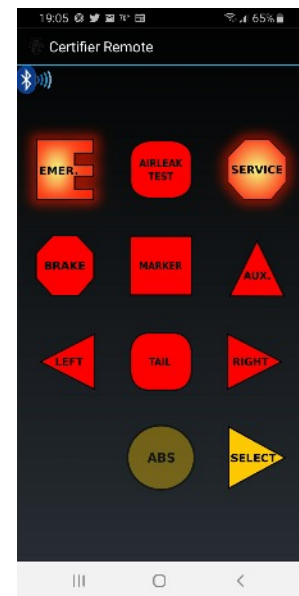


# **LITE-CHECK CERTIFIER 1200**

## **OPERATIONS MANUAL**



### **LITE-CHECK CERTIFIER FOR FMVSS/CMVSS 121-BRAKE TIMING TEST WITH LIGHTS, AIR AND ABS**

Version 1.0.0 Sept 25, 2019

## CAUTIONS

### USE ONLY CLEAN, DRY, OIL FREE, FILTERED AIR

- ▶ **DO NOT** connect the tester or release vehicle brakes without **FIRST CHOCKING THE TIRES** and securely supporting the vehicle. The trailer can move(walk) during testing.
- ▶ **DO NOT** weld on the vehicle while the vehicle is connected to the tester. The tester is grounded to the vehicle chassis and welding may damage the tester's circuitry.
- ▶ **DO NOT** operate other systems or electrical devices on the vehicle during brake system testing. Doing so may cause inaccurate results.
  
- ▶ Engines operating near the tester may interfere with remote control operation. If difficulty is experienced, install electrical noise suppression on the offending engine.
- ▶ Each tester is matched to one remote control via Bluetooth. If you experience interaction of remotes of multiple testers operated in close proximity, contact LITE-CHECK for assistance.
- ▶ For reliable remote control operation, the tester antenna must be fully exposed.
- ▶ **EMERGENCY** air must be supplied to the trailer's brakes before the 1200's **SERVICE** brake function will operate. This prevents 'Compounding' and possible structural damage to brake components.
- ▶ Use only air hoses and fittings as supplied by Lite-Check. Others may produce erroneous results during brake timing tests.
- ▶ In order to safely perform consistent and accurate tests, operators of the LITE-CHECK 1200 must first familiarize themselves with this manual, the tester, and the brake system being tested. Should you have any questions, contact LITE-CHECK Technical Support at 800-343-8579, 7:00 am – 4:00 pm, Pacific Time, Monday through Friday.

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## **LITE-CHECK CERTIFIER 1200**

### **Description**

- ▶ Electronic diagnostic tester for heavy-duty trailers and dollies.
- ▶ Tests 12V 7-pin lighting systems for shorts, chassis shorts, opens, and open grounds.
- ▶ Tests air brake systems for leaks, proper operation, and apply/release timing (FMVSS 121).
- ▶ Tests service/control line pressure differential for trailers/dollies equipped to tow other vehicles.
- ▶ Gathers and interprets 121 brake response data to tester via remote data acquisition hub.
- ▶ Operates via tablet for remote control operation, or personal computer Graphical Use Interface (GUI).
- ▶ Remote tablet provides convenient service brake cycling for slack adjustment verification.
- ▶ Remote tablet allows for efficient verification of vehicle lamp operation.
- ▶ Allows test data, including brake timing, to be saved to the computer and/or to be printed.
- ▶ Performs all ABS tests and configuring following manufacturers procedures.
- ▶ Reads and writes the following ABS manufacturers; Bendix, Haldex and Meritor-Wabco.

### **Key Features of the Certifier 1200**

- ▶ GUI display for test results.
- ▶ System voltage display.
- ▶ System amp-draw display.
- ▶ Automatic fault alarm.
- ▶ Tablet for remote control operation provides one-person operation and testing.
- ▶ Overload protection prevents vehicle-wiring damage resulting from shorts to ground.
- ▶ User friendly brake inspections, air-leak tests and 121 brake timing tests.
- ▶ “Differential Kit” (for timing-testing dollies and trailers equipped to tow other vehicles).
- ▶ For 121 Timing tests only, a minimum of 2 sensors are required per axle tested outside of the US, and just one is required in the US.)

### **Set-up Requirements**

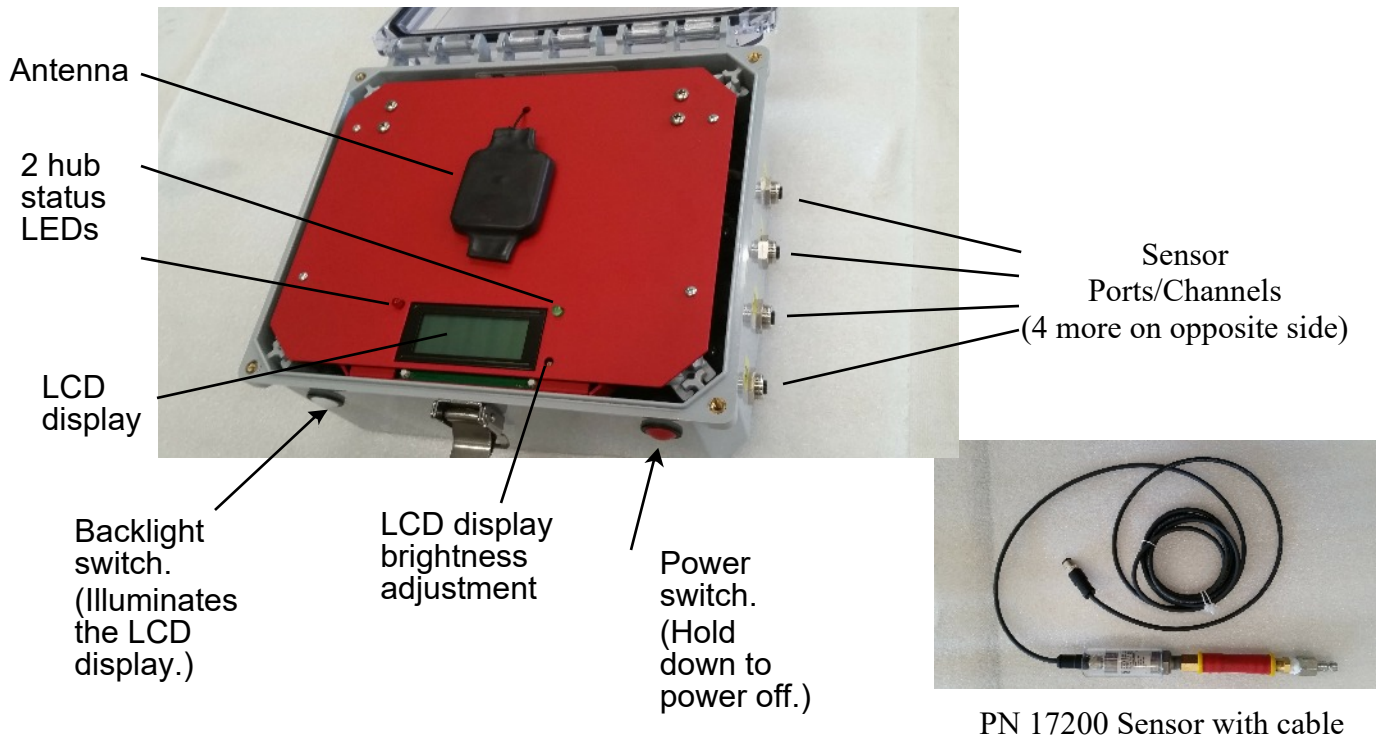
Electrical power, 110 vac

Compressed air, filtered, dry, 110 psi @ 10 scfm

Computer printer included

3/8” air fittings for transducer connection into brake chambers

## MODEL 400 HUB AND DOLLY PART # 17190



### Description:

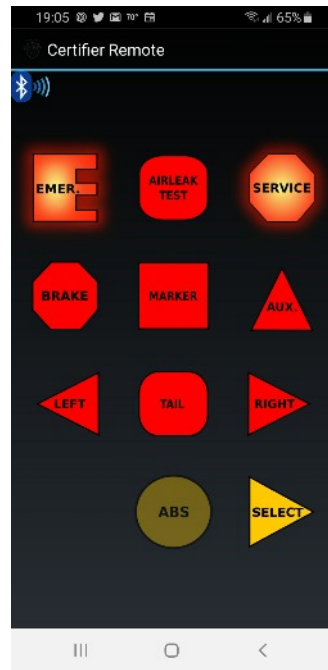
The hub picture above has the hub cover open for a better picture. Users should operate the hub with the cover closed. The dolly the hub rests on is not shown in the picture.

The hub gathers data from up to eight (8) sensors, interprets that data, and transmits the result to the 1200 Certifier. The hub communicates with your 1200 Certifier via an antenna mounted under the bottom tray of the 1200.

### HUB Status LEDs

- ▶ Green LED lit: Indicates normal operation
- ▶ Red LED lit: Indicates error condition in the hub

## LITE-CHECK TABLET PN 18092



### Description:

The tablet PC supplied with your 1200 Certifier permits operation of 11 tester functions from up to 100 feet distance from the tester. Its 11 shape-coded buttons match those on the tester GUI and activate the same functions. The tablet communicates with the tester via Bluetooth, and is non-directional. For best operation, **assure the receiving antenna on the tester is fully exposed and not shrouded by metal.**

## LITE-CHECK MODEL 363 DIFFERENTIAL KIT, PN 18115

Differential Manifold PN 18115



This 50 CI Canister Assembly will also be used.



### Description:

This kit provides additional equipment necessary to perform that portion of the 121 brake-timing Tests (Differential) which applies only to converter dollies and trailers designed to tow other vehicles.

This test compares the incoming service pressure against the outgoing pressure and evaluates its difference to FMVSS 121 specifications.

