Z-Stuff for Trains
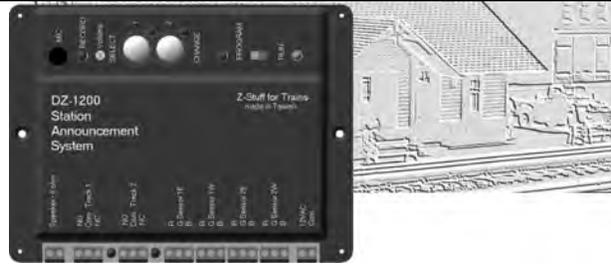### making model railroading more fun

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DZ-1200
Station Announcement
System   Rev 2-10-02

Contents:
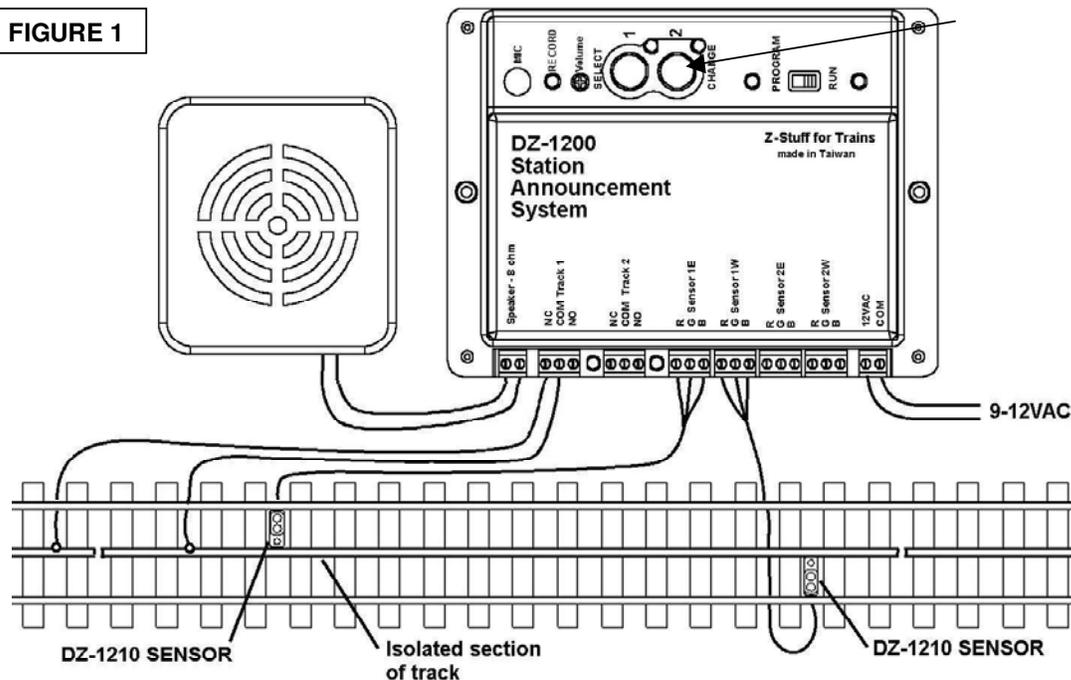(1) DZ-1200 Controller
(1) Speaker (8 ohm)
(2) DZ-1210 Barcode Sensors
(16) Barcodes
(16) Barcode supports
Mounting screws for controller & detectors

Features and operation:

The DZ-1200 Station Announcement System adds a wonderful touch of realism to your layout. It is designed to provide station arrival and departure announcements of train name, track number and city announcements for up to 16 trains on two tracks, even if your trains do not have sound. This is accomplished by attaching barcodes to the underside of the train. The barcodes are then read by detectors, which are placed between the rails. You can easily record your own announcements, train and city names. The system controller will stop the train at the station and it can be released after a delay or manually on either through or dead-end tracks. It can also stop trains running under Lionel TMCC. Read on for specific instructions for testing, installing, and programming the unit.


