

E-Z COMMAND

DCC Reverse Loop Module

Developed to simplify the wiring of reverse loops on two-rail layouts using NMRA Conformant Digital Command Control, the *E-Z Command*® DCC Reverse Loop Module allows you to operate your trains through a reverse loop section without manually changing locomotive direction or track polarity.

- Maximum current draw in the reverse loop: 5 Amps
- Functions when the first wheel on either rail crosses the gap (wheels must be metal)
- Designed for safe use on both common rail and two rail wired layouts

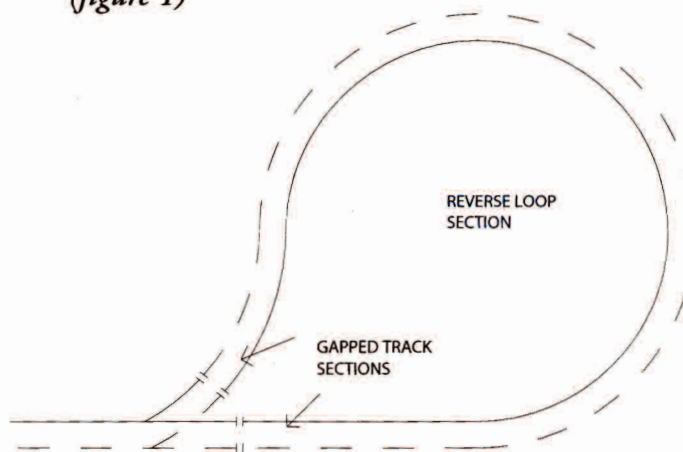
IMPORTANT NOTICE

The Bachmann Reverse Loop Module does not function for two-rail DC layouts powered by conventional 12 volt DC!

The Problem with Reverse Loops

Every user of 2-rail DC knows the 'reverse loop blues.' Including a reverse loop in a 2-rail DC (analog) layout leads to a short where the reverse loop ties into the main line.

(figure 1)



The only way to prevent this short circuit is to insulate both sides of the track. A single two-rail gap is not enough, since a passing engine will short the rail through the electrical pick-up on both sides of the gap. Therefore, the track has to be gapped on both sides of the reverse loop (figure 1). Once gapped, you still must ensure that the rails are not short circuited upon entry or exit of the reverse loop.

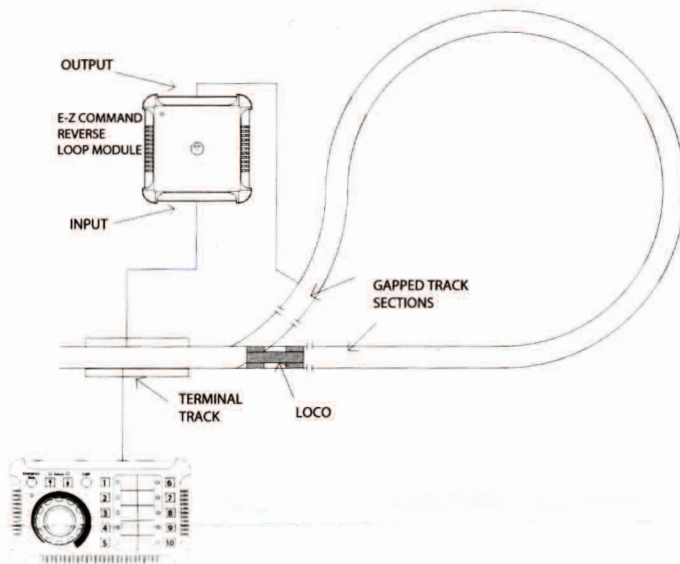
Usually, the polarity is selected such that there is no short circuit upon entry into the loop. While the train is in the loop, the polarity is changed, so that there is no short circuit at the exit of the loop.

On conventional layouts, this leads to a problem. Changing the polarity in the reverse loop will change the direction of the train, since the train's direction is dependent on the track polarity. Therefore, the direction also has to be changed at the power pack, so that the train keeps moving in the same direction on exit from the loop. In this case, the train has to be stopped while traversing the loop.