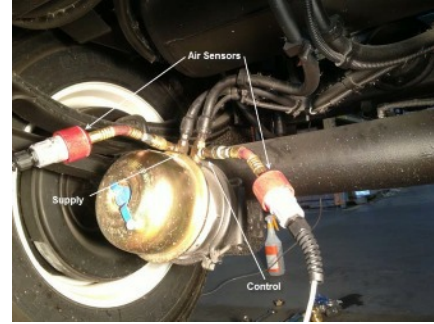
### Contains:

- Additional atmospheric pressure sensor/transducer

**NOTE:** The 50 CI Canister Assembly will also be used during differential tests, but it is not actually part of the Differential Kit (PN 18115).



## LITE-CHECK AIR PRESSURE SENSOR/TRANSDUCER (Lite-Check PN 17200)



### Description:

- ▶ The 1200 Certifier comes standard with 2 sensors. Additional sensors are recommended for testing additional brake chambers and as back-ups.
- ▶ Air pressure sensor/transducer with 9' cable -PN 17200.
- ▶ Generally one sensor/transducer is connected to a service-brake chamber and one is connected to an emergency-brake chamber.
- ▶ One sensor/transducer is connected to the 50 CI differential chamber at the back of the trailer during differential testing.
- ▶ Sensors are connected to the remote hub (17179) with a 9' shielded cable.
- ▶ **Do not extend or shorten without first contacting Lite-Check.**

## INITIAL SET-UP PROCEDURES for when the unit first arrives

### Shop Set-up

Remove test station from shipping container. Verify condition and check items against content list. Notify carrier of any shipping damage or loss. Notify LITE-CHECK of any item shortages.

1. On the right side of the tester, connect blue coiled hose to the "Service Air - Blue" bulkhead, connect red coiled hose to the "Emergency Air - Red" bulkhead, and attach the 7-way cable.
2. Connect at least two sensors to the hub.
3. Unpack the printer and connect the AC power cord from the printer into the power strip at the center-back of the printer shelf. Slide the printer into the far right side of the middle shelf.
4. Insert the spare battery for the hub into the battery charger which sits on the bottom tray inside the 1200. Be sure the battery charger is plugged into the power strip at the center-back of the printer shelf.
5. Install your shop air connector to the air filter/regulator on the left side of the tester. Do not supply air at this time, but only when instructed. Assure shop air supply is capable of supplying and maintaining clean air at 110 psi to the tester throughout all tests.
6. Connect shop 110 Vac power to test station.
7. Connect the 4-port USB hub (PN 18135) to an open USB port on the PC.
8. Connect the Mouse and the Keyboard to the 4-port USB hub.

Follow the Certifier Self-Test Procedures listed in Pages 9 - 14.

Call Lite-Check Technical Support at 800-343-8579 for assistance if needed.



## **1200 CERTIFIER SELF-TEST PROCEDURES**

**Purpose:** To check the 'zero' air calibration of sensors and to check the tester for internal air leaks, and to resolve any issues in them, as needed.

**NOTE:** **Do not connect Tester to vehicle during any of these self-tests.**

You will perform 3 unique tests in sequence to be sure your 1200 Certifier is ready to be used for testing. The 3<sup>rd</sup> test (Differential test) will only need to be done if you are testing a trailer or dolly which is designed to tow another vehicle. All 3 tests are listed below.

**1. Internal Air Leak Self-Test without a Trailer or Dolly**

**2. 121 Timing Self-Test without a Trailer or Dolly**

**3. Differential Self-Test\* without a Trailer or Dolly**

\* The Differential Self-Test will only be done on vehicles designed to tow other vehicles.

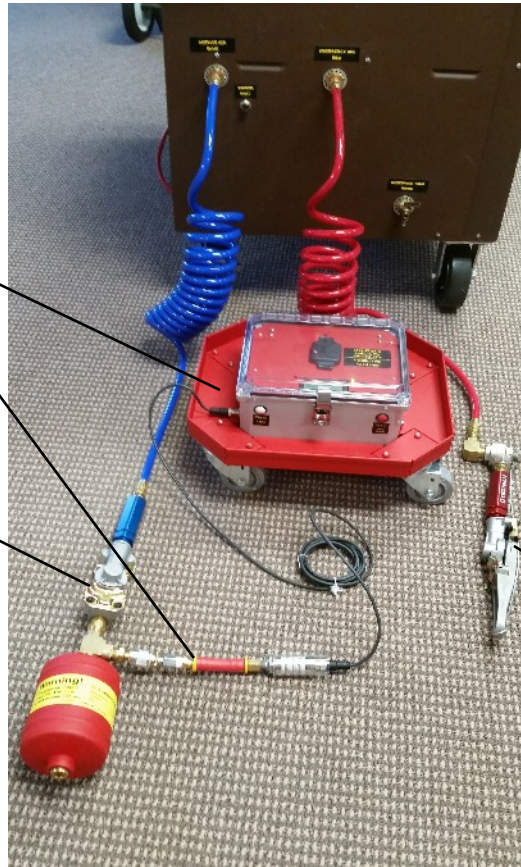
All tests will be discussed in detail on the following pages.

## **Performing the Internal Air Leak Self-test, without being attached to a trailer or dolly:**

1. Check that Certifier glad-hands are secure and tightly blocked off. See the picture and instructions below to accomplish this. Be sure that the Certifier and the hub are powered off whenever a sensor is attached or removed from any test hardware or a trailer.

1.  
Connect a sensor to any of the hub ports and the quick-disconnect of the 50 CI Canister Assembly.

2.  
Connect the service glad hand to the glad hand of the 50 CI Canister Assembly.



3.  
Block off the emergency air line from the tester using the "Gladhand Shutoff with Chain", PN 20053.

2. Perform the "Normal Power-up Procedure" detailed in the Appendix, starting on page 39.
3. Enter "SELF CAL" in the VIN location in the Trailer Information Panel, which is the left side of the display shown on the GUI, and pick "Self Calibration" in the Configuration box on the Trailer Information Panel.
4. On the GUI, select "Air Leak", "121 Timing" (and "Differential" if you will be testing a vehicle that is designed to tow other vehicles). Then click 'START' on the GUI. The Internal Air Leak test will start.
5. If the Internal Air Leak test **FAILS**:
 

**FAIL = >2 POUNDS SERVICE**  
**FAIL = >3 POUNDS EMERGENCY**

  - 5a. Select "Retry" on bottom right corner of Air Leak test page in the GUI.
  - 5b. If it fails a 2<sup>nd</sup> time, pick "Cancel All Tests" on the left edge of the GUI and continue.
  - 5c. Engage the EMERGENCY and SERVICE air lines to get air into the system. Soap-test the blocked-off glad-hands, external fittings and internal fittings as needed to locate the source of the leak(s) and continue.
  - 5d. Tighten fittings and thread seal them as needed and continue.
  - 5e. Select "START" again (as in step 4). If this retry fails, call LITE-CHECK for assistance.

**If the Internal Air Leak test passes, the Tester will advance to the 121 Timing Test.**

**This is the end of Internal Air Leak Self-Test, without being attached to a trailer or dolly.**

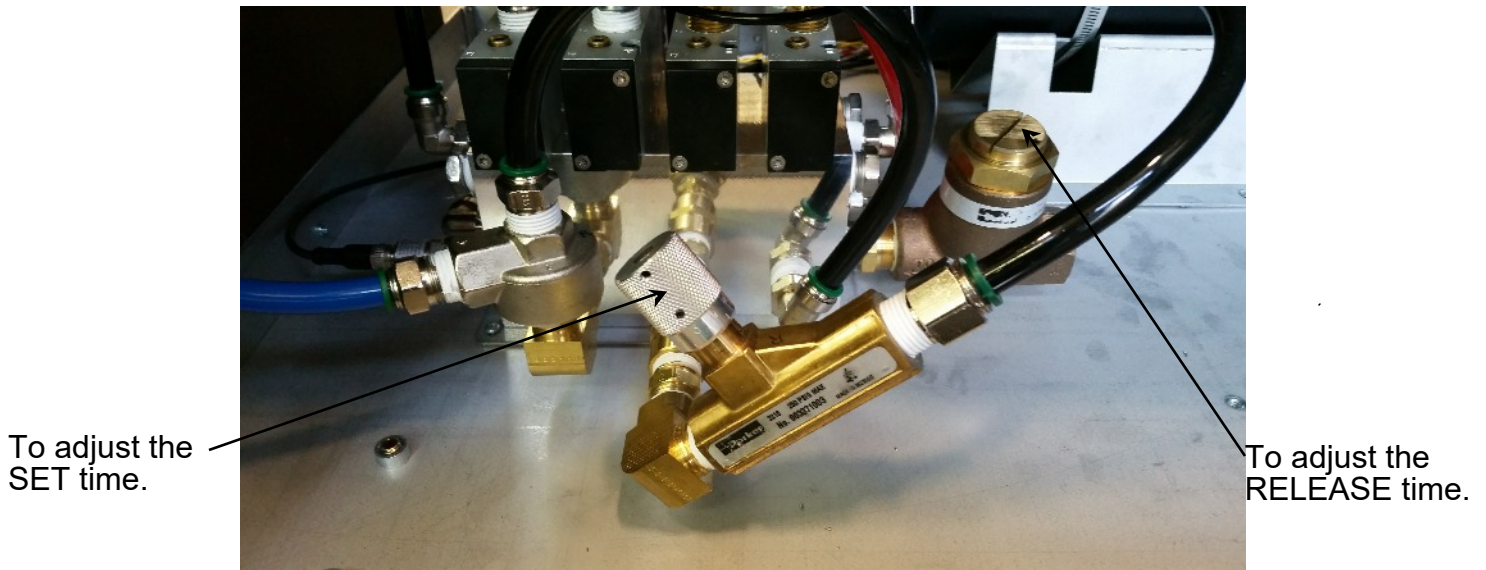
## **121 Timing Self-Test, without a trailer or dolly:**

**Purpose:** This test verifies that the components of the test system (air supply, hoses, fittings, glad-hands, etc.) combined with the tester's inherent **set** and **release** times complies with the maximum permissible times specified in Figure 2 of FMVSS-121, S6.1.13 as amended (Set > 0.350 sec. (+ .005 seconds) and Release > 0.700 sec. (+ .005 seconds)). **Do not attempt vehicle brake timing or differential tests if either of the composite times for the test system do not pass. Otherwise you run the risk of failing otherwise 'good' vehicles.** If you are failing vehicles for apply and release timing, re-run this test to verify the test system's performance.