FIGURE 1

DZ-1200 Setup & Test:

See Figure 1 - Consider testing the setup on a bench or tabletop before installing on your layout.
1) Connect the speaker to the system controller.
2) Slide the Run/Program switch to **RUN**.
3) Connect 9-12VAC to the power input and turn on power.
4) The GREEN Run LED should be on and both TRACK POWER LEDs (located next to each connector) should be OFF.
5) Turn power off and connect a DZ-1210 to a Sensor input for Track 1. Connect the RED, GREEN, and BLUE wires to the R,G, and B pins. (A second sensor can be installed later.)
6) Place the sensor between the rails as shown in Figure 1 with the mounting hole towards the center rail. Your section of test track should be at least three baggage or passenger cars long to make it easy to roll the car past the sensor.
7) Turn power back on and wait until both track power LEDs are OFF.
8) Slide the Run/Program switch to PROGRAM. The controller should say "Press 1 for Trains; 2 for Track".
9) Press the Button labeled "1" (SELECT). The controller should say "Track setup mode. Press 1 to select, press 2 to change or record. Track 1 is a through track."
10) Both LEDs next to the "1" and "2" buttons should be off.
11) Cut one of the barcode cards in half along the centerline. If you have a train whose name is pre-recorded (see list below), use the barcode strip for that train number.

DZ-1200 Setup & Test (cont.):

12) When the WHITE portion of a barcode strip is held about ¼-½" above the sensor, the #1 button LED should light. Removing the barcode strip should cause the LED to go out again. (Be careful to not have any bright lights directly above your sensors, that will overload them and cause them to fail to operate properly.)

13) Next attach two (2) barcode supports to the bottom of the first car (baggage or passenger car) in the train using the double stick tape on each support. Position them as shown in Figure 2. (For some cars, like most MTH passenger cars, the barcode strip could be attached directly to the boxes molded into the bottom of the car using double stick tape.)

14) Place the barcode strip on the supports so that the WIDE WHITE bar with the train number will pass over the bar code sensor first. The supports should hold the barcode strip so that it is suspended between the center rail and the outside rail.

15) If your piece of track is long enough, place the car with barcode on the track so that it is not over a sensor.

16) Slide the Run/Program switch back to **RUN**. The controller should now say "Run mode".

17) Roll the car past the sensor at a slow and steady speed. If everything is working properly, for a Train #1barcode, the controller should say "Now arriving on track 1 from Atlanta, the Southern Crescent Limited. Watch your step." (The train name and city will depend on which number strip was used.)

18) The TRACK LED next to the track connector should go ON momentarily and the LED next to the #1 button should turn ON indicating the presence of a train.

19) Press button 1. The controller should say, "Now departing on track 1 for Chicago, the Southern Crescent Limited. All Aboard!" The LED next to button 1 should then go out and the TRACK POWER LED should turn OFF.

20) If you roll the car past the sensor fast enough the controller will say nothing. This is normal and allows for express trains to pass passenger stations and not be stopped or announced.

21) Steps 5 to 17 could be repeated for other sensor positions and for track 2.

FIGURE 2
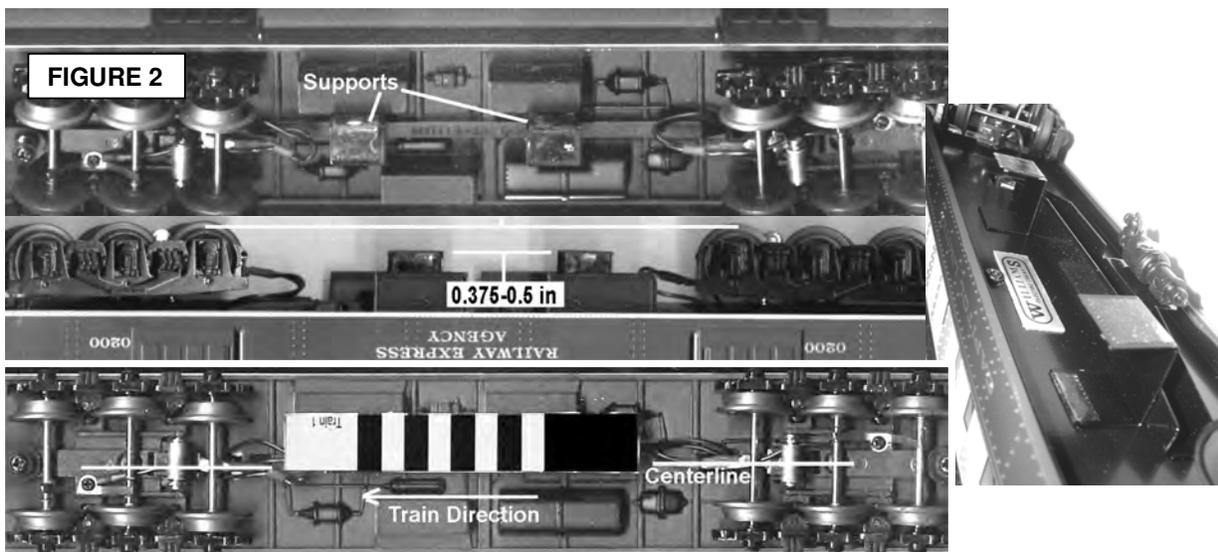
Installation:

