Z-Stuff for Trains
making model railroading more fun
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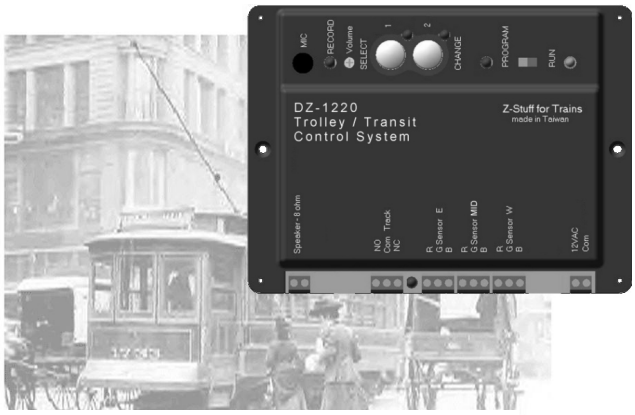
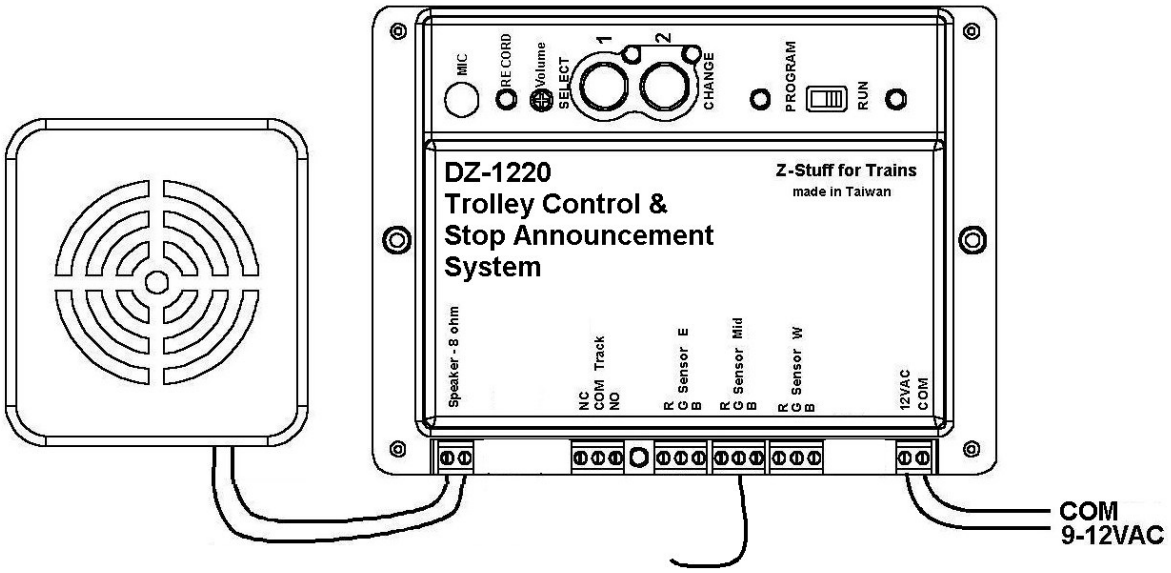
DZ-1220 Trolley / Transit Control System

Rev. 4-10-02

Contents:
(1) DZ-1220 Controller
(1) Speaker (8 ohm)
Mounting screws for controller



Features:
The DZ-1220 Trolley / Transit Control System adds a wonderful touch of realism to your layout. It provides stop announcements for up to 10 stops, even if your trolley or transit car does not have sound. The System can be used with a point-to-point track or a loop of track. You can easily record your own stop names and set your own stop points. The system controller will stop the trolley at each stop and then release it after a delay. The typical "CLANG-CLANG" sound is made when the trolley starts up.