1. The hardware setup needed for the 121 Timing Self-Test is the same as was just used for the Internal Air Leak Test, which should have just completed.
2. Verify the following LED's status on the hub:
  - ▶ The green LED should be lit indicating a good state.
  - ▶ The red LED will be lit if the hub encountered an error condition. (Likely the sensor attached to the hub did not self-calibrate and may be defective. Or, there may be air pressure in the line, or, there may be a low battery condition in the hub.)
  - ▶ To adjust the brightness of the display on the hub, you can adjust the small screw near the lower right corner of the hub display.
3. The "Setup HUB Sensors" dialog should be displayed. In this dialog, identify the appropriate hub port which has the sensor cable (coming from the 50 CI reservoir) attached to it. On that sensor in the GUI, change "Unused" to "Curbside" to select it for use.
4. Now select "Done" in the lower right hand corner of the "Setup HUB Sensors" dialog popup. The 121 Timing test should immediately start as a result of this action.
5. If the test is successful, the 1200 Certifier GUI **will either:**
  - **Advance to the start of the next test**, which is the Differential Test (if it was selected to run) and a dialog popup should be displayed telling you to connect the Diff Kit.
  - **OR the GUI will indicate the test passes and if you hit 'Continue' a "Certifier Report" will display.**
6. **But if the 121 Timing test fails**, the error will be shown which will identify the failure. The reason for the failure will be given, such as the speed at which portions of the test were completed, or for not selecting a valid sensor, etc.
  - ▶ If the failure is due to a sensor issue, fix the issue and then click on "Retry".
  - ▶ If the failure is due to timing, you may have to adjust one or both of the valves on the Air Manifold, and then click "Retry". See the next page for how to adjust the two valves.

**Please see the picture on the next page to identify the locations of the two valves.**

### 121 Timing Self-Test, without a trailer or dolly (continued):



The **SET** time should read 350 - 355 milliseconds and the **RELEASE** time should read 700 - 705 milliseconds.

- To increase the **SET** time, turn the valve on the FRONT of the Air Manifold clockwise.
- To decrease the **SET** time, turn the valve on the FRONT of the Air Manifold counter-clockwise.
- To increase the **RELEASE** time, turn the valve on the RIGHT SIDE of the Air Manifold clockwise using a large screwdriver.
- To decrease the **RELEASE** time, turn the valve on the RIGHT SIDE of the Air Manifold counter-clockwise using a large screwdriver.

**This is the end of the 121 Timing Self-Test, without using a trailer or dolly.**

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## Perform a Brake Air Differential Self-Test on the 1200 only, not using a Trailer or a Dolly:

Nat'l Highway Traffic Safety Admin., DOT

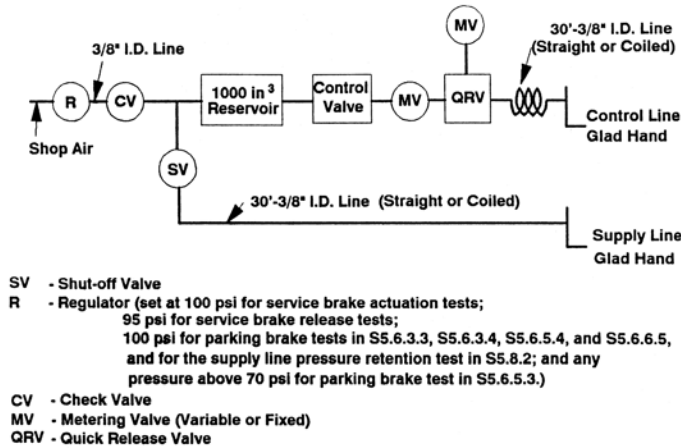


Figure 1. Trailer Test Rig.

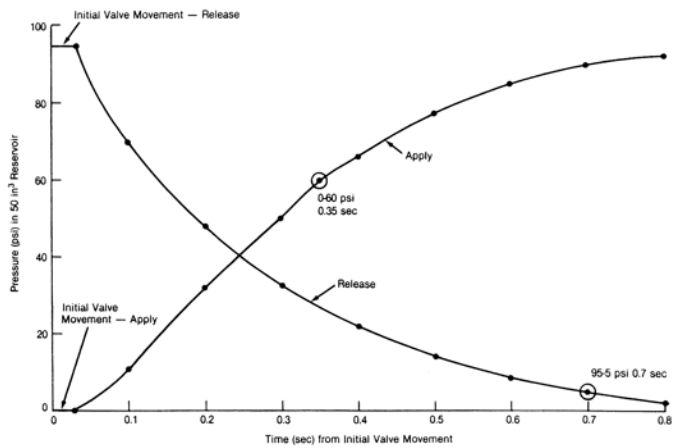


Figure 3. Pressure vs. Time for 50 in³ Test Reservoir.

## Set-up and perform the Brake Differential Self-Test:

This Differential Self-Test is performed to verify your 1200 Certifier is functioning properly so that when a Differential Test is performed on an actual trailer or dolly in the future, the user will know that the results are accurate.

The Differential Test only applies to vehicles equipped to tow other air brake vehicles, such as dollies, short semi-trailers (for doubles and triples) and B-train front semi-trailers. The test requirements are specified in FMVSS-121, Paragraph S5.3.5.

The purpose of a Differential Test is to verify the control signal passed through the rear SERVICE glad-hands of a trailer being tested, to another towed trailer or dolly, varies no more than the permitted amount from the signal controlling the brakes on the vehicle being tested. This permitted difference depends on the SERVICE/Control input pressure to the vehicle being tested.

5 psi to less than 20 psi	1 psi difference or less
20 psi to less than 40 psi	2 psi difference or less
40 psi or greater	5% of the input pressure or less

This test requires attachment of the double glad-hand fitting assembly, also known as the "Differential Kit" or "Diff Kit" (PN 18115). The Diff Kit is an option which can be purchased separately from the 1200 Certifier.

1. Now that the Air Leak and 121 Timing self-tests have passed, a popup should be displayed telling you to **connect the Diff Kit**. Before that can be done, **disconnect the 50 CI tank from the SERVICE glad-hand**. Leave all the other connections intact.

2. The Diff Kit now needs to be attached to the SERVICE glad-hand. To do this properly, **notice the "Air Flow" direction sticker on the Diff Kit**. Connect the SERVICE glad-hand from the 1200 Certifier to the correct glad-hand on the Diff Kit, which is identified by being sure the Air Flow will be flowing out of the SERVICE glad-hand and into the Diff Kit. Then click on "Continue" in the popup.

**This test continues on the next page.**

**Set-up and perform the Brake Air Differential Test, with no trailer or dolly (continued):**

**NOTE:** Immediately after that glad-hand in the Diff Kit is a brass nipple which has an orifice inside to allow air flow into the Diff Kit at a specific rate. The size of the FMVSS-121 specified orifice is 0.0180 inches diameter (about diameter of a pin). Air must flow through this orifice before getting to any sensors being used for this test.

3. Verify that a cable (attached earlier) is still connected to the “Sensor Port” on the right side of the Tester. This cable and sensor is part of the Diff Kit.

4. **Attach the 50 CI reservoir** to the open glad-hand on the Diff Kit.

5. A sensor and cable assembly (PN 17200) **should still be connected** to the quick disconnect on the 50 CI canister assembly. The sensor should still be connected to a port on the hub.

6. The “**Setup Hub Sensors**” view will now be shown. The sensor attached to the hub was selected to be “Curbside” for the Air Leak and 121 Timing Tests. This sensor needs to be changed from “Curbside” to “Rear”. Then click on “Continue” in the box below the list of Sensors. **The Differential Test will now start and run.**

7. **If the Test Passes**, another popup will be shown notifying you to “Disconnect the Differential Kit”. But you don’t technically have to disconnect it at this time to successfully complete this test. This popup just shows up at the end of a successful Differential Test.

8. **Now click on “Continue”** on the popup. You will be shown a “Certifier Report” with the results of the tests that have been run: The Air Leak Test and 121 Timing Test results are in the “AIR CONDITIONS” portion of the Report. The Differential Test results are shown in the “DIFFERENTIAL TEST” portion.

9. **If the Test Fails**, hit “Retry” to run the Differential Test again. If it fails a 2<sup>nd</sup> time, call LITE-CHECK for assistance.

10. **If the Test Passes**, remove the Diff Kit and save the data from the Certifier Report if desired.

**This is the end of the SERVICE Brake Differential Test with no trailer or dolly.**











---

## TESTER OPERATION, GENERAL

### General:

The system provides two means of tester operation: The tester's tablet PC and the computer's Graphical User Interface (GUI). The key names and functions are listed below:

### Functions of Keys, Panel, and Tablet:

<u>GUI button and Tablet button</u>		<u>Action/function (In air system test mode)</u>	
EMER	EMER		Pressurizes trailer Emergency/Supply system (Trailer air supply).
SERVICE	SERVICE		Activates trailer Service/Control system
AIR LEAK-TEST	AIR LEAK-TEST		Blocks air supply to trailer and reads air loss in system.
<u>GUI button and Tablet button</u>		<u>Action/function (In electrical system test mode)</u>	
BRAKE	BRAKE		Tests brake light circuit
MARKER	MARKER		Tests marker light circuit
AUX	AUX		Tests auxiliary power circuit & power to ABS
LEFT	LEFT		Tests left turn circuit
TAIL	TAIL		Tests tail light circuit
RIGHT	RIGHT		Tests right turn circuit
<u>GUI button and Tablet button</u>		<u>Action/function (Special function keys)</u>	
SELECT	SELECT		Selects test mode

## NOTES

- Only one electrical circuit operates at one time.



## **Verify the Tablet is charged and functional:**

- ▶ Start the “Certifier” app on the tablet by clicking on the proper icon.
- ▶ Only one electrical circuit operates at one time. Pressing a different 2<sup>nd</sup> key cancels the previous. Pressing the same key 2 times without hitting any other key cancels that function.
- ▶ The actions of the tablet parallel that of the tester’s GUI.
- ▶ Activating a function via the tablet will illuminate the respective LED on the 1200 GUI display.
- ▶ The tablet can be programmed to operate with only one tester.