After initial testing, the DZ-1200 could now be put on your layout. The DZ-1200 box could be mounted at your control panel with wires running to the speaker, which should be mounted in or near your station. The sensors can be mounted as shown in Figure 1. To control and stop the train at your station the center rail must be isolated. In Figure 1, the center rail is shown with two cuts to isolate it. The section of isolated rail must be longer than the train. If it is not longer, then the controller may not reliably stop the train at the station. The powered center rail should be connected to the "NC" pin of the TRACK 1 connector and the "COM" pin of the connector should connect to the isolated center rail.

Track Setup: (Through Track / Dead-end Track / TMCC Track)

The default settings for track 1 and 2 are **THROUGH TRACK**. If either track 1 or 2 are **DEAD-END TRACK** or **TMCC**, then you need to make a change.

1) Move the slide switch to **PROGRAM** mode.
2) Press button 2 to go to Track Setup Mode.
3) After the "Track 1 is a through track." announcement, press button 2 to change track 1 to a "Dead-end Track" or "TMCC". If you keep pressing button 2 you will return to "Through track".
4) If you are done, slide the switch back to **RUN** mode.
5) If you need to change track 2, press button 1 again to go to track 2 and then change the track 2 settings.
6) Slide the switch back to **RUN** mode when you have the tracks set for the types you need.

IMPORTANT NOTE – *Trains must back into dead-end tracks. It is assumed that when power is turned off and back on that the engine will be going in the forward direction when started.*

TMCC control **-**

You can also use the DZ-1200 with Lionel's TMCC. When a barcode is read, the controller interrupts the power to stop the train and then restores the power to the track. The Auto Release function will not work because once power is interrupted you must use your TMCC remote to restart the train. Pressing track button (1 or 2) will initiate the departure announcement and when the track power is pulsed (passenger lights go out and back on) you can start up the train with your remote. Of course, with TMCC control, you could ignore track power control and just use your remote to stop and start the train.

Operation:

The default operation is that a when a train pulls a car with a barcode over the sensor, the controller makes the arrival announcement and interrupts power to the track to stop the train. This is great for trains with standard E-units or the equivalent and a through track in front of the station. After the "Watch your step" announcement, the controller will turn on the LED next to the button to indicate there is a train on that track. (If the train travels too fast the controller will not stop the train. This is so that fast trains can pass the station without stopping.) Even if the power is turned off and back on at a later time, the controller remembers that a train is on the track and holds it at the station until the button is pressed.

Manual Release -

To release the train, press the button next to the lighted LED. The controller will make the departure announcement and pulse the track power to restart the train. The train will then start up and leave the station.

Automatic Release – Conventional Control only

Any train can be set to automatically startup after a fixed delay of 10, 20, or 40 seconds. (See Engine type and Restart setup.)

To Change Train Name recording:

(One word of caution however, once you have deleted the "factory" recording, it cannot be retrieved. You can have the factory announcements re-recorded by returning the unit to Z-Stuff, GarGraves, or Ross.)

The Train Name Announcement module contains 16 prerecorded train names and city pairs. (Listed below) One of the features that makes the DZ-1200 so much fun is that you can change these announcements to trains or cities of your choosing. You can change the train name, the eastbound city, or the westbound city. One, all or none, your choice! The sensor reads the bar code and associates that bar code to a train number. The announcements recorded for that train number are then played by the DZ-1200.