DZ-1220 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) Make sure the RUN/PROGRAM switch is set to **RUN**.
3) Connect a short piece of wire (testing jumper) to pin "G" of the MID (Middle) Sensor input. (All pin G's are connected together and are connected to input power COMMON).
4) Connect 9-12VAC to the power input and turn power **ON**. If you are using accessory power from your trolley power transformer, the common terminal should connect to the common of the transformer.
5) The green RUN LED should be **ON** and the TRACK POWER LED (located next to the connector) should be **OFF**.
6) Take the testing jumper attached to pin G and touch it to pin B of the EAST (E) Sensor. The controller should say, "Lake Shore Drive." It will turn on the TRACK POWER LED for a short time and then say, "End of the line." (or sometimes –"Last stop.") The LED next to button "1" will light to indicate there is a trolley on the track sensor.
7) After about 5 seconds, it will say "Next stop is Michigan Avenue" Then you will hear the "CLANG-CLANG" and the TRACK power LED will again turn on and off. Then the button "1" LED will go out, unless you are still touching pin B.
8) Now take the testing jumper attached to pin G and touch it to pin B of the MID Sensor. The controller should say, "Michigan Avenue." It will turn on the TRACK POWER LED for a short time. The LED next to button "1" will light to indicate there is a trolley on the track sensor.
9) After about 3-4 seconds, it will say "Next stop is Wabash Avenue." Then you will hear the "CLANG-CLANG" and the TRACK power LED will again turn on and off. The button "1" LED will go out, unless you are still touching pin B.
10) Finally, take the testing jumper attached to pin G and touch it to pin B of the WEST (W) Sensor. The controller should say, "Wabash Avenue." It will turn on the TRACK POWER LED for a short time and then say, "End of the line." (or sometimes – "Last stop.") The LED next to button "1" will light to indicate there is a trolley on the track sensor. After about 5 seconds, it will say "Next stop is Michigan Avenue." Then you will hear the "CLANG-CLANG" and the TRACK power LED will again turn on and off. The button "1" LED will go out, unless you are still touching pin B.

This completes the "Bench Testing" of the DZ-1220. Now you are ready for installation!

Installation:
Installation consists of making wire connections to the track, created isolated outside rails when needed, and if desired, changing the controller's stops and announcements. You need to wire the controller as shown in Figures 2 for point-to-point or Figure 3 for a loop of track. For either case, only the end point sensor(s) are required. The MID point sensors can be used for the most reliable location of stop locations, but the options of selecting the number of stops or designating them will eliminate the need for cutting the track to create the isolated rail sections.

1) Create sections of isolated rail as shown in Figure 2 or 3. They should be longer than the length of your trolley. The EAST/WEST end sensors (isolated rails are shown) are necessary for point to point operation and the MID sensor is optional. With Lionel track isolated rail is difficult, because each metal tie connects the outside rails together. If you are using Lionel type track, then DZ-1210 Sensors, DZ-1011 Block signal/sensors , or Lionel contactors may be used. (Wiring for these options is shown in Figures 4 & 5.)
2) Connect wires from the isolated rail sections to the sensor inputs. Connect the wires to the sensor inputs labelled "B".
3) Place a trolley car on the track. (if your trolley or transit car does not have electronic reverse, then see the section on Trolley Settings.)
4) Turn controller power ON and trolley power ON.
5) The trolley should be started if it is not all ready running, by cycling power or pressing button 1.
6) The trolley should now stop at the end points and at each mid point.

Controller Set up: Track Options / Trolley Options:
To correctly stop and restart trolleys, especially those without reverse units, the system must be told the type of trolley or transit car that you are using. Also, you need to set up the controller for either point-to-point track or a loop of track.

TRACK Setting	Default	Alternate
Track type	Point-to-point	Loop

To change the track type:
The default type is point-to-point, so you only need to make this change if you have a LOOP of track as shown in Figure3.

1) Start with power **OFF**.
2) Switch the Run/Program switch to **PROGRAM**.
3) Turn the power **ON**. The controller will say "Press 1 to select, 2 to change or record." "Point-to-point."
4) If you press button 2, it will say "Loop." If you press button 2 again, it will return to "Point-to-point".
5) When you have it set for your type of track, return the run/program switch to **RUN**. Controller will say "Run mode".

Trolley Options	Default setting	Alternative	
1. Electronic reverse	Electronic reverse	No electronic reverse	
2. Response time	Fast response	Slow response	Some electronic reverse units need slower pulses
3. Last Stop sound	Last stop sound ON	Last stop sound off	For loop mode, the LAST STOP announcement may be turned off
4. Depart Sound	CLANG-CLANG	"Doors closing"	The CLANG-CLANG of the trolley is not really appropriate for transit cars
5. Stop Mode	Sensors only	Select Number of stops	This lets you pick 1-8 stops between end points without the need for additional sensors
		Push button designated stops	This lets you designate the location of each stop by pressing button #1 to set the stop location

To change the trolley settings:
This will only be necessary if you are NOT using the default settings shown above.