If you experience interference between tester systems and the tablet, contact LITE-CHECK Technical Support for assistance at 1-800-343-8579.

## **INTERPRETING PANEL DISPLAYS, INDICATORS AND ALARMS**

### **General:**

The 1200 Certifier utilizes two on-board means of communicating with its operator:

1. Graphical User Interface (GUI) of the Certifier 1200 application loaded onto the PC
2. Audio Alarm with pitch-coded sound for faults

### **Switch Indicators, LED:**

Indicators on the GUI will be activated whether circuit is activated by the Tablet or from the GUI.

- ▶ Steady indicator: Switch and circuit activated.
- ▶ Flashing indicator: Fault condition found in circuit being tested.

### **Audio Alarms:**

- ▶ Fault alarm (Unique pitch assigned to each specific fault type)

## **LITE-CHECK CERTIFIER SOFTWARE**

(PC Graphical User Interface or “GUI”)

### **General:**

Your LITE-CHECK 1200 System includes the capability to operate the tester from the PC via the CERTIFIER software GUI which is loaded onto a Windows PC. This software allows convenient insertion of vehicle and work data such as VIN, Customer Name and Order Number into the test record so this information becomes a permanent part of the record.

Once a test has been run (or a set of tests if more than one test was requested to run) the test results are saved automatically in a report.

Saved data files (Reports) are stored on the PC's hard drive and can be viewed and printed via **ADOBE or other PDF viewers**. The user will specify a VIN Number into the Trailer Information Panel just before the start of a test. (See page 24 for a sample of this Panel.) This VIN number will be **incorporated into part of the PDF file name** of the Report. For example, if a user entered “1234ABC” for the VIN number of a vehicle under test, the PDF file which will be generated when the user saves the “Certifier Results” will be named **“Report 1234ABC-[Date].PDF”**.

### **Upgrading your LITE-CHECK CERTIFIER Software:**

The LITE-CHECK 1200 Certifier has the software already installed on the provided PC. Updates to any of the software/firmware for the 1200 Certifier (GUI app, Tablet app or Hub firmware) **should ONLY be done if instructed to by LITE-CHECK Technical Support**. Any needed files will be provided by LITE-CHECK, and the process to install any updates will be provided to each customer on an individual basis.

To start any update process, You must contact LITE-CHECK Technical Support at 800-343-8579, 7:00 am – 4:00 pm, Pacific Time, Monday through Friday.

# PERFORMING TESTS ON AN ACTUAL TRAILER OR DOLLY

## Performing the Air Leak Test, when attached to a trailer or dolly:

1. Attach the EMERGENCY Air output glad-hand from the tester to the EMERGENCY glad-hand port on the front of the vehicle under test (i.e. trailer or dolly). **WARNING: Failure to connect the Emergency air can cause brake “compounding” and damage the brake chamber!**
2. Attach the SERVICE Air output glad-hand from the tester to the SERVICE glad-hand port on the front of the vehicle under test.
3. Perform the “Normal Power-up Procedure” detailed in the Appendix which starts on page 39.
4. **NOTE:** The default length of time this test will take (set by Lite-Check) is 60 seconds. We generally recommend this setting not be changed. But, you may adjust it if needed by selecting the “Settings” tab at the top of the Main 1200 Startup Screen which should be displayed on the GUI right now. **Then see page 28 & 29 for how to navigate the Settings screen.** If you do modify the settings, be sure to click on ‘Done’ on the Settings page to return the GUI to the Main 1200 Startup Screen.
5. Fill in the “Trailer Information Panel” with the appropriate data. (This panel is the left side of the Main 1200 Startup Screen. The VIN number is required, so enter the VIN number for this vehicle. Enter the Customer and Order Number as desired. Click the drop-down menu inside the “Calibration” selection box to select the correct “Configuration” of the vehicle under test. Do not choose “Self Calibration”. **See page 24 for the “Configuration” choices available.**
6. Click on “Start” in the Trailer Information Panel. The Air Leak test will start.
7. If the Internal Air Leak test **FAILS:**

**FAIL = >2 POUNDS SERVICE**  
**FAIL = >3 POUNDS EMERGENCY**

  - 7a. Select “Retry” on bottom right corner of Air Leak test page in the GUI.
  - 7b. If it fails a 2<sup>nd</sup> time, pick “Cancel All Tests” on the left edge of the GUI.
  - 7c. Engage the EMERGENCY and SERVICE air lines to get air into the system. Soap-test the blocked-off glad-hands, external fittings, and internal fittings as needed to locate the source of the leak(s).
  - 7d. Tighten fittings and thread seal them as needed.
  - 7e. Select “START” again (as in step 6). If this retry fails, call LITE-CHECK for assistance.

---

**This is the end of the Air Leak Test when the tester is attached to a trailer or dolly.**

## Performing the 121 Timing Test, when attached to a trailer or dolly:

### PURPOSE:

This test is used to verify that components of the trailer or dolly under test (air supply, hoses, fittings, glad-hands, brake cans, etc.) are in satisfactory condition to insure the tester's inherent **set** and **release** times complies with the maximum permissible times specified in FMVSS-121 **for the specific type of vehicle being tested**. Various types of vehicles are selectable on the "Main 1200 Startup Screen" under the "Configuration" dropdown. (See page 24 for the vehicle choices.) If you are failing vehicles for apply and release timing, re-run the **"121 Timing Self-Test Without a Trailer or Dolly"** (on page 11) to verify the test system's performance, before testing actual vehicles again.

1. Perform the "Normal Power-up Procedure" detailed in the Appendix starting on page 39.
2. Connect a sensor to any port on the Hub, if there isn't one already attached and ready for use.
3. Attach the EMERGENCY Air output glad-hand from the tester to the EMERGENCY glad-hand port on the front of the vehicle under test (i.e. trailer or dolly). **WARNING: Failure to connect the Emergency air can cause brake "compounding" and damage the brake chamber!**
4. Attach the SERVICE Air output glad-hand from the tester to the SERVICE glad-hand port on the front of the vehicle under test.
5. Verify the following LED's status on the Hub:
  - ▶ The Green LED should be lit indication a good state.
  - ▶ The the Red LED will be lit if the Hub encountered an error condition. (Likely the sensor attached to the Hub did not self-calibrate and may be defective. Or, there may be air pressure in the line. Or, there may be a low battery condition in the Hub.)
  - ▶ To change the brightness of the display on the Hub, you can adjust the small screw near the lower right corner of the Hub display.
6. The "Setup Hub Sensors" dialog will popup. Select the appropriate Hub port that matches where you connected your sensor in Step 2, above. On that sensor selection in the GUI, change "Unused" to "Curbside" to select it for use.
7. Now select "Done" in the lower right hand corner of the "Setup Hub Sensors" dialog popup. The test will immediately start as a result of this action.
8. At test completion, the SUMMARY page will appear and display the results.

**This test continues on the next page.**

**Performing the 121 Timing Test, when attached to a trailer or dolly (continued):**

9. **But if the 121 Timing test fails**, the error will be shown which will identify the failure. The reason for the failure will be given, such as the speed at which portions of the test were completed, or for not selecting a valid sensor, etc.
- ▶ If the failure is due to a sensor issue, fix the issue and then click on “Retry”.
  - ▶ If the failure is due to timing, you may have to adjust one or both of the valves on the Air Manifold, and then click “Retry”. See below for how to adjust the two valves.

**The SET time should read 350 - 355 milliseconds and the RELEASE time should read 700 - 705 milliseconds.**

- To increase the **SET** time, turn the valve on the FRONT of the Air Manifold clockwise.
- To decrease the **SET** time, turn the valve on the FRONT of the Air Manifold counter-clockwise.
- To increase the **RELEASE** time, turn the valve on the RIGHT SIDE of the Air Manifold clockwise using a large screwdriver.
- To decrease the **RELEASE** time, turn the valve on the RIGHT SIDE of the Air Manifold counter-clockwise using a large screwdriver.



10. The Test Report may be saved as a confirmation of the tester performance. To save, click on “Save “ or “Save and Print”.

**This is the end of 121 Timing Test, using a trailer or dolly.**

---

## **Perform the SERVICE Brake Differential Pressure Test on a trailer or dolly:**

The Differential test only applies to vehicles equipped to tow other air brake vehicles, such as dollies, short semi-trailers (for doubles and triples) and B-train front semi-trailers. The test requirements are specified in FMVSS-121, Paragraph S5.3.5.

The purpose of a Differential test is to verify the control signal passed through the rear SERVICE glad-hands of a trailer being tested, varies no more than the permitted amount from the signal controlling the brakes on the vehicle being tested. This permitted difference depends on the SERVICE/Control input pressure to the vehicle being tested.

5 psi to less than 20 psi	1 psi difference or less
20 psi to less than 40 psi	2 psi difference or less
40 psi or greater	5% of the input pressure or less

---

**NOTE:** The rear SERVICE glad-hands of the vehicle under test can be used to supply air to a towed trailer or dolly. So this test is used to verify that the air supplied at the back of a trailer under test is sufficient enough to properly provide the needed air to a towed trailer or dolly.

This test requires attachment of the double glad-hand fitting assembly, also known as the “Differential Kit” or “Diff Kit” (PN 18115). The Diff Kit is an option which can be purchased separately from the 1200 Certifier.

1. On the Diff Kit, **notice the “Air Flow” direction sticker**. Connect the Service Air line from the 1200 Certifier tester to the correct Diff Kit glad-hand. The correct glad-hand is identified by being sure the Air Flow will be flowing away from the tester and into the Diff Kit.

**NOTE:** Immediately after that glad-hand is a brass nipple which has an orifice inside of it to allow Air flow into the Diff Kit at a specific rate. The size of the FMVSS-121 specified orifice is 0.0180 inches diameter (which is about diameter of a pin). Air must flow through this orifice before getting to any sensors being used for this test.

