- CV8: R8 Manufacturer ID --- 143
- CV17: --- Long address upper byte 192-231 192
- CV18: --- Long address lower byte 0-255 3
- CV19: --- Advanced consisting --- 0
- CV21: --- When CV21>0, functions follow its own address, CV21=1, functions follow the consist address --- 0
- CV49: odd sound number on, even sound off 1 on
- CV50: --- Horn type 0-22 6
- CV51: --- Horn volume 0-15 12
- CV52: --- Bell type 0-7 3
- CV53: --- Bell volume 0-15 12
- CV54: --- Bell ring rate 0-50 3
- CV55: --- Traction Motor volume 0-15 12
- CV56: --- Brake squeal volume 0-15 7
- CV57: --- Dynamic brake volume 0-15 12
- 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: --- Sand release volume 0-15 12
- CV64: --- Rail wheel slack 0-15 12
- CV65: Start Kick voltage 0-15 12
- CV66: 28 speed steps table 0-15 12
- CV67: 28 speed steps table 0-15 12
- CV68: 28 speed steps table 0-15 12
- CV69: 28 speed steps table 0-15 12
- CV70: 28 speed steps table 0-15 12
- CV71: 28 speed steps table 0-15 12
- CV72: --- Auto brake squeal enable/disable 0-1 1(enable)
- CV73: --- Flange squeal volume 0-15 12
- CV74: Light mode, Unusual headlight 1-off, dim, bright cycle, 0=on 1
- CV75: --- Nt Used 0-3 0
- CV76: Traction Motor sound on/off 0-1 1(on)
- CV77: --- Programming to “0” will restore some CV’s to factory settings --- 0

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INSTALLATION

It is quite a challenge to install the decoder in your loco. You should have some basic electrical knowledge. In all decoder installations, you must isolate the chassis and motor from the wheel pick ups, otherwise the decoder will be damaged. The decoder is inserted between the pickup tabs and motor leads. If you are not sure how to install the decoder, please ask the DCC dealer for help in installation.

Note: To install this decoder, you must file 2 small tabs off the chassis halves, this may void your locomotives warranty.

Refer to the instructions that came with your Kato GG-1 locomotive for removal of this decoder. Otherwise the decoder will be damaged. The basic electrical knowledge. In all decoder installations, you must isolate the chassis halves, so the decoder board sits flush on top of the chassis. Use care when filing metal as to avoid any metal filings from getting lodged in the motor or drive train. We recommend to apply tape to cover the chassis before filing. There are four contact strips on the outer edges of the decoder that must be bent down at a 45 degree angle, with a little "V" bend at the ends as picture shown, to make contact with the chassis halves.

Before installing the decoder, you must apply two small pieces of insulating tape on each side of the chassis, inside of the motor contact slots. Apply all the way to the bottom of the slots. Do not cover the copper motor brush tabs. These tabs need to contact to the decoder’s motor contacts. Use a #11 blade to burish the tape to the inside of the chassis halves. Also apply tape on the outside of the decoder’s motor brush feed contacts. You may need to bend the decoder’s motor brush feed contacts slightly inward to make positive contact with the motor brush tabs. Slide these tabs and the decoder downward on the chassis, making sure to align the notches in the decoder with the four remaining chassis tabs. Seat the decoder flush on the top of the chassis. Make sure the decoder’s motor brush feed contacts slightly inward to make positive contact with the chassis halves. The speaker must face upwards and sit in the hole on the decoder board. Re-check your installation, then test run the chassis with installed decoder on the test track. If the installation process passes, install the body shell. Your GG-1 is ready to go to work on your railroad.

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.

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

You can use F12 or CV 123 to turn off the traction motor sounds. You can use F19 or CV50 to select 22 different horn sounds and use F18 or CV52 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. 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.

CV117 controls the function of headlight. CV117=0 sets normal directional on/off. CV117=2 sets rule 17 light effect. CV117=3 sets three cycles light effect (off, dim and bright).

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) or Tech 6 (item #0001200) for DC operation will allow you to control all of the sounds in your sound equipped locomotives. And, the MRC Blackbox and Tech 6 are easy to setup and use.

<table>
<thead>
<tr>
<th>Function</th>
<th>Idle/Moving</th>
</tr>
</thead>
<tbody>
<tr>
<td>F0</td>
<td>Headlight on/off or rule 17 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>Short air release</td>
</tr>
<tr>
<td>F4</td>
<td>Coupler cut lever</td>
</tr>
<tr>
<td>F5</td>
<td>Brake release (idle) / brake squeal (moving)</td>
</tr>
<tr>
<td>F6</td>
<td>Dynamic brakes</td>
</tr>
<tr>
<td>F7</td>
<td>Air hose firing/uncoupling lever</td>
</tr>
<tr>
<td>F8</td>
<td>Not used</td>
</tr>
<tr>
<td>F9</td>
<td>Engine cooling fan</td>
</tr>
<tr>
<td>F10</td>
<td>Rail wheel clack (only moving)</td>
</tr>
<tr>
<td>F11</td>
<td>Traction air compressor on/off</td>
</tr>
<tr>
<td>F12</td>
<td>Traction Motors off and horn on</td>
</tr>
<tr>
<td>F13</td>
<td>Short air release</td>
</tr>
<tr>
<td>F14</td>
<td>Coupler crash</td>
</tr>
<tr>
<td>F15</td>
<td>Air compressor</td>
</tr>
<tr>
<td>F16</td>
<td>Flange squeal</td>
</tr>
<tr>
<td>F17</td>
<td>Air release</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</td>
</tr>
<tr>
<td>F20</td>
<td>Associated loco 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 volume</td>
</tr>
<tr>
<td>F23</td>
<td>Change traction motor volume</td>
</tr>
<tr>
<td>F24</td>
<td>Safety valve pop</td>
</tr>
<tr>
<td>F25</td>
<td>Air release</td>
</tr>
<tr>
<td>F26</td>
<td>Flange noise</td>
</tr>
<tr>
<td>F27</td>
<td>Sand release</td>
</tr>
<tr>
<td>F28</td>
<td>Air release</td>
</tr>
</tbody>
</table>

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