1) Begin by ensuring the DZ-1200 unit is set up as described in the initial setup instructions and that the speaker, transformer, and sensor connections are connected as shown in Figure 1.
2) The changes are made by using the two buttons on the controller. Button 1 "Select" is used to toggle through the menu of train name and city choices. Button 2 "Change" starts the "record" function when changing an announcement. It is a good idea to toggle through the prerecorded announcements using only button 1 until you have a comfortable understanding of the DZ-1200 system. If you get lost, simply return the run/program switch to "run" to restore the system to normal operation.
3) Without actually changing any announcements, let's walk through the steps used to make changes to the prerecorded announcements.
4) Move the run/program switch to **PROGRAM**. The controller will say "Train setup mode. Press 1 for trains, 2 for track"
5) Press 1 to select trains. The controller will say, "Train setup mode. Press 1 to select, 2 to change or record." "Train 1, The Southern Crescent Limited"
6) You are at the top of the train name menu. The prerecorded announcement for train 1 is "The Southern Crescent Limited". (The menu sequence is Train 1, train 1 East city, train 1 West city. Train 2, train 2 East city, etc.)
    a) If you wanted to change the train name associated with train 1, you would press 2 now and when the "record" LED comes on, record by speaking at the microphone. At the conclusion of the recording, your new recording is automatically played back. To rerecord, simply push 2 again. You can continue with this cycle until satisfied with your announcement of the train name you have chosen.
    b) If you do not want to change the train name associated with train #1, simply push button 1 to toggle to the next selection, which is the Eastbound City. The prerecorded eastbound city associated with train #1 is Atlanta. To change the eastbound city name, push 2 and record as described for train name changes. To leave the city name "as is" push button 1 to toggle to the westbound city associated with train #1.
7) You can continue "toggling" through the entire library of 16 train names and 16 city pairs by pushing button 1. **As long as you do not push button 2, you will not make any changes**.
8) When finished, move the run/program switch to **RUN**. The controller will say "Run Mode".
9) Remember that moving the bar code strips over the sensors will trigger announcements based on the train number associated with that bar code. This is a quick way to get to a high number train, like train #16, without pressing button 1 so many times.

Pre-Recorded Messages that can be changed by user:

from TRAIN SETUP MODE

Train #	Train Names (1.6 sec)	East City (1.2sec)	West City (1.2sec)
1	The Southern Cresent Limited	Atlanta	Chicago
2	Pennsy's Broadway Limited	New York City	Cleveland
3	The Santa Fe Super Chief	Chicago	Los Angeles
4	The 20th Century Limited	New York City	Albany
5	So. Pacific's The Daylight Limited	San Diego	Seattle
6	B&O's Capital Limited	Baltimore	Cleveland
7	The Hiawatha Special	Milwaukee	St. Louis
8	The Orange Blossom Special	Washington DC	Miami
9	The City of New Orleans	St. Louis	New Orleans
10	The Chessie Special	Washington DC	Cincinnati
11	The Burlington Zephyr	Chicago	Denver
12	The North Coast Limited	Chicago	Seattle
13	The Florida Special	Miami	Atlanta
14	The Golden Gate Special	Chicago	San Fransico
15	The Rock Island Rocket	Chicago	Kansas City
16	The Oriental Limited	Chicago	Seattle

from TRACK SETUP MODE

Announcements (2 sec)

Now Arriving on Track 1 from
Now Arriving on Track 2 from
Now Departing on Track 1 for
Now Departing on Track 2 for

To Change Track Announcements:
1) Track announcements can be also be changed using buttons 1 and 2. Again the functions are "Select" for button 1 and "Change" for button 2.
2) There are 4 announcements in the Track Setup mode, they are listed at the bottom of page 3.
3) To access the Track Setup mode, move the run program switch to **PROGRAM**. The controller will say, "Press 1 for trains, 2 for track".
4) Since we want to access track setup, press 2. The controller will say, "Track Setup mode. Press 1 to select, 2 to change or record." "Track 1 is a through track".
5) We will press 1 to select. The controller will say, "Now arriving on track 1 from"
6) At this point, pushing button 1 (select) will toggle you to the next announcement. Pushing button 2 will start the recording sequence, the red LED will light up and the new announcement can be recorded to replace the prerecorded "Now arriving on track 1 from" announcement. The recording process is the same as described for train name changes.
7) Continue to toggle through the four track announcements using button 1 (select).

When you have completed listening to or changing the track announcements, return the run/program switch to the **RUN** position to restore the system to normal operation.

To Change Stop Point for Each Train:
Since each of your passenger trains could be a different length and it would be nice if the cars stopped near the platform, the system provides a way to program the stop location for each of the trains. The system tries to correct for train speed, but the coasting of some trains will cause variation. Figure 3 shows a train approaching a station at Time 1. At Time 2, the train would stop at the default position. But if the position is programmed, as described below, the train can be made to stop at a later location like Time 3. This timing and position is for the bar code strip used, so if you change engines the setup may need to change.

