An Automatic STOP and GO Circuit for DC Operation

Robert Wilkins (Nov 2019)

With this small inexpensive circuit board you can set up a small single track oval or circle layout that runs automatically with an adjustable stop time. This setup is most commonly used to simulate a station stop. After a pause the train continues to repeat the process.

The components needed to complete this project, in addition to the track and a 12 Volt train controller transformer include the following:

1. The JLK60 Automatic STOP and GO Circuit Board
2. A Reed Switch that is activated by a magnet.
3. A Neodymium Magnet that is attached to the train.
4. Connection wires to the track, to power the module and connect the reed switch.
5. A piece of track that is modified to accommodate the circuit. (Stop Track)

The JLK60 Automatic STOP GO Board components include

1. Connection plugs to AC power source, to Reed Switch and to Stop Track. The 3 way plug is used for an accessory such as a signal
2. A Relay Switch
3. A Timer Chip for the stop delay
4. A Potentiometer to set the stop time
5. A Red LED. Turns ON when Switch is active.

The JLK60 STOP & GO board is connected to the fixed AC output on the train controller.

An optional slide switch can be placed on one line to turn the board on or off. The variable DC output from the train controller is attached to the track and controls the train speed. The Reed Switch is set in the track just before the stopping point. This switch is activated by the neodymium magnet that is placed on the undercarriage of the locomotive. Usually to a screw or other metal part under the loco is used. The reed switch activates the relay which turns power off to the isolated section of the Stop Track.
Once the locomotive's electrical pickup crosses into this section of track the locomotive will stop. The Timer chip activates for a delay period that is set by the adjustable potentiometer. Turning the Pot clockwise increases the stopping time. When the pause time expires the relay is turned off re-powering the Stop track and the train resumes forward motion. This system can be setup typically at a Train Station to simulate a train stopping for passengers.

In setting up this circuit you need to consider the following.

1) **Where to locate the activating Reed Switch**

   Generally this is set just before the train crosses into the isolation track. In HO scale this is around 12-24 inches from the first gap in the Stop Track. The two ends of the Reed switch are soldered to the connection wires. The wires are fed through the track between the ties so that the body of the switch can be laid parallel to the track. The wires run under the rails and are connected to the terminals on the circuit board.

2) **Where to locate the isolation Stop Track**

   This should be setup so that when the train stops most or all of the passenger cars can access the station's platform. This point will generally put the isolated part of the track at the far end of the station or just beyond.

3) **How to build the Stop Track**

   As the diagram above indicates 2 break gaps are needed in the track. The gap between these breaks will depend on the length of the locomotive's electric pickup wheels on that side of the track. Select a piece of track. Cut the gaps using a fine hacksaw or Dremal type cutting disc or use smaller pieces of track with plastic insulator joiners to isolate the track. The cut should be just wide enough to break the electrical contact.
Feeder wires are soldered on either side of the furthest track gap and connected to the circuit board. An interconnecting wire is prepared by soldering the wires directly to the track beyond both gaps or solder the wire ends to two rail joiners. The joiners are attached to the ends of the track that contains the gaps. The Stop track is now installed on the layout.

Connect the wires from the AC terminal on the train transformer controller to the JLK Board to power the circuit. A switch can be inserted on one of the wires to deactivate the Board so that the stop feature is deactivated.

The unit is now ready for testing. When power is applied nothing will happen until a locomotive with the magnet attached passes over the reed switch. The red LED on the board will light and an audible click will sound. The locomotive will stop on the Stop track and wait for the timer chip to count down. You can adjust the time delay by turning the potentiometer dial using a small flat blade screwdriver. Turn clockwise to increase the delay and counterclockwise to shorten. Once the delay has elapsed the red LED turns off, the track is switched on and the train proceeds forward.

**A kit** containing the necessary components required to complete this project is available at the website modeltrainsounds.com (Project 17)

The kit components include:

- 1x JLK60 Circuit Board assembled.
- 1x Reed switch + 1 Slide switch
- 1x Neodymium magnet
- Instructions for installation

*Soldering is required for wiring*