

Installing and Configuring of Z3-Plus with TTA-3



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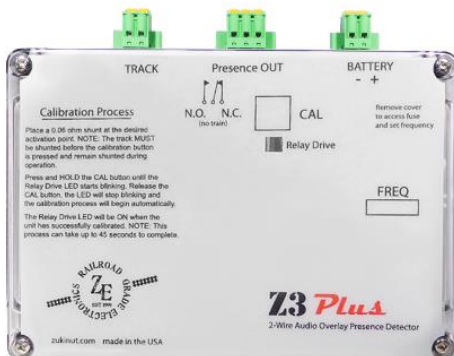
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1.0 Purpose

The Z3-Plus is a 2-Wire audio overlay track circuit operating on 9 to 24VDC and is field configurable for the following track drive frequencies: 8.2K, 10K, 11.5K, 13.2K, 15K, 17.5K, 20K, 26KHz. The TTA-3 is a surge protection for the Z3-Plus and is Comet's recommendation.

Materials:

Quantity	Comet Part #	Description
1	400586	Z3-Plus
1	401105	TTA-3 Three Terminal Arrestor
1	401107	AAR 2-3/8" Terminal Block w/ Hardware



400586 Z3-Plus



401105 TTA-3 Three Terminal Arrestor



401107 Terminal Block

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2.0 Scope

Provides basic installing of Z3-Plus with TTA-3 and frequency configuration (if necessary) of Z3-Plus with AEI site specific parameters.

3.0 TTA-3 and Z3-Plus Installation

TTA-3 Installation

1. Take Comet part number 401107, which will house the TTA-3 and mount to the wall/backboard. Comet mounts near the copper buss bar, as the grounding wire is relatively short.
2. Take the small bag of hardware and assemble on the terminal block in this order:
 - a. AAR Washer
 - b. Wire terminal (wired to Z3 track connections)
 - c. Wire terminal (wired to the track)
 - d. AAR Washer
 - e. Clamp nut
 - f. TTA-3
 - g. AAR Washer
 - h. Binding Nut (x2)
3. Ensure wire terminals are wired to the correct connections (see Drawing number 70-0274-06)

Z3-Plus Installation

1. Determine compatible frequency needed for the site. It's Comet standard to configure and provide Z3-Plus in 26KHz. If frequency is needed to be changed, navigate to [Section 4.0 Z3-Plus Frequency Configuration](#) before moving on.
2. After the correct frequencies are assigned, follow wiring schematic as according to Drawing number 70-0274-06 at the end of this document: "TRACK" connections to the TTA-3, "Presence OUT" connections to the APU, "BATTERY" connections to the LVD-2000 (low voltage detector).
3. Obtain track & Time authority. Always place the track shunt at the desired pick point BEFORE pressing the CAL button. Ideally the shunt should be a 0.06 ohm unit. After calibration move the shunt out approximately 10ft to ensure correct activation point.
4. After track side calibration procedures have been successfully completed, place a temporary shunt at the track wires on the unit in the case and verify that the signal system goes to stop. Once verified remove the temporary shunt.
5. If the unit will not calibrate, watch the relay drive LED for approx. 45 seconds. If it blinks this means the Z3-Plus has turned its receiver gain to the maximum setting and cannot

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see the track shunt. Look for open circuits between the Z3-Plus and the shunt on the track. I.e., track wires, bond wires, etc.

6. The Z3-Plus will look equally in both directions. If one side of the circuit has insulated joints the Z3-Plus will operate, however, the activation distance will not be the same. In general, track circuit equipment cannot see past insulated joints.
7. Audio overlay systems like the Z3-Plus will not work with wide band shunts in their track circuit range.
8. If relay drive is stuck ON look for short circuits between the Z3-Plus and the desired pick point.
9. The greater the distance between the Z3-Plus and track connections, the greater the affects ballast will have on the Z3-Plus performance.
10. Presence output is a dry contact configuration Form –C dry contact, 225mA max current. (N.C. contact with no train presence)
11. In good track ballast conditions, a Z3-Plus circuit can travel up to 500ft in each direction. Rotating operating frequencies to avoid interference with other equipment is recommended.
12. The higher the operating frequency the shorter the track circuit.
13. Optional: Paint a stripe on the side of the rail at the desired pick point at each end of the circuit to provide a visual troubleshooting aid.
14. High series inductance is the track leads, commonly found in primary surge protection assemblies can shorten the usable detection range of the Z3 Plus.