1) Start with the RUN/PROGRAM switch in **RUN** and power **OFF.**
2) Turn power **ON** and slide the RUN/PROGAM switch to **PROGRAM**. The controller will say "Press 1 for Stop Names, 2 for trolley set up". Press 2 and hear: Trolley setup mode. Press 1 to select, press 2 to change or record." "Electronic reverse". Electronic reverse is option 1. If you press button 1 again, you will continue to cycle through the options and next will be "Fast response".
3) To change an option press button 2. If you press button 2 again it will go to the alternate setting. If you press button 2 again you will either return to the default or the next option in the case of option 5.
    a. Option 1 – If your trolley has no electronic reverse (bumpers don't count), then choose "No electronic reverse". With only bumpers to reverse your trolley, you will need to put stops at the end of track.
    b. Option 2 – If you are using a transit car (like a Budd car) you may need to set this to "Slow resonse" to make sure the electronic reverse unit has time to cycle.
    c. Option 3 – For a loop of track you may not want the "Last stop" announcement, so you can set the "Last stop" sound OFF.
    d. Option 4 – Departure sound may be set to "Doors closing" (or a phrase or sound you record) as an alternative to the "CLANG-CLANG" sound that is made before the trolley starts up from a stop.
    e. Option 5 – The stop mode can be set in one of three different modes, "Sensors Only, Selected number of stops" or "Push button designated stops".
        i. "Sensors only" – Use this with isolated rails to sense stop locations. DZ-1011 Block signal detectors or Lionel style contactors can also be used.
        ii. "Select number of stops" – This lets you select the number of stops (1-8) between end points. The trolley goes through a calibration run after you return to "run mode" and then equally spaces the selected number of stops between end points. Each time you turn power on it will calibrate again because the speed may have changed.

Trolley setting set up is continued on the next page.

iii. "Push button designated stops" – Selecting this causes the trolley to start a calibration run. After the run is complete, it will ask you to press button 1 for each stop location that you would like between the end points. It will ask you to set the stop points for each direction, but the number of points must be the same.

4) For option 5, if you want one of the alternatives to "Sensors only", press button 2, the controller will say "Select number of stops" "1 stop". (This choice may not work well for track with small radius curves that cause large variations in speed.)
   a. Press button 1 to select this option. The controller will say "Press 2 to select number of stops." "1 stop".
   b. Press 2 until you have the number of stops you would like.
   c. Then slide the RUN/PROGRAM switch to **RUN**. The controller will say "Run mode."
5) For option 5 "Push button designated stops", press button 2, the controller will say "Push button designated stops". "1 stop". (This choice is more accurate, but a little more trouble to set up.)
   a. Press 1 to select this option. The controller will say "Calibrating". "Press 1 to start car". (Make sure trolley power is **ON** and the trolley is on the track**.**)
   b. Press 1 to have the trolley start a calibration run. The trolley will run until it finds the EAST end point sensor then reverse direction and travel until it finds the WEST end point. Then, the trolley will return to the EAST end point and the controller will say "Press 1 to designate stops" and it will start the trolley again.
   c. When the trolley reaches a point where you want it to stop, Press 1. The controller stops the trolley, says "Stop 1" and then re-starts the trolley. Press 1 for each point at which you'd like the trolley to stop (for up to 8 stops).
   d. When the trolley gets to the end point, it stops and will say "Press 1 to designate stops" and it will start the trolley again so you can set the same stop points for the return trip. The controller then goes to the start of setup mode and says "Trolley setup mode. Press 1 to select, press 2 to change or record."
   e. Return the RUN/PROGRAM switch to **RUN**.