1) Slide the RUN /PROGRAM switch to the **PROGRAM** position.
2) Press button 1 for Train Setup Mode.
3) Run your train (with barcode attached) over the sensor.
4) Anytime after you hear the START of the train name message, press button 1. This will stop the train and program that stop position for that train. The maximum time delay from detection to stop point is 10 sec.
5) Slide the RUN /PROGRAM switch back to the **RUN** position.

Recording and Programming Shortcut:
Steps 1-3 can be used to quickly get to the train announcement for any train. After step 3, just wait for more than 10 sec. When the train name is repeated, you can change the recording as previously described.
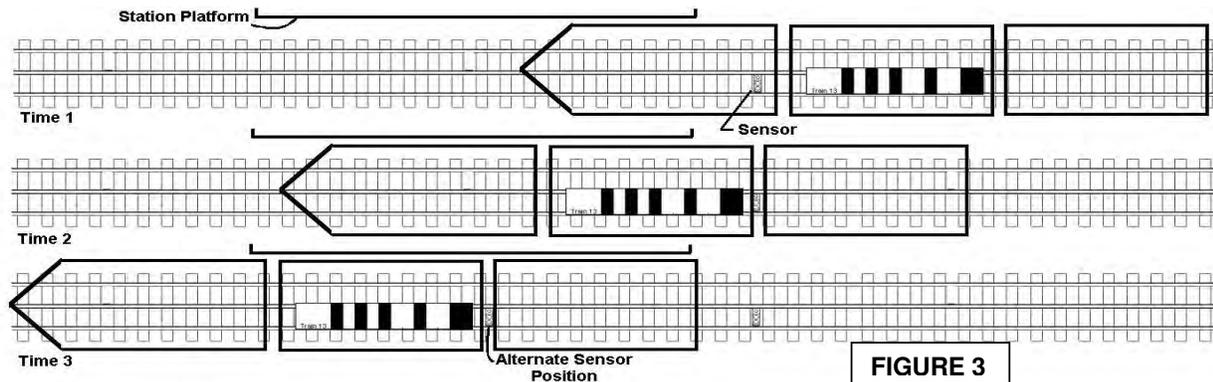

FIGURE 3

Engine Type and Restart Setup:
To correctly stop and restart trains, especially after the power is removed, the system must be told the type of engine being used for each train. There are three major questions: 1) Do you want the train to be manually restarted or automatically restart after a delay time? 2) Does the train start in neutral or forward when power is applied? 3) Should the train stop with power ON or with power OFF? Reminder – this setup is only for the barcode strip used, if you change engines the setup may need to change.

To setup each engine for each train:
1) Slide the RUN /PROGRAM switch to the **PROGRAM** position.
2) Press button 1 for Train Setup Mode.
3) Run your train (with barcode attached) over the sensor and wait 10 secs. Or Press button 1 until you get to the number of the train you wish to setup.
Restart mode:
4) Press and hold button 1 for about 3 seconds. Release the button when you hear "Manual Start" or "10 (or 20 or 40) sec Auto". (*This only re-starts trains in conventional mode. In TMCC mode, the announcement is made after the delay, but there is no restart.*)
5) You can now press button #2 repeatedly until the method or time you desire is stated, then either press button 1 to select the next option or slide the switch back to **RUN** to end the programming.
Engine Type:
6) The controller will next say the engine start up type, like "Starts in Neutral". You can press button 2 to change the type, then press button 1 to select the next option.
**Stop Mode**:
7) The controller will next say the engine stop mode, like "Stop in neutral" or "Stop power off". You can press button 2 to change the type, then press button 1 to return to the first option or slide the switch back to **RUN** to end the programming.

Typical Engine Setups:

Lionel electronic e-unit or MTH	default	stop in neutral - starts in neutral	
Lionel mechanical e-unit		stop in neutral - starts in forward	
Williams		stop power off - starts in forward	
TMCC	default	stop in neutral - starts in neutral	set track for TMCC

