C26039 New York Stat DOT
VM-1020

Field Test Procedure

DD3820559 **Rev:2—15 January 2018**

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Introduction

This test procedure describes the field tests for a VM 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 whatever is required to get up into the sign
- Digital multi-meter
- Laptop computer, with central controller software, miscellaneous software, and null modem cable.
- Common hand tools
- Ground resistance tester
- Cellular telephone or other means of communication with the central controller operator.

Site Information

Daktronics Representative: _____

Contract number and name: _____

Field test procedure addendum ED number, if any ("NA" if not applicable):
_____

Sign site: _____
(Typically highway number, direction, and mile-post number or intersection)

Sign model no.: _____

Sign 1 serial no.: _____

Field controller serial no.:_____

Field controller address no.:_____

Site telephone number: _____

Site IP address: _____

Important: Make sure that the firmware listed below is the most current version, if not make sure to download the latest version of the firmware.
Sign dimension: _____

Firmware:	Version number:
1) VFC	_____
2) Player Image	_____
3) Video Processor	_____
4) LCD Board	_____
5) Display Module micro	_____
6) Display Module EPLD	_____
7) ACP Micro	_____
8) ACP EPLD	_____
9) Display interface micro	_____
10) Display interface EPLD	_____

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 Panels Exterior Inspection

____3.0 Visually inspect the outside of the signs panel.

____3.1 Check that the light sensors are unobstructed.

Power Connection Inspection

____4.0 Turn off the power to the sign panels.

____4.1 Check that the positive, and negative wires are landed into the DC power in and are landed on the correct polarity on the terminal block.

____4.2 Check that the signal wiring is terminated on signal terminal block inside sign.

Display Panel Interior Inspection

____5.0 Make sure the Site Information is filled out for each display panel: sign serial number, sign model number, sign assembly number, etc.

____5.1 Inspect the inside of each display panel for damage and signs of water intrusion. Check for loose parts, connections, and wiring.

____5.2 Verify that the fiber-optic are connected to the proper location on the VCB (Vanguard control board).

____5.3 Check that all conduits that enter the sign panels are sealed.

Sign Power Test

____6.0 Apply power to the sign panels.

____6.1 Using a safe procedure, measure the DC voltage it should measure 24 VDC (+/- 10%). Record below.

a. Voltage Reading_____

____6.2 Verify that VCB, and module power indicator lights are on

Functional Test

____7.0 Turn on the sign controller power switch, check that the power indicator LED is on.

____7.1 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 to configure peripherals.

____7.2 **Note: If testing at night do the all on 10% test patterns**. Display the "**All On 100% Burn**" test pattern; check that all fans turn on for each sign panel. Once complete set test pattern to "**None"**.

____7.3 Check that the value indicated by each of the light sensor for each panel appears reasonable for the current ambient lighting conditions. Record below for each sign panel.

Date: _____ Time: _____ Sky conditions: _____

Module Light sensor readings: 1: _____

____7.4 Check that the module temperature appears correct, and record below:

Note: Temp sensors utilize digital integrated circuits, which are calibrated at the integrated circuit factory, and do not require additional calibration.

Module Temp 1, degrees F.: _____

____7.5 Check that all LED power supplies (Isolation Boards) in Traffic Cabinet indicate "OK" (figure 8 pattern of the 7-segment display). Check that each power supply indicates pass on the controller.

____7.6 Run the following test patterns individually and verify that all the test patterns display properly.

a. Alphabet
b. Line ID
c. Module ID
d. **Note: If testing at night do not run this test.** Auto Test Pattern

____7.7 Set the time, date, and correct time zone.

____7.8 Display a message (not a test pattern) 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 on each sign panel. This verifies proper message display capability for this sign size.

____7.9 **Note: If testing at night do the all on 10% test patterns**. Display the "All On 100%" test pattern, and check that the All-On 100% brightness test pattern is displaying. Turn off one Power Supply. Check in the "View Peripherals" screen that all power supplies (isolation boards) that are on indicates 24.1 to 25.2 VDC and the one off says fail. Repeat the above step for each remaining power supply.

a. Turn on all power supply groups

____7.10 Perform a pixel test and verify that all pixels are reported as good.

____7.11 Sign panel door signal switches.

a. Display the View Peripherals Menu on the controller. Check that the LCD indicates that door is closed.

____7.12 Traffic cabinet door detection switches. **Note:** Operate the doors, not just the switches, to be sure that the switches adjustments are correct. It may take up to 10 seconds after the door position is changed to indicate the change. Some traffic cabinets have only one door:

a. Display the View Peripheral Menu on the LCD. Close both traffic cabinet doors for 15 seconds and then open the door, and quickly check that the LCD indicates that the doors are closed.

b. With the door currently open, wait 15 seconds for the controller to update, and then check that the LCD indicates that the door is open.

c. Open the other door and wait 15 seconds for the controller to update, then check

d. That the LCD indicates that the door is open.

____7.13 Parallel surge suppressor with remote reporting

a. Display the "View Peripherals" screen on the controller, and check that the Surge Suppressor entry indicates "Pass" for each sign panel.

____7.14 Reinstall all enclosure covers.

____7.15 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 Confirm that all traffic cabinet thermostats are set properly, and all equipment covers are installed properly.

____8.1 Verify the displays are blank.

____8.2 Verify that any test messages you created have been removed from the sign controller.

____8.3 Record if main breaker is left on or off: On: ___ Off: ___ Date: _____

____8.4 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 field 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)