FIGURE 2

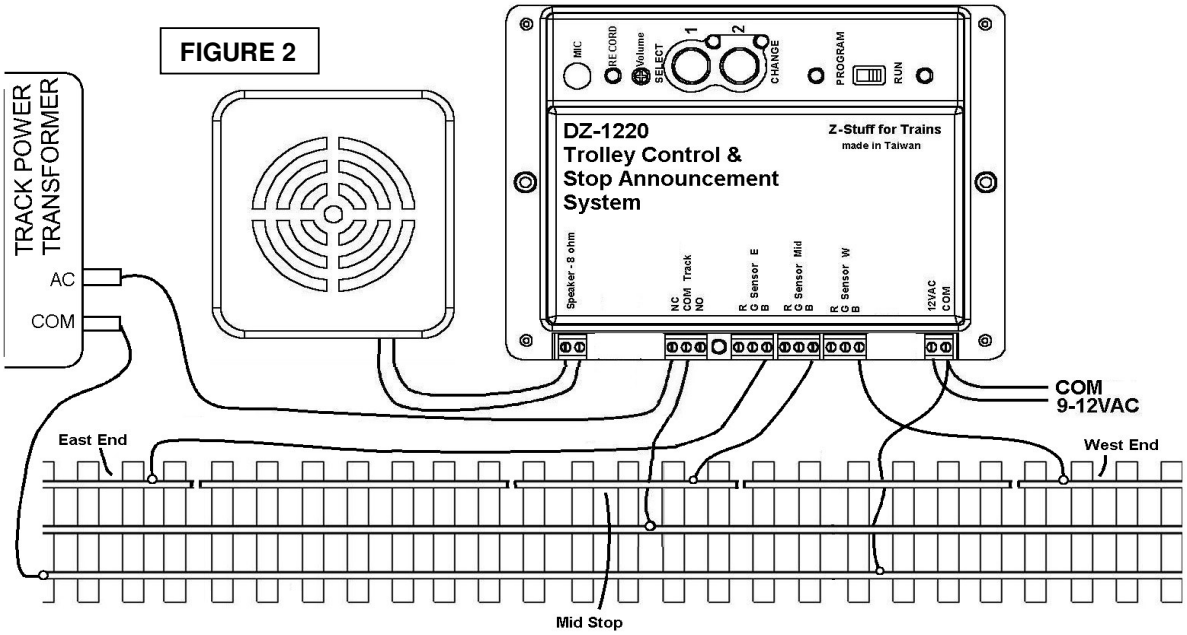
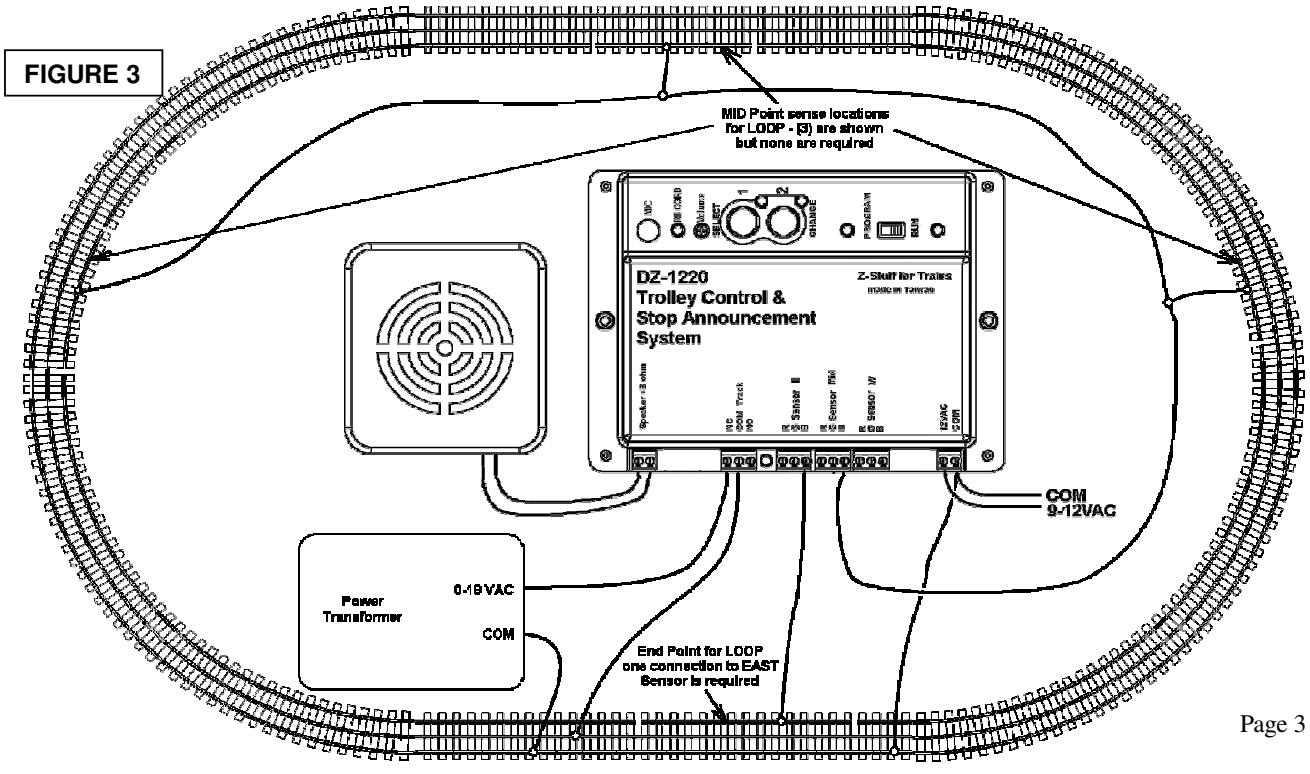