**What about sensors on or near a curve?**

If you can, always place your sensor so that the car with the barcode is traveling on a section of straight track while passing over the sensor. However, this may not always be possible. The problem is shown in Figure 4. When the car is on a curve and the sensor is placed as shown, the barcode can totally miss the sensor. If the sensor is placed as shown in Figure 5, then even though the sensor is outside the rails, the barcode will still pass over the sensor. This becomes a real challenge with different radius track and differing car lengths.
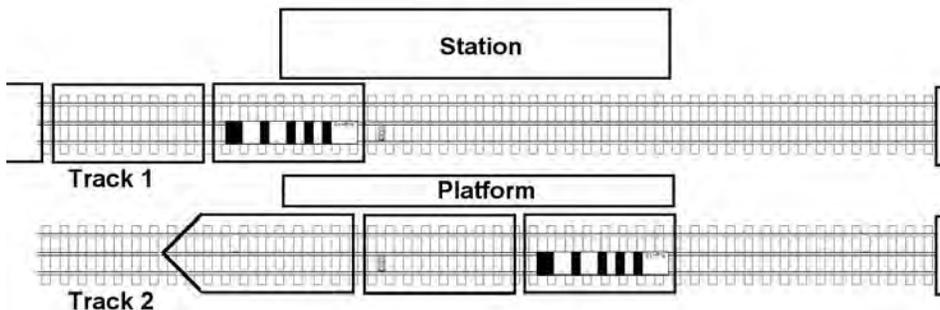

FIGURE 4

FIGURE 5
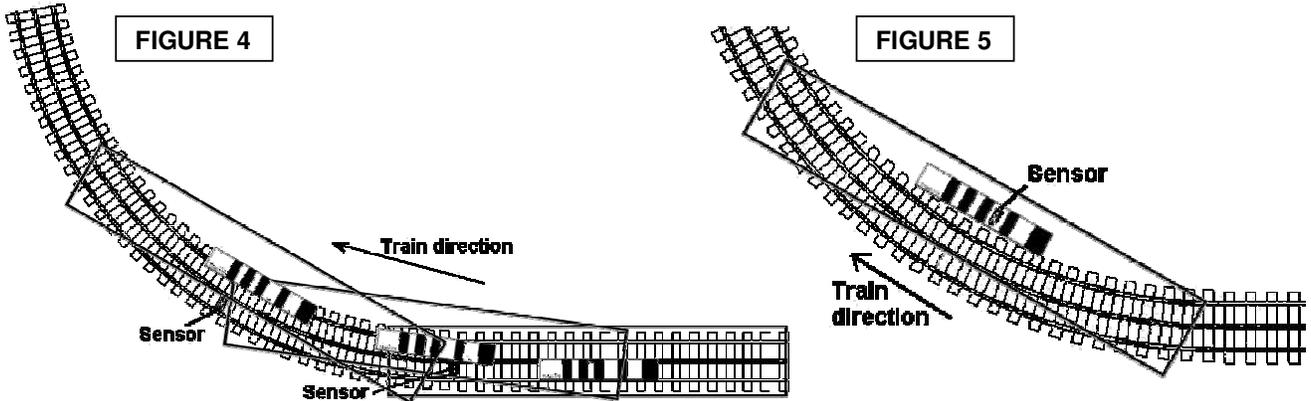
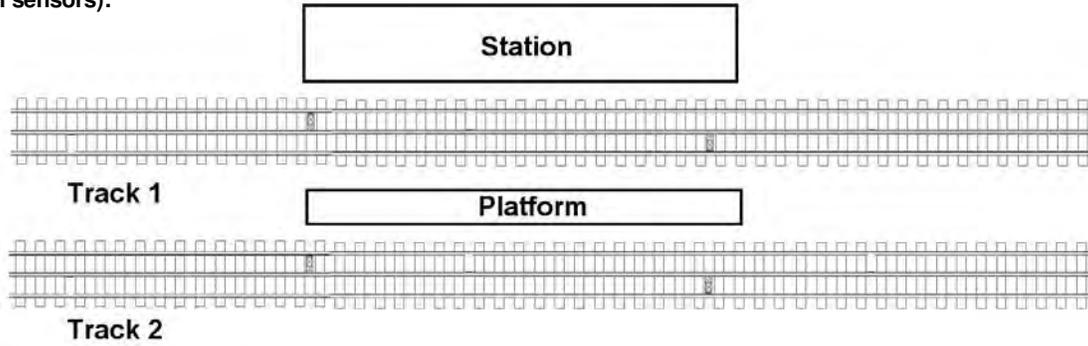**Sensor position for two Westbound (or Eastbound) tracks:**
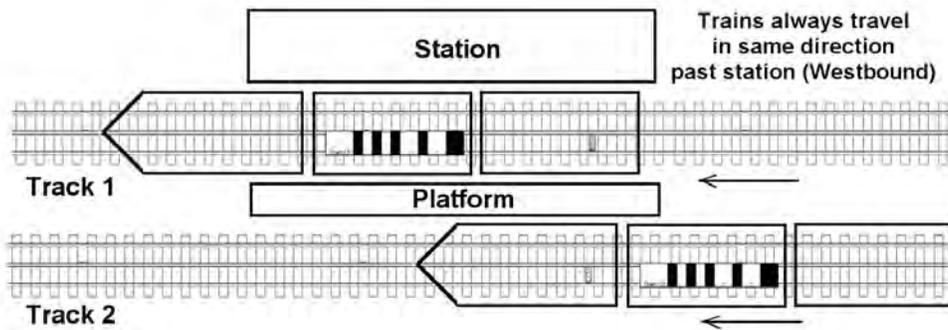
Sensor positions for two tracks, one Eastbound and one Westbound:
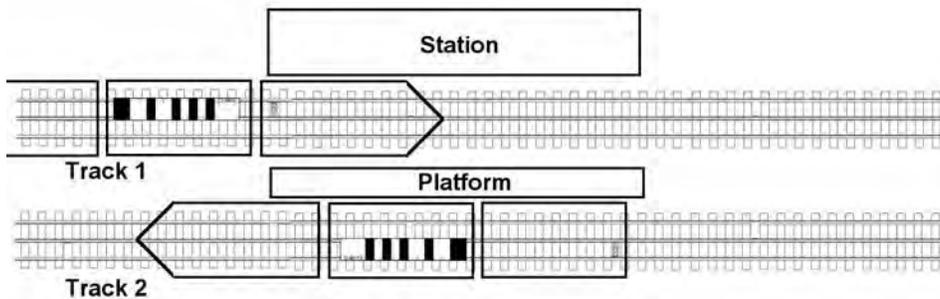