2. **Connect the other glad-hand on the Diff Kit to the SERVICE glad-hand** on the FRONT of the vehicle under test.

3. **Connect the Sensor** attached to the Diff Kit to the “Sensor Port” on the right side of the tester.

4. **Connect the glad-hand on the 50 CI canister assembly (PN 18025)** to the REAR service air connection at the back of the trailer under test.

5. **Connect a sensor and cable assembly (PN 17200) to the quick disconnect on the 50 CI canister assembly**. Connect the other end of this sensor and cable to any Port on the HUB.

6. **Connect the glad-hand on the EMERGENCY air line output** (the coiled red hose) from the Certifier to the EMERGENCY glad-hand on the front of the trailer under test.

**This test continues on the next page.**

## **SERVICE Brake Differential Pressure Test (continued):**

7. On the rear of the trailer under test, **seal off the EMERGENCY air** connection using a “Gladhand Shutoff with Chain” (PN 20053) or other approved tool.

### **8. Perform these Power-up steps as needed:**

- ▶ If not already powered up, turn the Hub on by using its red button.
- ▶ Supply 110 VAC to the Tester and turn on the Tester using the switch on the left side.
- ▶ Connect the air source. Minimum pressure for the air source is 110 psi at 10 SCFM.
- ▶ Wait about 30 seconds to allow the air tank inside the Tester to pressurize and stabilize.
- ▶ At this time, the “Main 1200 Startup Screen” will be displayed. (See page 24 for a screen shot.) Near the bottom of the left side of this view, there is an “Input” air pressure reading.
- ▶ If needed, adjust the regulator on the left side of the 1200 Tester so the input pressure displayed on the 1200 screen is between 100 and 105 psi. We recommend 102 psi.
- ▶ The CERTIFIER 1200 Tester is now ready to perform this test.

9. **Verify or make the proper selections in the GUI** to be able to run the Differential Test. First, in the “Trailer Information Panel” (the left side of the Certifier GUI) type in a VIN Number, which is a required field. For “Configuration” do not pick “Self Calibration”, but instead, you need to select the proper type of trailer/dolly under test. In the “Tests to Run”, check the boxes for Air Leak and Differential. The other choices in the “Trailer Information Panel” are optional entry fields.

10. **Click on “Start”. The Air Leak test will start.** It will complete if there are no leaks. (A successful Air Leak test must be done before a Differential test. If the Air Leak test fails, see step 5 in the “Performing the Internal Air Leak Self-test” on page 10 to help you debug that failure.)

11. After the Air Leak test passes, a popup will be displayed telling you to **connect the Diff Kit**. You’ve already done that a few steps ago, so just click on “Continue” in this popup.

12. If a sensor was not selected in an earlier test, the **“Setup Hub Sensors”** view will now be shown. Select “Rear” for the correct sensor port. Then click on “Done” in the box below the list of Sensors.

13. **The Differential test will now run.** At the completion of a passing test, another popup will be shown notifying you to “Disconnect the Differential Kit”. But you don’t actually have to disconnect it at this time. The popup just shows up at the end of the test.

14. **Now click on “Continue”** on this popup. You will be shown a “Certifier Report” view with the results of the test that has been run: The Differential Test results are shown in the “DIFFERENTIAL TEST” portion.

**This is the end of the “Air Differential Test, using a Trailer or Dolly”.**

---



## PERFORMING ABS TESTS

### SETUP:

- ▶ The test station is in the operational mode with power and ai
- ▶ A NOREGON ADAPTOR is installed in the 1200 CERTIFIER for operation with the computer.

### ABS configuration process.

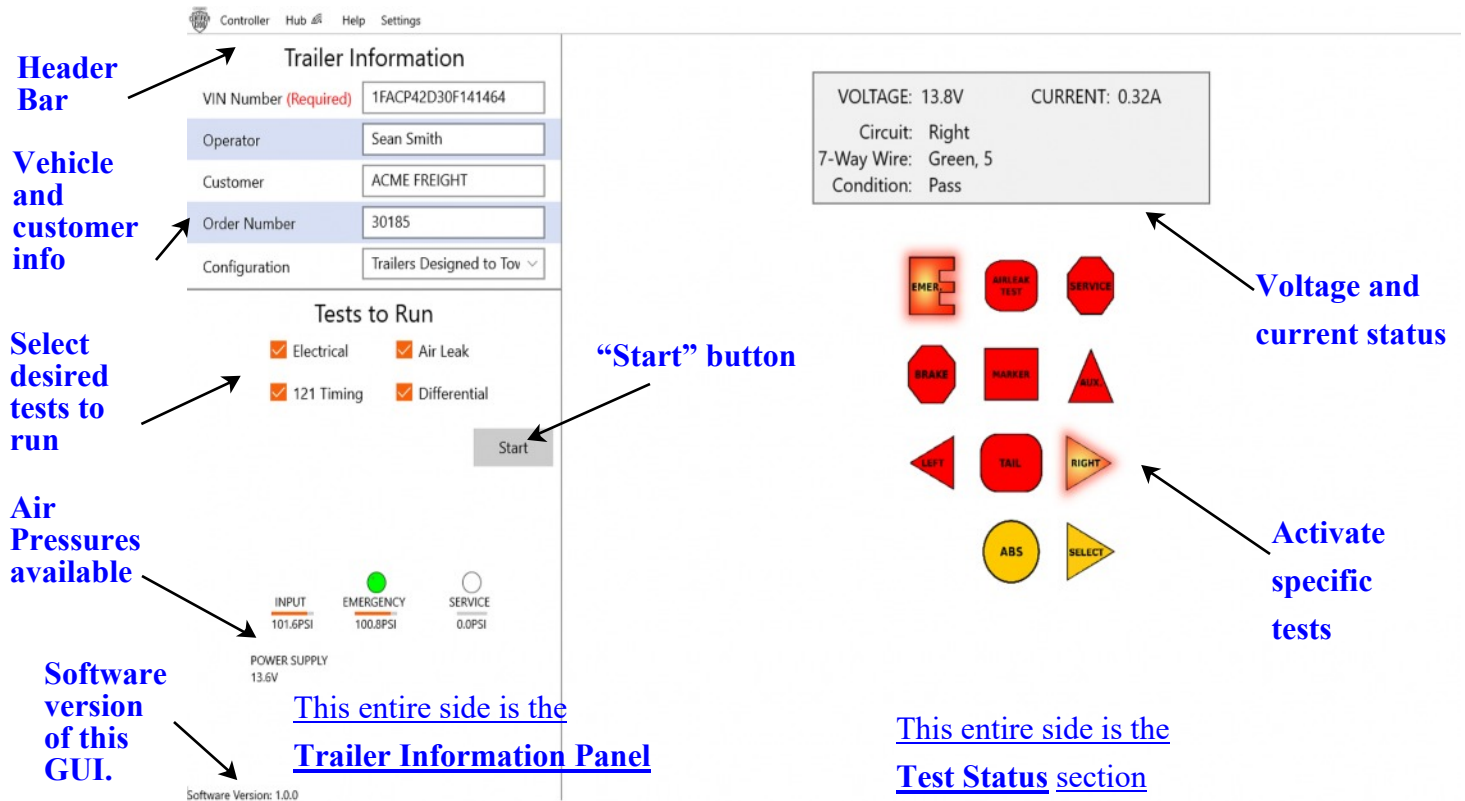
1. Connect 7-way cable to trailer.
2. Click on ABS key in the GUI or on the tablet which will activate power and air (aux and brake circuits).
3. Open the ABS program on the PC for configuration and operation of the ECU in the vehicle under test such as Bendix or Haldex.
4. Press the SELECT key once to charge the emergency line.
  - This will enable the “Self Test” for the ECU valve.
  - This will also allow the wheels to rotate freely.
5. Press the SELECT key a second time to charge the service line.
  - This will enable the “Sensor Test” to be performed.
  - The brakes can also be cycled on and off with the tablet (or the “BRAKE” key on the tester) while the operator spins the axles (see end-of-the-line test below).
6. Press the ABS key to cancel the ABS Test routine.  
Proceed with ABS recommended process.

NOTE: END-OF-THE-LINE test can be performed with the LITE-CHECK tablet.

- Press ABS on the tablet keypad.
  - Press the SELECT once to charge the emergency line.
  - Press the SELECT a second time to charge the service line.
  - Spin wheel to the required speed and press BRAKE to apply service air.
  - Wheel should stop if ABS is connected properly.
  - Repeat wheel spin for wheels under ABS control.
7. Close the ABS program on the PC.

# WHAT YOU WILL SEE ON THE 1200 CERTIFIER GUI SCREENS

## MAIN 1200 STARTUP SCREEN (General overview)



**Header Bar section:** Dropdown menus under each item. (The 'HUB' icon shows the battery charge which is left in the Hub. The Radio Signal Strength with the Hub is shown next to the battery icon.)

### Trailer Information Panel:

VIN Number = (Required) VIN of Trailer or Dolly to be tested

Operator = The current user of this test system

Customer = Whoever is purchasing the vehicle (or the owner of the vehicle)

Order Number = As needed, for tracking of test data for specific customers

Configuration = Type of Trailer / Dolly being tested.