FIGURE 3



To Change STOP 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 STOP Name Announcement module contains 10 prerecorded stop names and several other announcements. (Listed below) One of the features that makes the DZ-1220 so much fun is that you can change these announcements to stops of your choosing!

1) Begin by ensuring the DZ-1220 unit is set up as described in the initial setup instructions and that the speaker, controller, A/C source, and track power are connected as shown in Figures 1,2, or 3.
2) The changes are made by using the two buttons on the controller. Button 1 "Select" is used to toggle through the menu of stop name and announcements. 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-1220 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) Turn the power ON and move the run/program switch to **PROGRAM**. The controller will say "Press 1 for Stop names, 2 for trolley setup."
5) Press 1 to select names. The controller will say, "Stop naming mode. Press 1 to select, 2 to change or record." "Stop 1, Lake Shore Drive."
6) You are at the top of the stop name menu. The prerecorded announcement for stop 1 is " Lake Shore Drive ". (The menu sequence is Stop 1, Stop 2, Stop 3, etc.)
   a) If you wanted to change the name for stop 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 stop name you have chosen.
   b) If you do not want to change the name for stop 1, simply push button 1 to toggle to the next selection, which is Stop 2 "Michigan Avenue".
7) You can continue "toggling" through the entire library of 10 stop names and 5 stop announcements 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".

Pre-Recorded Messages that can be changed by user:

Stop Names	Time(sec)
1) Lake Shore Dr	1.2
2) Michigan Ave	1.6
3) Wabash Ave	1.6
4) State St	1.6
5) Dearborn St	1.6
6) Clark St	1.6
7) LaSalle St	1.6
8) Wells St	1.6
9) Wacker Dr	1.6
10) Halsted St	1.6

Stop Announcements	Time(sec)
1) Doors closing	1.2
2) Next Stop is…	1.2
3) …is next.	1.2
4) Last stop	1.2
5) End of the Line	1.6

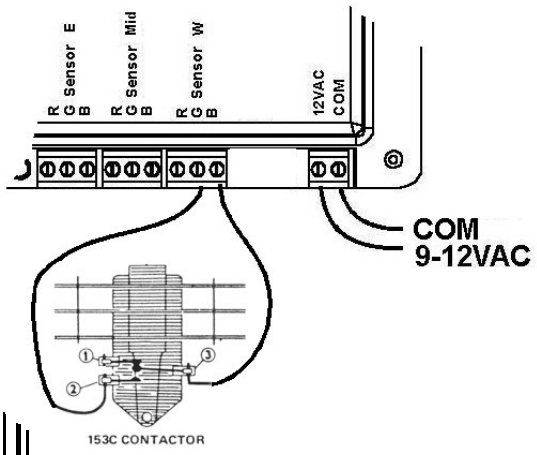


FIGURE 4

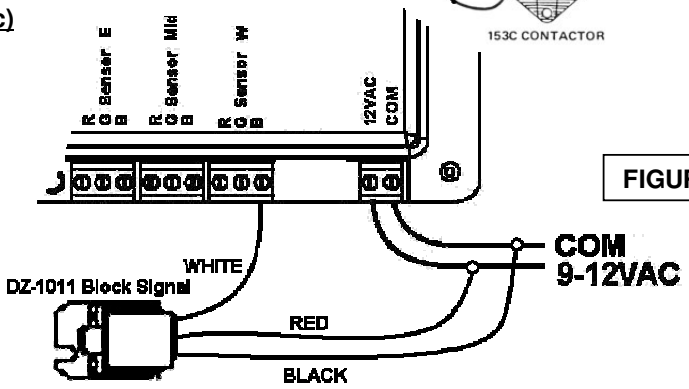


FIGURE 5

Re-programming the Sounds:
If you accidentally mess up your sounds and want your chip re-programmed, contact GarGraves or Ross. 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