



## Technical Bulletin #2.1 Programming a 4-digit address using Digitrax Zephyr (DCS50)

### Overview:

To program the locomotive electronics to use a 4-digit address using the Digitrax Zephyr model DCS50 throttle, the user must manually set CV17, CV18 and CV29 to enable the 4-digit address capability of the decoder. To perform this programming successfully, the user will need to determine the correct values to set CV17 & CV18 by completing the included worksheet. It is recommended that this procedure be performed on the main track using operations mode programming. If performed on the dedicated service mode programming track, using either paged or direct mode programming, then unsuccessful programming results are likely.

- \* Note: The programming shortcut for 4-digit addressing outlined in the Digitrax Zephyr manual will not work to program the Tower 55 decoder in any programming mode on the Zephyr throttle due to a programming timing issue with the DCS50. Please use the procedure outlined in this bulletin to access this feature.
- \* Note: If the DCS50 is being used as a command station with a DT400/DT400R throttle connected via the Loconet ports, then the programming shortcut for 4-digit addressing outlined in the DT400/DT400R throttle manual will work to enable the 4-digit address capability of the decoder when using the DT400/DT400R throttle to perform the operations mode programming.

### Worksheet:

To determine the values to program into CV17 and CV18, please complete the following worksheet before beginning the 4-digit address programming procedure later in this bulletin.

1. Write the 4-digit address to be programmed into the decoder here: \_\_\_\_\_

2. Take the 4-digit address from step 1 and divide by 256.

(Result from step 2 = \_\_\_\_\_)

3. Take the digits to the left of the decimal point in the result from step 2 and add 192.

(Result from step 3 = \_\_\_\_\_)

4. The result from step 3 is the value for CV17. Write it below for reference during programming:

**CV17 = \_\_\_\_\_**

5. Take the digits to the left of the decimal point in the result from step 2 and multiply by 256.

(Result from step 5 = \_\_\_\_\_)



6. Subtract the result from step 5 from the 4-digit address in step 1.

(Result from step 6 = \_\_\_\_\_)

7. If the result from step 6 is greater than 100, then write it below as the value for CV18. If the result is less than 100, then add a leading 0 to make the result three digits and write it below as the value for CV18.

**CV18** = \_\_\_\_\_

Procedure:

1. Place the Tower 55 locomotive on the main track.

\* Note: The rails of this track should be connected to the **RAIL A & RAIL B** outputs on the DCS50 command station.

2. Press the **PROG MODE** key on the DCS50 throttle until "**Ops**" appears in the LED display.

\* Note: This is the setting for operations mode programming.

3. Press the **STEPS CV** key on the DCS50 throttle.

(The LED display should read "**o####**" with the # symbols replaced by actual digits)

4. Enter "**17**" using the numeric keypad on the DCS50 throttle.

(The LED display will read "**o017**")

5. Press the **STEPS CV** key on the DCS50 throttle.

(The LED display will read "**d####**" with the # symbols replaced with actual digits)

6. Enter the value for CV17 from the worksheet using the numeric keypad on the DCS50 throttle.

(The LED display will read "**d####**" with the # symbols replaced with the digits that were keyed in)

7. Press the **CV WR** key on the DCS50 throttle.

(The LED display will blink "**d####**" and then return to solid displaying "**d####**")

8. Press the **EXIT** key on the DCS50 throttle.

9. Press the **PROG MODE** key on the DCS50 throttle until "**Ops**" appears in the LED display.

10. Press the **STEPS CV** key on the DCS50 throttle.

(The LED display should read "**o####**" with the # symbols replaced by actual digits)

11. Enter "**18**" using the numeric keypad on the DCS50 throttle.

(The LED display will read "**o018**")

12. Press the **STEPS CV** key on the DCS50 throttle.

(The LED display will read "**d####**" with the # symbols replaced with actual digits)



13. Enter the value for CV18 from the worksheet using the numeric keypad on the DCS50 throttle.  
(The LED display will read "d####" with the # symbols replaced with the digits that were keyed in)
14. Press the **CV WR** key on the DCS50 throttle.  
(The LED display will blink "d####" and then return to solid displaying "d####")
15. Press the **EXIT** key on the DCS50 throttle.
16. Press the **PROG MODE** key on the DCS50 throttle until "**Ops**" appears in the LED display.
17. Press the **STEPS CV** key on the DCS50 throttle.  
(The LED display should read "o####" with the # symbols replaced by actual digits)
18. Enter "**29**" using the numeric keypad on the DCS50 throttle.  
(The LED display will read "o029")
19. Press the **STEPS CV** key on the DCS50 throttle.  
(The LED display will read "d####" with the # symbols replaced with actual digits)
20. Enter "**38**" using the numeric keypad on the DCS50 throttle.  
(The LED display will read "d038")
21. Press the **CV WR** key on the DCS50 throttle.  
(The LED display will blink "d038" and then return to solid displaying "d038")
22. Press the **EXIT** key on the DCS50 throttle.  
(The sounds on the locomotive should shut down after a few seconds)
23. The enabling of the 4-digit address for the Tower 55 locomotive is now complete.

Testing:

1. Press the **LOCO** key on the DCS50.  
(The LED display should begin flashing)
2. Enter the 4-digit address that was programmed in the procedure above using the numeric keypad.  
(The LED display should be flashing "#####" with the # symbols replaced with the 4-digit address that was keyed in)
3. Press the **LOCO** key on the DCS50.  
(The LED display should display "#####" solid and the locomotive sounds should start up)
4. Select **FORWARD** with the direction knob on the DCS50.  
(The front end head, number board & ditch lights should turn on. If not, see step 5. Otherwise go to step 6)
5. To turn on the lights press the "**O**" key on the DCS50.  
(The front end head, number board & ditch lights should turn on)



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6. Increase the throttle setting on the DCS50 by turning the throttle knob clockwise.  
(Confirm that the locomotive moves in the forward direction)
7. Press the "2" key on the DCS50.  
(Confirm that the horn sounds and that the ditch lights alternate flashing for a few seconds before returning to solid)
8. Decrease the throttle setting to zero on the DCS50 by turning the throttle knob counterclockwise until it stops.
9. Select **REVERSE** with the direction knob on the DCS50.  
(The rear end headlight should turn on and the front lights, except for the number boards should turn off)
10. Increase the throttle setting on the DCS50 by turning the throttle knob clockwise.  
(Confirm that the locomotive moves in the reverse direction)
11. Decrease the throttle setting to zero on the DCS50 by turning the throttle knob counterclockwise until it stops.
12. The operation test is now complete.