1. Trailers NOT designed to tow another vehicle
2. Trailers designed to tow another vehicle
3. Trucks and busses NOT designed to tow another vehicle
4. Trucks, Tractors and single units designed to tow another vehicle
5. Trailer conversion dolly

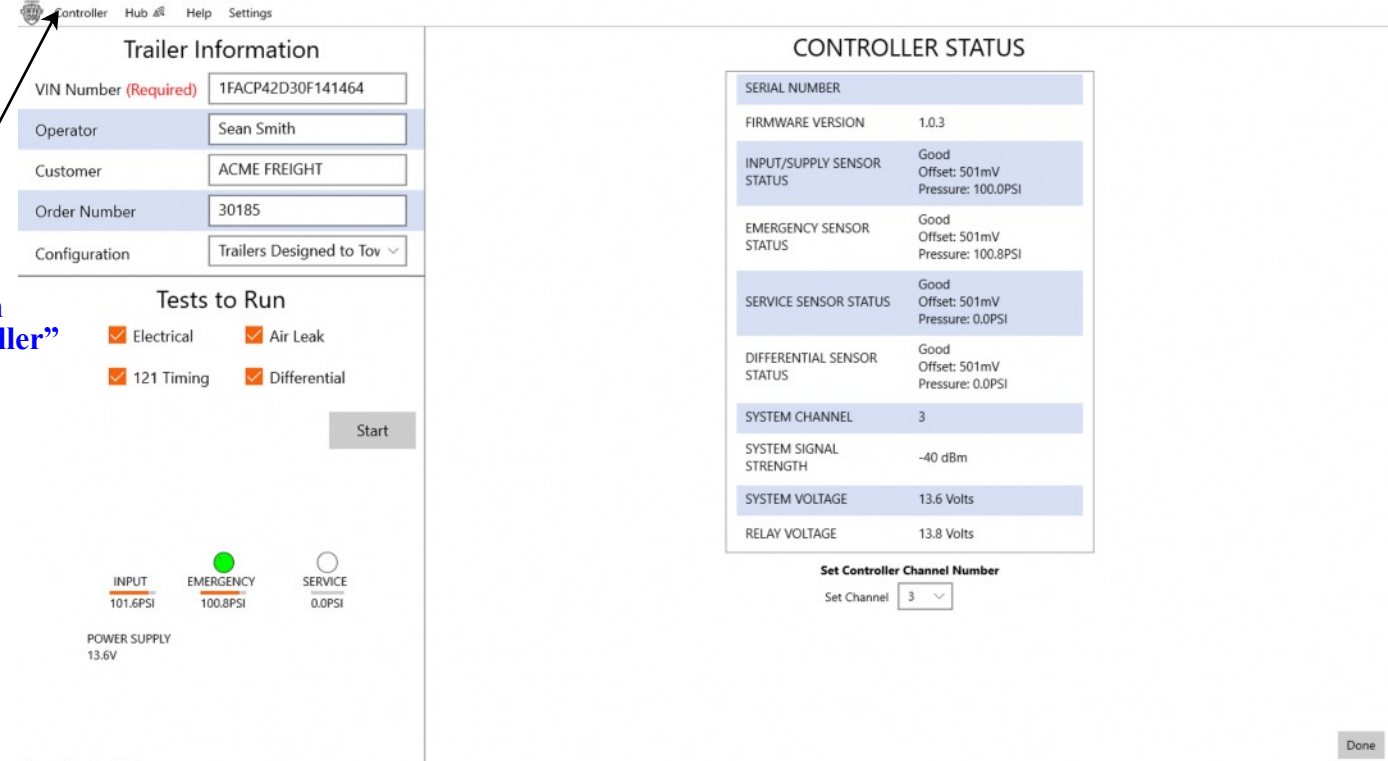
**Tests to Run section:** 1. Electrical 2. Air Leak 3. 121 Timing 4. Differential

NOTE: The Air Leak Test must be also selected and run immediately before the 121 Timing or the Differential test. After selection(s) made, click "START" to initiate. Tests will run sequentially until they all pass or a failure is encountered.

### Test Status section:

Displays the results of each test as it happens. If a failure is encountered, all testing will stop and the failure will be displayed. When not running air tests, you can also activate individual manual electrical tests here.

## SETUP TESTING: “Controller” dropdown for Status



The screenshot shows the Lite-Check CERTIFIER 1200 interface. On the left, the 'Trailer Information' section includes fields for VIN Number (1FACP42D30F141464), Operator (Sean Smith), Customer (ACME FREIGHT), Order Number (30185), and Configuration (Trailers Designed to Tow). Below this is the 'Tests to Run' section with checkboxes for Electrical, Air Leak, 121 Timing, and Differential. A 'Start' button is at the bottom right of this section. On the right, the 'CONTROLLER STATUS' section displays various sensor readings and system information. A blue arrow points to the 'Controller' dropdown menu in the top navigation bar, with the text 'Click on “Controller”' next to it.

**Trailer Information**

VIN Number (Required) 1FACP42D30F141464

Operator Sean Smith

Customer ACME FREIGHT

Order Number 30185

Configuration Trailers Designed to Tow

**Tests to Run**

☒ Electrical ☒ Air Leak

☒ 121 Timing ☒ Differential

Start

**CONTROLLER STATUS**

SERIAL NUMBER	
FIRMWARE VERSION	1.0.3
INPUT/SUPPLY SENSOR STATUS	Good Offset: 501mV Pressure: 100.0PSI
EMERGENCY SENSOR STATUS	Good Offset: 501mV Pressure: 100.8PSI
SERVICE SENSOR STATUS	Good Offset: 501mV Pressure: 0.0PSI
DIFFERENTIAL SENSOR STATUS	Good Offset: 501mV Pressure: 0.0PSI
SYSTEM CHANNEL	3
SYSTEM SIGNAL STRENGTH	-40 dBm
SYSTEM VOLTAGE	13.6 Volts
RELAY VOLTAGE	13.8 Volts

Set Controller Channel Number

Set Channel 3

Done

### “Controller” Dropdown options: (Click on “Controller” to see this Controller status view.)

**Serial Number:** The Serial Number of this Certifier 1200.

**Firmware Version:** Level of the Firmware on the Controller Board.

**Input/Supply Sensor Status:** Sensor status and air pressure before any changes are made by the Manifold.

**Emergency Sensor Status:** Sensor status and air pressure available to the Emergency gladhand.

**Service Sensor Status:** Sensor status and air pressure available to the Service gladhand.

**Differential Sensor Status:** Sensor status and air pressure before any changes are made by the Manifold.

**System Channel:** The Channel the Hub communicates on.

**System Signal Strength:** The strength of communication between the 1200 Certifier and the Hub.

**System Voltage:** Voltage available at this location.

**Relay Voltage:** Voltage available at this location.

**Set Controller Channel Number:** User input to change the System channel the Hub will communicate on.

**NOTE:** The **Set Controller Channel Number** is the only item modifiable directly by the user in the ‘Controller Status’ section. All the others are only data points about the status of the Controller.

## SETUP TESTING: “Hub” dropdown

The screenshot shows the Lite-Check CERTIFIER 1200 interface. At the top, there is a navigation bar with 'Controller', 'Hub', 'Help', and 'Settings'. The 'Hub' dropdown is highlighted, and an arrow points to it with the text 'Click on “Hub” to see the “Hub Status”.' Below the navigation bar, the 'Trailer Information' section contains fields for VIN Number (1FACP42D30F141464), Operator (Sean Smith), Customer (ACME FREIGHT), Order Number (30185), and Configuration (Trailers Designed to Tow). Below this is the 'Tests to Run' section with checkboxes for Electrical, Air Leak, 121 Timing, and Differential, and a 'Start' button. At the bottom, there are three status indicators: INPUT (101.6PSI), EMERGENCY (100.8PSI), and SERVICE (0.0PSI), along with a POWER SUPPLY (13.6V) indicator. On the right side, the 'Hub Status' panel displays various status values: HUB CONNECTED (True), HUB SERIAL NUMBER (-), HUB FIRMWARE VERSION (0.1.34), HUB VOLTAGE (12.2 Volts), HUB CHANNEL (3), HUB SIGNAL STRENGTH (-40 dBm), and HUB STATUS SENSOR1 through HUB STATUS SENSOR8 (all Good). A 'Done' button is located at the bottom right of the interface.

### Hub status:

**NOTE:** None of these are modifiable directly by the user. They are only status values reported by the Hub.

**HUB Connected:** Indicates if the Hub is communicating with the 1200 Certifier. True or False.

**HUB Serial Number:** Serial Number of the Hub.

**HUB Firmware Version:** Firmware version installed in the Hub.

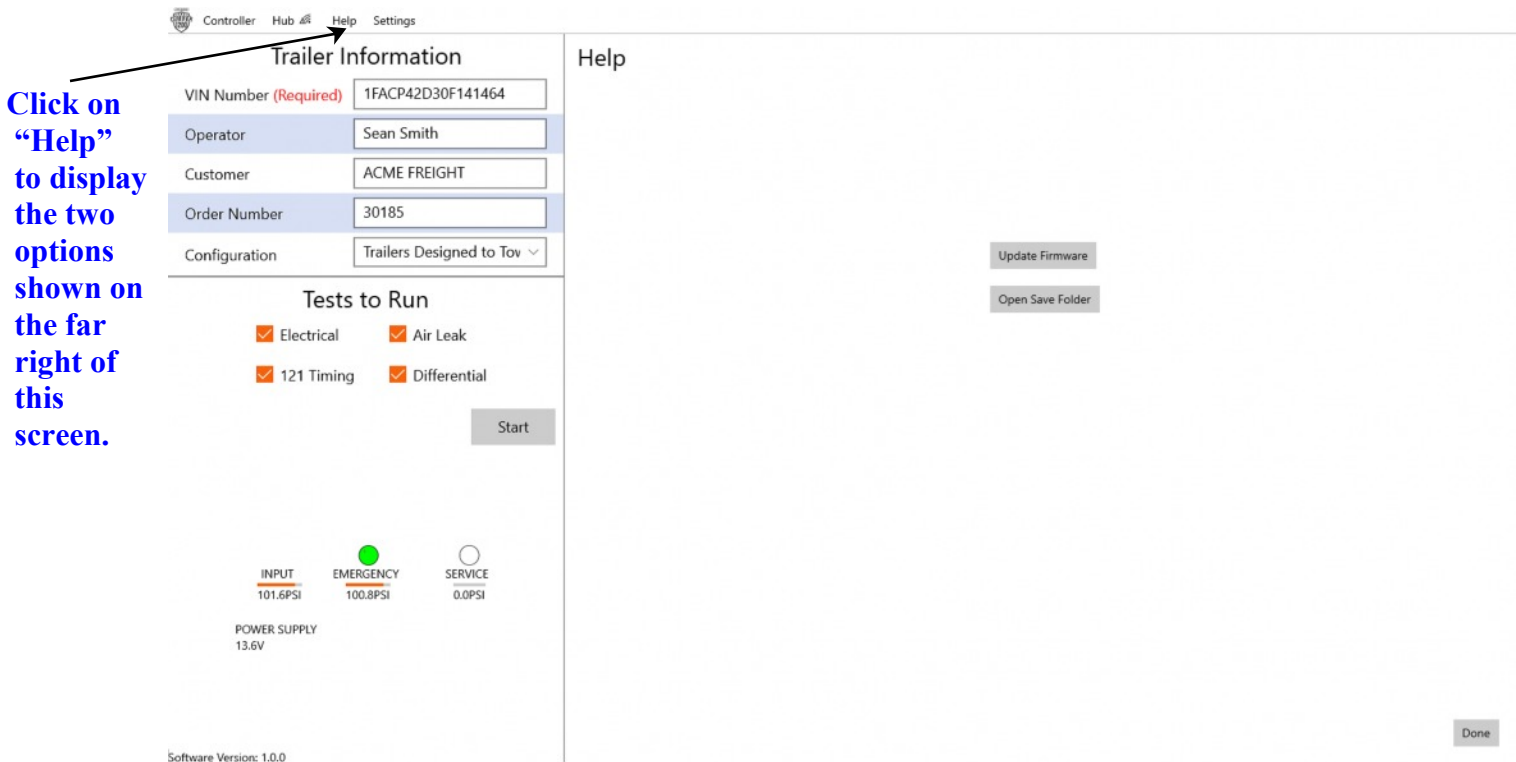
**HUB Voltage:** Voltage of the battery in the Hub.

