

**C26036**  
**Pennsylvania DOT**  
**Retro Display**  
**Site Name: \_\_\_\_\_**  
**Field Test Procedure**

**DD3876733**

**Rev: 1—16 March 2018**

# **DAKTRONICS**

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**DD3876733**

**Contract: C26036**

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## **DAKTRONICS, INC.**

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## Introduction

This test procedure describes the field tests for a LED dynamic message sign site for this project. The purpose of this test is:

1. To check that the sign and related equipment supplied by Daktronics has been installed properly.
2. To check that all sign and related equipment supplied by Daktronics is functioning. Special emphasis is placed on items that, if bad, are not expected to show up as being bad during normal operation. Example: earth grounding not connected.
3. To put the sign into the state needed so that it is ready for normal operation without the need for an additional visit before beginning normal operation.
4. As a record that all tests and setup tasks have been performed at each particular site so that it will not be necessary to re-visit sites later because of not being sure whether or not certain tests or setup items have been done.

Note that this is not a test of all software functions or hardware design limits; this would be very time consuming, and would be redundant, as those tests need to be done only once.

This test should be performed for every sign site at the completion of installation of the particular site.

The test messages to be used should be the test messages listed or messages such as "Testing; Message 1" or moving rows, moving columns, etc., that will not misdirect traffic.

This test requires the cooperation of an operator at the central controller with personnel at the sign site.

Test equipment required:

- Boom truck, or ladder access required to get up into the sign
- Digital multi-meter and Ground resistance tester
- Laptop computer, with vanguard software
- Ethernet Cable
- Common hand tools
- Flash Drive/Memory Stick



## Traffic Cabinet Inspection

- \_\_\_1.0 Turn off the power to the traffic cabinet.
- \_\_\_1.1 Check that earth grounding wires are secured to earth ground rod from sign, traffic cabinet conduit grounding collars, traffic cabinet panel board, traffic cabinet case, and power source.
- \_\_\_1.2 Verify that ground wire and ground rods are connected properly per site riser.
- \_\_\_1.3 Remove the panel board cover. Check that the 2 hot wires, neutral, and earth ground wires from the 120/240 VAC power source are connected into the panel board main breaker terminals, neutral bus, and earth ground bus, respectively.
- \_\_\_1.4 Visually inspect the outside of the sign controller for damage, check that all necessary connectors are plugged into the outside of the sign controller, and check that the connector screws (if any) are tight.
- \_\_\_1.5 Inspect the modem panel or other communication interface panel for loose parts or wiring, and check that the wiring or fiber(s) for the communication system is terminated properly.
- \_\_\_1.6 **Applies only if TC is provided by others:** Check to see if there is surge suppression on the AC power for our equipment. If there is surge suppression, check "Yes"; if there is not surge suppression, check "No": Yes \_\_\_ No \_\_\_
- \_\_\_1.7 Terminate communication from controller to sign.

## Traffic Cabinet Power Test

- \_\_\_2.0 Check that all traffic cabinet panel board circuit breakers are off, except for the "Panel board Surge Suppressor" breaker, which should be on. Apply power to the traffic cabinet only.
- \_\_\_2.1 Using a safe procedure, measure the AC voltage from the panel board main breaker input lugs to neutral; it should measure between 105 and 125 VAC. Also, check the voltage from neutral to earth ground. It should measure less than 10 VAC. (This is a no-load test of the input voltage.) Record below.
  - a. L1 to neutral: \_\_\_\_\_ L2 to neutral: \_\_\_\_\_ Neutral to earth ground: \_\_\_\_\_
- \_\_\_2.2 Re-install the panel board cover.
- \_\_\_2.3 Check that all control equipment is plugged into the control equipment outlet strip.
- \_\_\_2.4 Check that all control equipment inside the traffic cabinet is switched off, and turn on the main circuit breaker and all circuit breakers in the traffic cabinet except for the **sign** breaker (if equipped).

## Sign Exterior Inspection

- \_\_\_3.0 Check that the light sensors are unobstructed.

## Power Connection Inspection

- \_\_\_4.0 Turn off the power to the sign, from outside the sign.
- \_\_\_4.1 On the din rail breakers check that the two hot wires, neutral, and earth ground wires from the 120/240 VAC power source are connected into the panel board main breaker terminals, neutral bus, and earth ground bus, respectively
- \_\_\_4.2 Check that the earth grounding wire is secure from the case of the sign (inside or outside) to the earth ground rod(s) near the base of the sign.
- \_\_\_4.3 Check that all panel board circuit breakers are off, except for the "Panel board Surge Suppressor" breaker, which should be on. Apply power to the sign.
- \_\_\_4.4 Using a safe procedure, measure the AC voltage from the panel board main breaker input lugs to neutral; it should measure between 105 and 125 VAC. Also, check the voltage from neutral to earth ground; should be less than 10 VAC. (This is a no-load test of the input voltage.) Record below.
- L1 to neutral: \_\_\_\_\_ L2 to neutral: \_\_\_\_\_ Neutral to earth ground: \_\_\_\_\_

## Sign Interior Inspection

- \_\_\_5.0 Make sure the Site Information for the sign is filled out: sign serial number, sign model number, sign assembly number, etc.
- \_\_\_5.1 Check for loose parts, connections and wiring, inside of the sign including the inside of the power supply enclosure, and service control panel. Also, verify that the fiber-optic cables are connected to the proper location on the VCB (Vanguard control board).
- \_\_\_5.2 Check that all conduits that enter the sign are sealed inside at the end that enters the sign.
- \_\_\_5.3 Resistance between circuit ground on the VCB and earth ground.
- Verify that power to the display is off.
  - Make sure fiber or cat5 cable isn't plugged in from controller to VCB when doing this test.
  - Inside of the power supply enclosure unplug the green wire connected between TB1 and the back wall of the display.
  - If equipped; remove P1 (the 4-pin connector) from all Mini CAN I/O board inside the display
  - Using a Multi-Meter Measure the resistance between the ground on the VCB power connector (black wire on P1) to the back wall of the display
  - Reading should be from 10K to 220K
  - Record Value \_\_\_\_\_
  - After test is complete reconnect green wire to TB1 and reconnect all the fiber or cat5 cable.

