Application No. 671: Relays for model railway systems

Author: Manfred Rueger, Oberfranken, Germany

Reed switch relays

Relays for model railways

There are many relay applications in a model railway system which are either triggered automatically or by the train. Model train manufacturers offer so-called circuit tracks, track switches or track contacts for this type of application, but those are very noticeable and seriously disrupt the overall appearance of the model railway display. They are also expensive and not very versatile in their use.

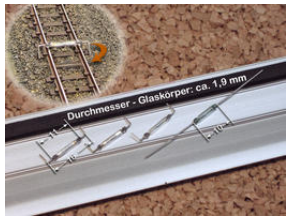
Use of reed switches

A much more practical solution are so-called "reed switches". They can be purchased in a variety of sizes and "switching currents", which allows them to be used for almost any application, all common model train standards and track gauges. They are available from well-known electronics retailers for a few cents apiece.

Camouflaging the reed switches

Reed switches have the big advantage that they are hardly noticeable once they are put in place. At the desired spot, I simply remove a sleeper and replace it with a reed switch. Before that, I solder the wires on and drill holes on both sides of the track to feed the switch cables through. Painting the reed switch matt brown and "gravelling" the track makes the change almost invisible.

Look of the reed switches

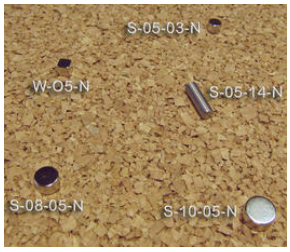


In this picture, I placed a reed switch on the track for demonstration purposes. I also marked an already built-in reed switch two sleepers in front.

Magnets on the vehicles

There must be a small neodymium magnet located underneath the locomotive or one of the carriages to trigger the desired relay operation. It will activate the built-in reed switches as the train passes through. I attach the magnets with a two-component adhesive after lightly sanding and degreasing the respective surface areas. This ensures that the magnets hold without any issue.

Magnets used



The type of magnet needed depends on where it is meant to be placed. In case there is no room underneath the locomotive or carriage, a stronger magnet can be mounted on the inside of the vehicle. Altogether, I used these magnets:

- cube magnet 5 mm (www.supermagnete.de/eng/W-05-N)
- disc magnet 5 x 3 mm (www.supermagnete.de/eng/S-05-03-N)
- rod magnet 5 x 14 mm (www.supermagnete.de/eng/S-05-14-N)
- disc magnet 8 x 5 mm (www.supermagnete.de/eng/S-08-05-N)
- disc magnet 10 x 5 mm (www.supermagnete.de/eng/S-10-05-N)

Disguising the magnets

Painting the magnets underneath the trains black disguises them perfectly.

Relay reliability

Numerous reed switches have been in use in my installation since 1996 and performed their tasks without any malfunctions. I use them to control signals, track points, sounds, vehicle-on-line-indicators, illumination and much more.

Example of a barrier relay system

This barrier is also reliably controlled by reed switches. To ensure the booms close in plenty of time, the first switch is mounted far enough from the barrier. The second switch sits directly underneath the planks of the railway crossing and opens the barrier immediately after the train has passed through.

My website

You can find more information and lots more pictures on my website mannis-n-bahn.de (www.mannis-n-bahn.de/#Portal).

Articles used

S-10-05-N: Disc magnet Ø 10 mm, height 5 mm (www.supermagnete.de/eng/S-10-05-N)
S-08-05-N: Disc magnet Ø 8 mm, height 5 mm (www.supermagnete.de/eng/S-08-05-N)
S-05-14-N: Rod magnet Ø 5 mm, height 13,96 mm (www.supermagnete.de/eng/S-05-14-N)
W-05-N: Cube magnet 5 mm (www.supermagnete.de/eng/W-05-N)
S-05-03-N: Disc magnet Ø 5 mm, height 3 mm (www.supermagnete.de/eng/S-05-03-N)

Online since: 31/07/2013