**HUB Channel:** The Channel the Hub is using at this time to communicate with the 1200 Certifier.

**HUB Signal Strength:** The strength of communication between the 1200 Certifier and the Hub.

**HUB Status Sensor1 through Sensor8:** Status of the 8 Sensor ports on the Hub.

## SETUP TESTING: “Help” dropdown



### HELP Dropdown:

Clicking on “Help” in the Header Bar will populate the right portion of this GUI showing two Help choices:

**Update Firmware:** To be used only when instructed to do so. Please verify with a Lite-Check representative.

— As part of a successful update process, you’ll need to have the file to be used for the update in a known location on your PC. When the 1200 Certifier App shows you a screen where you are to “Pick file”, the 1200 is letting you specify which file to use and where it is located. At this time, you should select the update file to be used.

Click on **Update Firmware** and you’ll be shown an option to “**Send enable bootloader command**” or not.

By default, this option already has a checkmark. **DO NOT UNCHECK THIS BOX.**

— **IMPORTANT NOTE:** If the “**Update Firmware**” operation fails, the 1200 Certifier will display an error message, but just for a few seconds. Then the Certifier application will boot automatically and return to this screen, so you can try the update again. But this time this box will **NOT** be checked. This is expected because when you try the update a 2<sup>nd</sup> time, you will **NOT** want to enable the bootloader command again. This is because it was already enabled when you made the first attempt to update the firmware. Then, if you try the update again and it fails a 3<sup>rd</sup> time, the Certifier App will boot again to this screen, and the box will still be unchecked. Because a 3<sup>rd</sup> failure would be extremely rare and unexpected, if that does happen, call Lite-Check Technical support at 1-800-343-8579 for assistance.

— **If the Update Firmware operation is successful**, the 1200 Certifier will display a message indicating success, but again, just for a few seconds. Then it will automatically boot to the main 1200 Certifier startup screen. At this point, the Certifier App is ready for normal use. (Please see page 24 for a view of the main 1200 Certifier startup screen.)

**Open Save Folder:** Allows the user to view or print test data from tests which have been performed and saved.

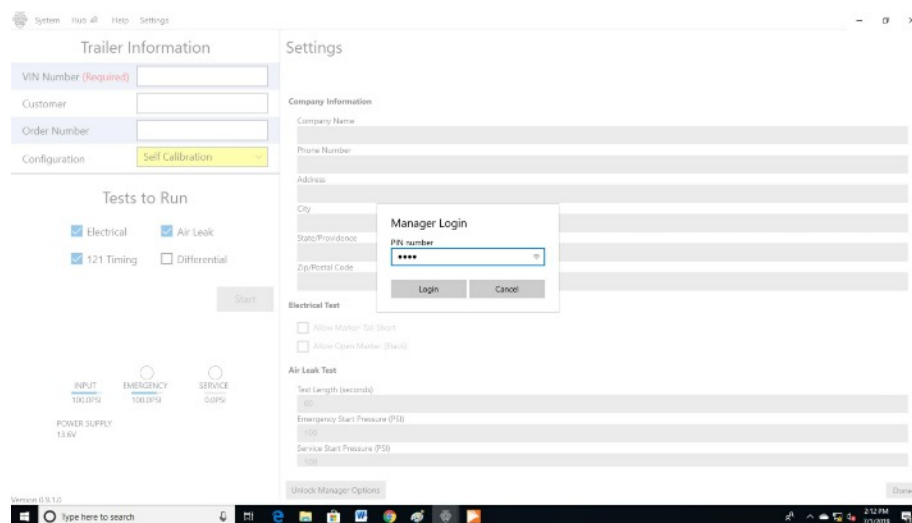
## SETUP TESTING: “Settings” dropdown (Page 1 of 2)

**Click on “Settings” to display the data in the right side of this screenshot**

**Click on “Unlock Manager Options” to edit the dithered selections on the right of this screenshot**

**Use the scroll Bar to see more Setting lower down on this page.**

Clicking “Unlock Manager Options” allows you to type in the PIN and select ‘Login’ (below).



### Settings dropdown (Page 1 of 2):

**Company Information section:** After Logging in using the Manager PIN, all the fields on the ‘Settings’ page may be edited, including **Company Information** (such as Company name, address, etc). After filling them in, you may scroll down to the bottom of this page and select “Done” to ‘lock’ them in, or you may fill in more fields on this page and select “Done” when you are ready. You may return to this page anytime, unlock, and modify fields as needed.

**Air Leak Test section:** First, use the Scroll Bar on the far right edge to be able to see all 6 items in the Air Leak Test section. Detail for these items are on the next page.

## SETUP TESTING: “Settings” dropdown (Pg 2 of 2)

Controller Hub Help Settings

**Trailer Information**

VIN Number (Required) 1FACP42D30F141464

Operator Sean Smith

Customer ACME FREIGHT

Order Number 30185

Configuration Trailers Designed to Tow

**Tests to Run**

☒ Electrical ☒ Air Leak

☒ 121 Timing ☒ Differential

Start

**Settings**

Emergency Start Pressure (PSI) 100

Service Start Pressure (PSI) 100

Emergency Air Loss Threshold (PSI) 3

Service Air Loss Threshold (PSI) 2

**121 Timing Test**

Input Pressure Max Threshold (PSI to start must be between 100 and this value) 105

Emergency Pressure Timeout (Minutes) 10

Service Release Build Pressure Timeout (Seconds) 15

**System Settings**

PDF Save Location Pick Location C:\Users\...\Desktop\New folder

**Change Manager PIN**

Change

Unlock Manager Options

Done

Software Version: 1.0.0

INPUT 101.6PSI EMERGENCY 100.8PSI SERVICE 0.0PSI

POWER SUPPLY 13.6V

### General Settings:

Emergency Start Pressure (PSI)

Service Start Pressure (PSI)

Emergency Air Loss Threshold (PSI)

Service Air Loss Threshold (PSI)

You must select “Unlock Manager Options” to edit any values on the ‘Settings’ page.

**Air Leak Test:** Set your preferred values for testing. (Values originally set to logical defaults by Lite-Check.)

**Test Length (seconds)** Default = 60. Allowable range = 10 - 600 seconds.

**Emergency Start Pressure (PSI)** Default = 100. Allowable range = 65 - 105 PSI.

**Service Start Pressure (PSI)** Default = 100. Allowable range = 65 - 105 PSI.

**Emergency Air Loss Threshold: (Default =2).** Range: 1 - 5 PSI. PSI loss at which the test is marked “FAIL”.

**Service Air Loss Threshold: (Default =3).** Range: 1 - 5 PSI. PSI loss at which the test is marked “FAIL”.

**121 Timing Test:** This test will perform the brake response time and display the results. Settings are adjustable by using the blue slider on each of the three available items:

**Input Pressure Max Threshold** Default = 102 PSI. (Allowed range: 101--105 PSI.)

**Emergency Pressure Timeout (Minutes)** Default = 5 minutes. (Allowed range: 1—10 minutes.)

**Service Release Build Pressure Timeout (Seconds)** Default = 10 seconds. (Allowed range: 5—15 seconds.)

**System Settings:** **PDF Save Location** This setting will be a location for the test results to be stored. Once selected, the location of the folder will be typed out next to the “Pick Location” selection box.



## Running tests (page 1 of 3) Enter Info, select tests, start tests.

Controller Hub Help Settings

### Trailer Information

VIN Number (Required) 2169YU5HJ2NN29034

Operator Sean Smith

Customer ACME FREIGHT

Order Number 7131

Configuration Trailers Designed to Tow

### Tests to Run

☒ Electrical ☒ Air Leak

☒ 121 Timing ☒ Differential

Start

INPUT 101.4PSI EMERGENCY 101.4PSI SERVICE 101.4PSI

POWER SUPPLY 13.6V

VOLTAGE: 13.8V CURRENT: 0.32A

Circuit: Left

7-Way Wire: Yellow, 3

Condition: Pass

EMER AIRLEAK TEST SERVICE

BRAKE PARKER ROK

LEFT TAIL RIGHT

ABS SELECT

Software Version: 1.0.0

**Above, all tests have been selected and have started. Electrical tests will run first.**

### Simple steps to have your 1200 run all the automatic tests, one right after the other:

Connect the sensors and cables from the Hub to the differential kit and the external 50ci air tank.

Verify the Hub is powered up and communicating properly by clicking on "Hub" in the header bar to examine status.

"Trailer Information" should be filled in as desired (VIN number is required). Pick the appropriate "Configuration" from the dropdown list available in the "Configuration" box. Select all "Tests to Run" by clicking on each box next to the Test Name. Then click on "Start" to start running all the selected tests.