Sensor and barcode locations for dead-end tracks:

Sensor locations for both tracks handling both Eastbound and Westbound trains (sorry, but this does require you to buy additional sensors):

To handle both directions with only a single sensor for each track, you can use two (2) barcode strips on one train. Use two different train numbers, like 12 and 13. Record the same train names for train 12 and 13. Then, record your eastbound city as the East city of train 12 and your westbound city as the East city of train 13. The use of two barcode strips can also be used to change the train names for eastbound and westbound trains – "Southern Pacific's Daylight Limited" eastbound and "Southern Pacific's Daylight Special" westbound.
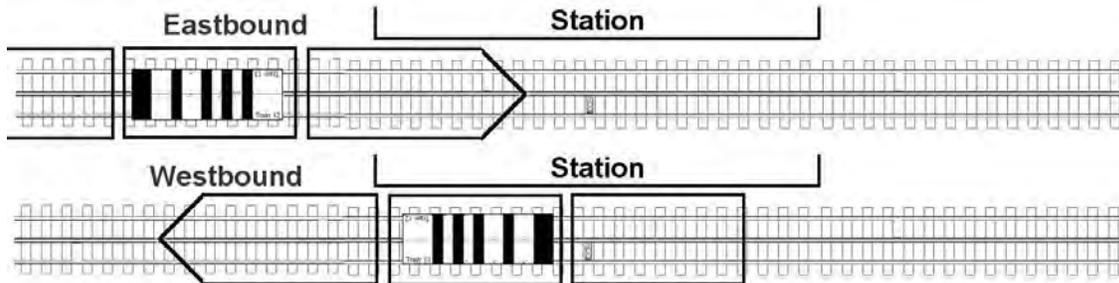
Extra Supports, Barcode Sheets and Sensors:
You can order these items from your dealer or directly from GarGraves Trackage, Ross Custom Switches or from your dealer:

DZ-1205 Barcode Sensors, (2) per package
DZ-1210 Barcode Sheets and Supports, a set of (16) sheets and (8) pair of supports

Re-programming the Sounds:
If you accidentally mess up your sounds and want your chip re-programmed, contact GarGraves Trackage, Ross Custom Switches, or your dealer. Of course, there is a small fee plus shipping.

For Parts and Service Contact:

GarGraves Trackage Corp.
8967 Ridge Road
North Rose, NY 14516
315-483-6577

Or

Ross Custom Switches
45 Church St.
Norwich, Conn. 06360
1-860-886-6800