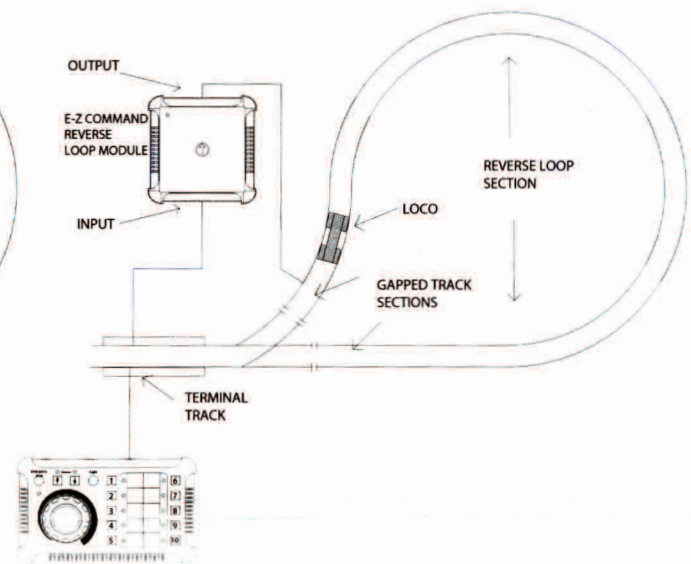
On **NMRA-conformant DCC** operated layouts, the direction of the train is independent from the polarity on the track, therefore, the polarity of the reverse loop can be changed without stopping the train or changing its direction.

Function of the Bachmann Reverse Loop Module

The Bachmann Reverse Loop Module adjusts the polarity in the reverse section automatically for the passing train. This happens in a simple way. If the polarity is not correct when the train enters the reverse loop, the Module detects the short generated by the wheels of the locomotive and changes the polarity instantly (see figure 2). This happens so fast, that it is undetectable during the movement of the train. The short is removed, and the train can enter the reverse loop. This short can be detected even if only a single wheel of the locomotive bridges the gap. When the train leaves the reverse loop at the other end, the ensuing short is detected by the module and the polarity is adjusted accordingly (see figure 3).



(figure 2)



(figure 3)

Note: If your turnout is equipped with a metal frog (or frogs), make sure the frog is non-powered. Powering the frog could create a short circuit.

To avoid a short circuit situation, the reverse loop section (the entire section controlled by the output of the Reverse Loop Module, regardless of the appearance of the actual track configuration) has to be slightly longer than the longest train on the layout!

Installing the Reverse Loop Module without *E-Z Track*[®]

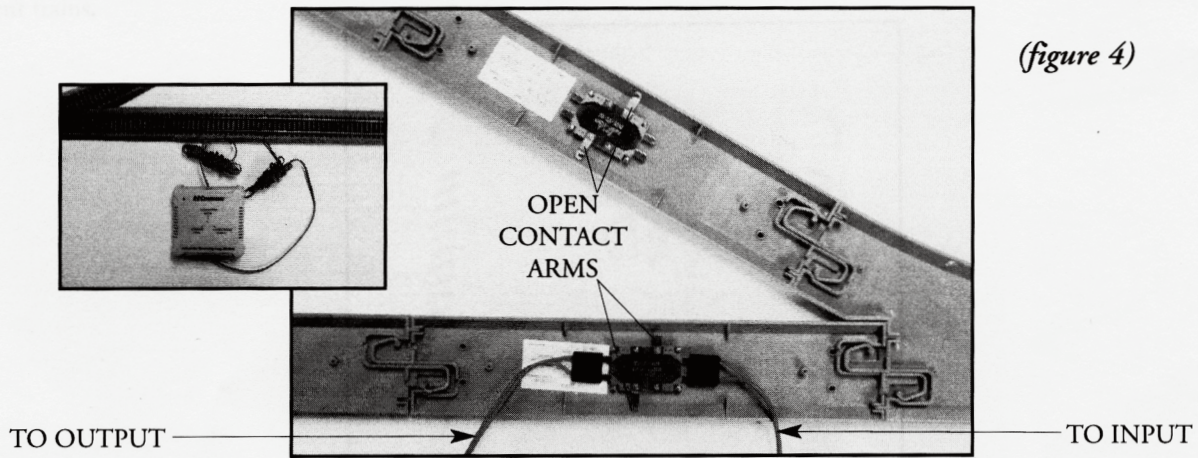
The wiring of the module is very simple and shown in general terms in figure 3. Your reverse loop configuration and connection procedure may vary, depending on the brand of track you choose. The reverse loop section must be insulated from the rest of the layout by gapped rails (as shown) in order to function properly.

First, connect the input wire to the track before the reverse loop as shown. Next, connect the output to the reverse loop track section that is insulated from the rest of the layout by gapped rails. A constantly lit LED indicator means your reverse loop is operating properly. A flashing LED indicates a short circuit at the locomotive. Immediately remove the locomotive from the track. If a short circuit is indicated, prolonged contact with the track could cause your locomotive wheels to become fused to the rails. Next, cut all power to track and correct the short circuit before resuming operation.