4.0 Z3 Plus Frequency Configuration

The Z3-Plus is capable of outputting the following track drive frequencies: 8.2K, 10K, 11.5K, 13.2K, 15K, 17.5K, 20K, 26KHz. In Figure 1, details the switch and TAP setting required to configure the unit for each frequency. This chart is also found on the backside once the top of the Z3-Plus is removed. Figure 2 provide examples of the setting for 8.2KHz.

Note: Perform the calibration procedure *after* changing the track frequency.

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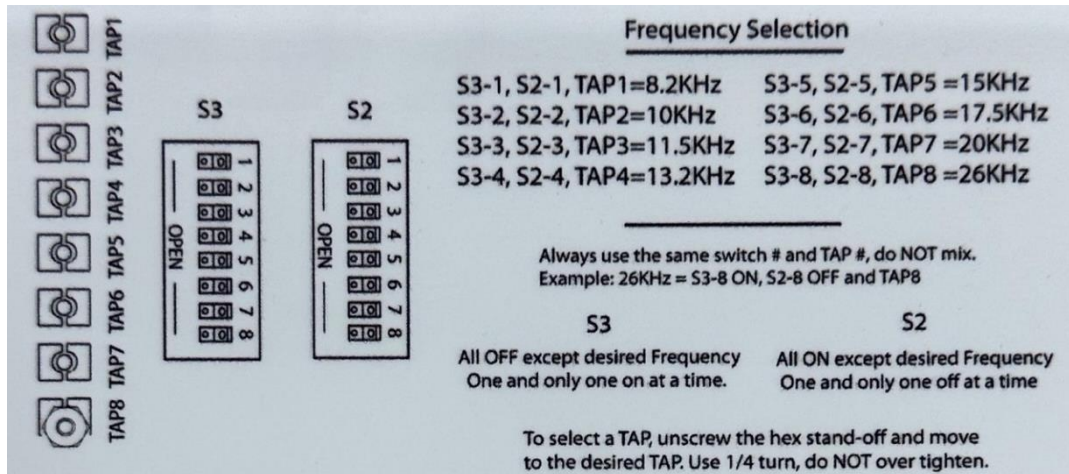


Figure 1: Frequency Selection Schematics

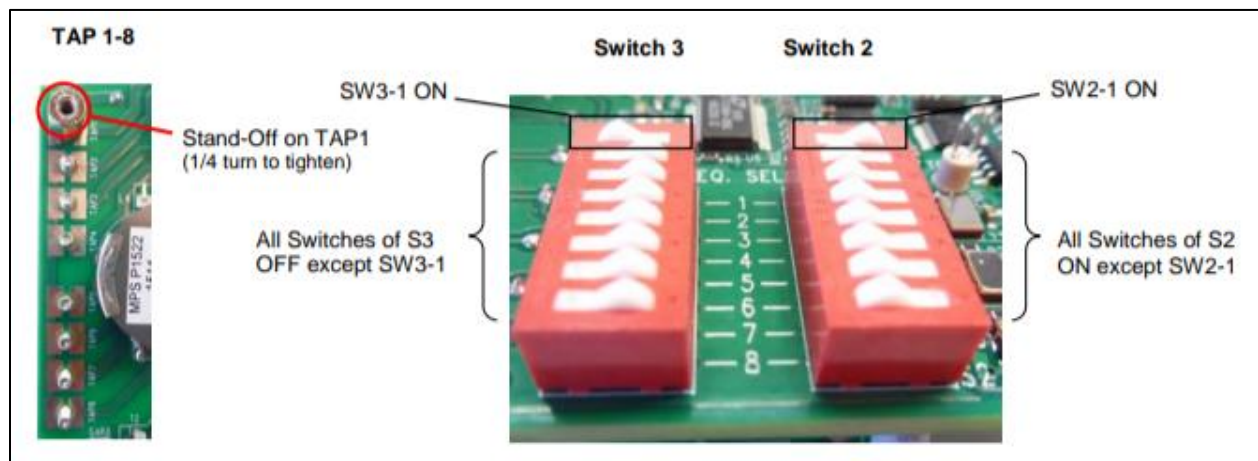


Figure 2: 8.2KHz Configuration

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