## Sign Power Test

\_\_\_6.0 Turn on all circuit breakers.

\_\_\_6.1 Check all sign convenience outlets and control equipment outlets by using a multi-meter, each outlet should measure between 105 and 125 VAC.

## Functional Test

\_\_\_7.0 Turn on the sign controller power switch, check that the power indicator LED is on.

\_\_\_7.1 Verify that DS1 and DS2 LED lights illuminating white. This is verifying signal is good for fiber ports A and B.

\_\_\_7.2 Enter all the necessary data into the sign controller such as address, module type, sign height, sign width, sign type, access type, and peripherals.

- a. Reference display configuration sheet if necessary

\_\_\_7.3 Check that all power supplies are passing in the peripheral menu.

\_\_\_7.4 Check that the value indicated by each of the MDLS appears reasonable for the current ambient lighting conditions. Record below:

Date: \_\_\_\_\_ Time: \_\_\_\_\_ Sky conditions: \_\_\_\_\_

Light sensor readings: 1: \_\_\_\_\_ 2: \_\_\_\_\_ 3: \_\_\_\_\_

\_\_\_7.5 Parallel surge suppressor with remote reporting: Display the "View Peripherals" screen on the LCD, and check that the Surge Suppressor entry indicates "Pass".

\_\_\_7.6 **Note: If testing at night do the all on 10% test patterns.** Display the "All On 100%" test pattern and check that it is displaying. Turn off one power supply. Check in the "View Peripherals" screen that all power supplies (isolation boards) that are on indicate 24.1 to 25.2 VDC. Repeat the above step for each remaining power supply. Turn on all power supplies.

\_\_\_7.7 Run the following test patterns and verify that all the test patterns display properly.

- a. Alphabet
- b. Line ID
- c. Module ID
- d. **Note if testing at night don't do this test pattern.** Auto Test Patterns

\_\_\_7.8 Set to "Normal Mode" to exit the test pattern mode.

\_\_\_7.9 Using Vanguard software display a message that will not misdirect traffic and that has characters that butt up to the top, bottom, left, and right edges of the sign and verify that it displays correctly. This verifies proper message display capability for this sign size.

a. Using a test message check visually that the dimming level of the display appears reasonable for the light conditions with automatic dimming set and record the level. Dimming Level% \_\_\_\_\_

\_\_\_7.10 Set the time, date, and correct time zone.

\_\_\_7.11 **Note: If testing at night run the all on 10% test patterns.** Run the "All On 100% Burn" test pattern and leave the brightness set to 100%. Using a safe procedure, check and record the AC voltage from the sign panel board main breaker input lugs to neutral; it should measure between 105 and 125 VAC. Also, check the voltage from neutral to earth ground; it should measure less than 10 VAC. (This is a loaded test of the input voltage.) Record below.

a. L1 to neutral: \_\_\_\_\_ L2 to neutral: \_\_\_\_\_ Neutral to earth ground: \_\_\_\_\_

\_\_\_7.12 Perform a pixel test and verify that all pixels are reported as good.

\_\_\_7.13 Reinstall all enclosure covers.

\_\_\_7.14 Record the installed firmware version numbers (from the sign controller "Version Information" page), and the dimensions of the sign. (If the dimension of the sign doesn't match the actual sign size, correctly configure the sign controller for this site.) Record the following information under the Site Information:

### Final Details

\_\_\_8.0 **If equipped:** Confirm that all sign and traffic cabinet thermostats are set properly, and all

\_\_\_8.1 Equipment covers are installed.

\_\_\_8.2 Verify the sign is blank.

\_\_\_8.3 Verify that any test messages you created have been removed from the sign controller.

\_\_\_8.4 Record if main breaker is left on or off: On: \_\_\_ Off: \_\_\_ Date: \_\_\_\_\_

\_\_\_8.5 Make sure the Site Information is filled out: serial numbers, site location, phone number, sign dimension, firmware versions, etc.



It is acknowledged that the following field test procedure has been completed for this site and the display is operational.

**Daktronics Technician**

_____	_____	_____
Printed Name	Signature	Date

**Customer**

_____	_____	_____
Printed Name	Signature	Date

DAKTRONICS PERSONNEL MUST RETURN THIS COMPLETED DOCUMENT AND QUALITY FEED BACK FORM TO THE DAKTRONICS CONTRACT PROJECT MANAGER.

**Transportation Quality Feedback form**

*For Internal Daktronics use only. This is not part of the field Test Procedure. This form needs filled out and sent back to Daktronics with the Field Test Procedures*

Submitted By \_\_\_\_\_ Contract# \_\_\_\_\_

Display Type (i.e. VF2400\_27x105-66-A) \_\_\_\_\_

Location of Display \_\_\_\_\_

Display Serial # \_\_\_\_\_ nearest City and State \_\_\_\_\_

Commissioning Date \_\_\_\_\_ Project Manager \_\_\_\_\_

Did you experience any issues or unplanned work during the commission of this display? **Yes/ No** (if no skip to additional comments/Punch list items)

Failed Part Description	Part Number	Part Serial #

**Describe the issues and or unplanned work**

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

**Additional Comments/Punch list Items**

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

FTP completed **Yes/ No**

Site Complete **Yes/ No** (if no documents punch list items above)