Double-sided tape is provided so you can easily place the reverse loop module at a convenient location on your layout.

Installing the Reverse Loop Module with *E-Z Track*®

To connect your module to the insulated reverse loop section, we suggest the *E-Z Track*® 9" Power Terminal with Insulated Gap (nickel silver only; Item No. 44597), also by Bachmann. To install the reverse loop module using Bachmann Item No. 44597, refer to figure 4. To create gaps and insulate the loop, loosen all contact arm screws and open the arms as shown. Connect the input wire to the terminals closest to the turnout. Next, connect the output wire to the terminals inside the insulated loop section.

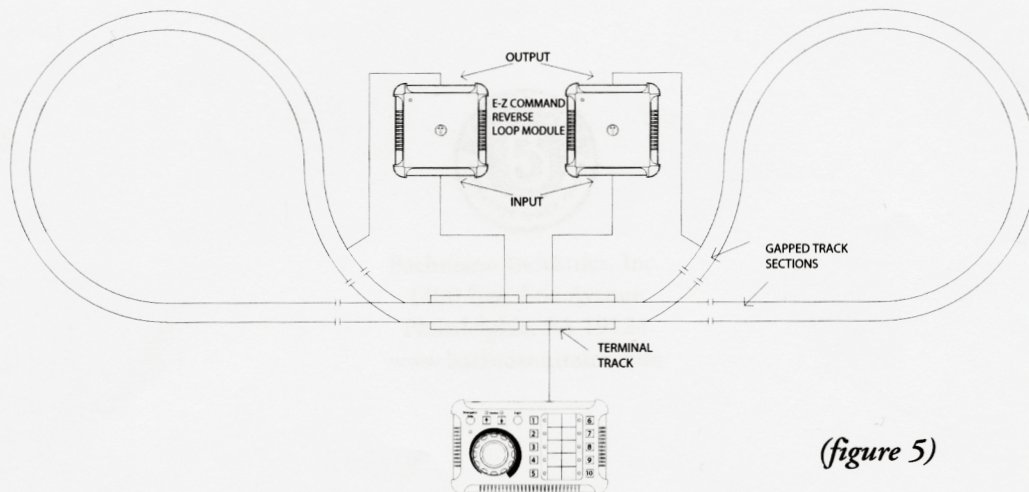


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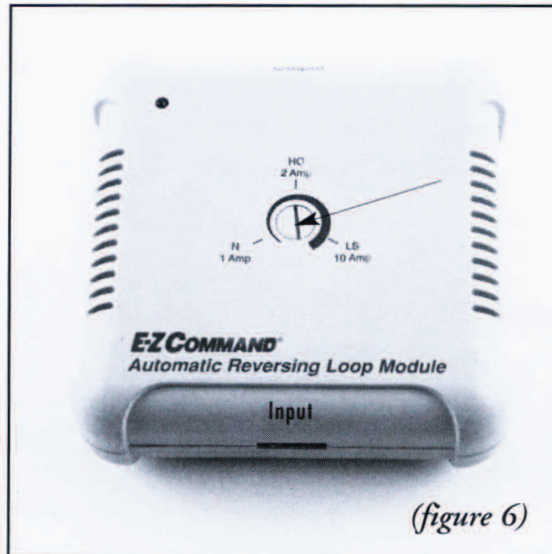
Wiring Dogbones

Using the Bachmann Reverse Loop Module, dogbones can also be wired without any problems. Please remember that the reverse loop (the section controlled by the module) has to be slightly longer than the longest train on your layout. Figure 5 illustrates the wiring and layout for a dogbone configuration.



Setting the Voltage Sensitivity of the Reverse Loop Module

A potentiometer on top of the unit is used to adjust the voltage sensitivity of the module. Use a slotted screwdriver to adjust the settings as needed (figure 6). Settings vary depending on the current draw of a particular locomotive. If the setting is too high, the module will be unable to detect the short and thus will not automatically reverse. If the setting is too low, the module will tend to chatter, because the locomotive load is triggering the automatic reversing relays. Scale designations printed around the adjustment screw indicate general settings, but the adjustment needs to be checked for both low-current locomotives and high-current trains.



Note: Larger or more sophisticated locomotives may require increased power for proper operation. In order to avoid a power brownout or overload, be sure enough current is provided to your layout to power your largest locomotive.



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