"Test Status" may be watched on the right side of the GUI that is displayed. In the example above, the Left Taillight test (just one of the several Electrical tests) is currently running. Many views, like this one, will only exist for a second, flashing by on the screen. Note that the Voltage and Current of the circuit under test are being displayed in real time. Some tests will be displaying graphs which will be updated in real time as the test progresses.

## Running Tests (page 2 of 3) Electrical Test in Progress

Controller Hub Help Settings

Trailer Information

VIN Number (Required) 2169YU5HJ2NN29034

Operator Sean Smith

Customer ACME FREIGHT

Order Number 7131

Configuration Trailers Designed to Tov

Tests to Run

☒ Electrical
 ☒ Air Leak
 ☒ 121 Timing
 ☒ Differential

Cancel All

INPUT 101.4PSI

EMERGENCY 101.4PSI

SERVICE 0.0PSI

POWER SUPPLY 13.5V

Software Version: 1.0.0

Electrical(1) 00:00:07

Air Leak 00:00:00

121 Timing 00:00:00

Differential 00:00:00

Summary 00:00:07

Electrical Test

Duration of the electrical test so far is 7 seconds.

Running Load Test...

	Voltage	Current	Status
Load Test:	13.5V	0.32A	
AUX	13.8V	0.85A	Pass
Brake	13.8V	1.20A	Pass
Marker	13.8V	0.64A	Pass
Tail	13.8V	0.32A	Pass
Left	13.8V	0.32A	Pass
Right	13.8V	0.32A	Pass

Stop

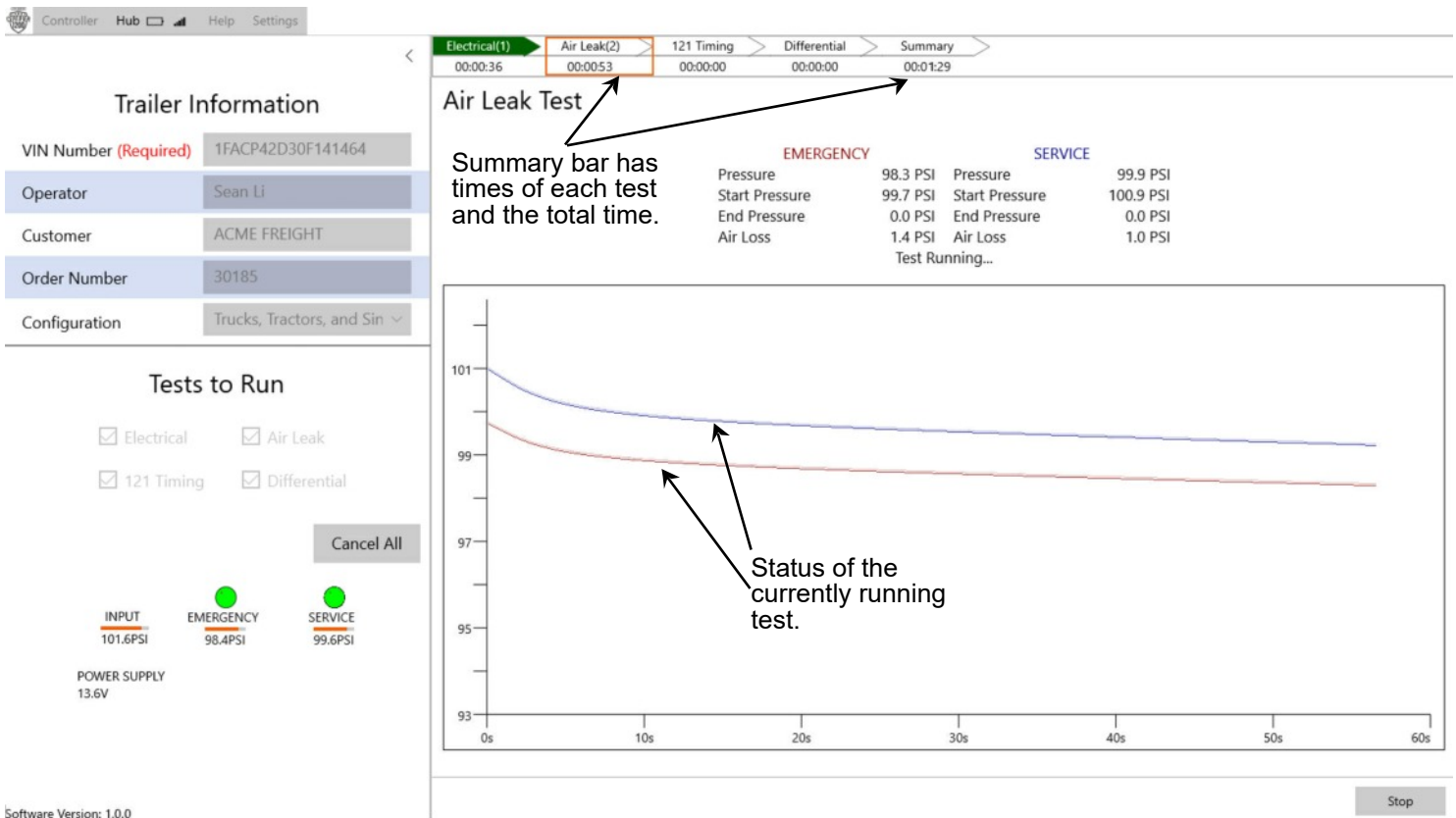
**The electrical test of all circuits is in progress.**

**The duration in time the test has run so far is 7 seconds.**

Voltage and current of all circuits are displayed.

The Air Leak test will start after all the electrical tests pass. If any electrical circuit test fails, all testing will stop. Then the user will be given a chance to locate and correct the problem. After fixing the issue, the user may click on “Retry” to retry the test. The “Retry” option will only show up if there is a failure.

## Automatically Running Tests (page 3 of 3) Electrical done, Air Leak Started



**Electrical tests have completed, and the Air Leak test is in progress.**

**Electrical tests have completed and passed:**

“Electrical” indicator (top-center of screen) is **Green**. It’s total test time (00:36) is displayed.

**Air Leak test has started and is running:**

- Elapsed time so far (00:53) in the top-center **Air Leak** indicator. (Because it is not **Green** or **Red** and you can watch the elapsed time of the test is incrementing, it means the test is still running.)
- Elapsed time is also available by looking at the “progress line” in the large graph, or in the “Summary” box at the top of the display.
- While the test is running, in the large “Test Running...” graph, if you hover over the chart with your mouse, a faint vertical line will appear on the chart. You may move the vertical line to the left or right to see the **Emergency Air** and **Service Air** pressures at any specific time in the test. These pressures will be shown right below the graph.

# SENSOR SETUP FOR 121 TIMING TEST AND DIFFERENTIAL TEST

The screenshot displays the 'Setup Hub Sensors' popup window. The background interface includes a top navigation bar with tabs: Electrical(1), Air Leak(2), 121 Timing(1) (highlighted), Differential, and Summary. Below this, the 'Trailer Information' section contains fields for VIN Number (Required), Operator, Customer, Order Number, and Configuration. The 'Tests to Run' section has checkboxes for Electrical, Air Leak, 121 Timing, and Differential. At the bottom, there are three status indicators: INPUT (101.4PSI), EMERGENCY (0.0PSI), and SERVICE (0.0PSI), along with a POWER SUPPLY (0.0V) indicator.

The 'Setup Hub Sensors' popup window has a title bar and a table with the following columns: Port, Name, Side, and Axle. The table lists 8 sensors, each with a unique Port number and a default configuration. The 'Side' column uses a dropdown menu, and the 'Axle' column uses a numeric input field with up/down arrows.

Port	Name	Side	Axle
1	Sensor 1	Unused	1
2	Sensor 2	Curbside	1
3	Sensor 3	RoadSide	1
4	Sensor 4	Curbside	2
5	Sensor 5	RoadSide	2
6	Sensor 6	Curbside	3
7	Sensor 7	RoadSide	3
8	Sensor 8	Rear	1

At the bottom of the popup is an orange 'Done' button.

**After the Air Leak test passes, the “Setup Hub Sensors” popup is shown.**

**Locate the Sensor in the list which is attached to the back of the trailer or dolly under test.**  
 Change the selection for that sensor to “Rear”. Then click “Done”.

## 121 TIMING TEST PASSED

**Trailer Information**

VIN Number (Required) 1FACP42D30F141464

Operator Sean Li

Customer ACME FREIGHT

Order Number 30185

Configuration Trucks, Tractors, and Sin

**Tests to Run**

☒ Electrical ☒ Air Leak

☒ 121 Timing ☒ Differential

Cancel All

INPUT 100.0PSI EMERGENCY 0.0PSI SERVICE 0.0PSI

POWER SUPPLY 13.6V

**121 Timing**

Test Passed

Service Charge Time:357 ms

Service Release Time:707 ms

Emergency Release Pressure:0.0 PSI

SensorNumber	Air Type	Sensor Name	Side	Axle	Set Time	Max Set Pressure	Release Time	Max Release Pressure	Park Break	Max Pressure During Release	Current Pressure
1	Skipped	Sensor 1	Unused	1	0 ms	101.2 PSI	701 ms	100.0 PSI	0.0 PSI	106.2 PSI	0.0 PSI
2	Service	Sensor 2	Curbside	1	352 ms	101.2 PSI	702 ms	100.0 PSI			
3	Service	Sensor 3	Curbside	1	353 ms	101.2 PSI	703 ms	100.0 PSI			
4	Service	Sensor 4	Curbside	2	354 ms	101.2 PSI	703 ms	100.0 PSI			
5	Service	Sensor 5	Curbside	2	355 ms	101.2 PSI	704 ms	100.0 PSI			
6	Service	Sensor 6	Curbside	3	356 ms	101.2 PSI	705 ms	100.0 PSI			
7	Emergency	Sensor 7	Curbside	3					0.0 PSI	106.2 PSI	0.0 PSI
8	Service	Sensor 8	Rear	1	357 ms	101.2 PSI	707 ms	100.0 PSI			

Green = Passed

Software Version: 1.0.1.2

Retry

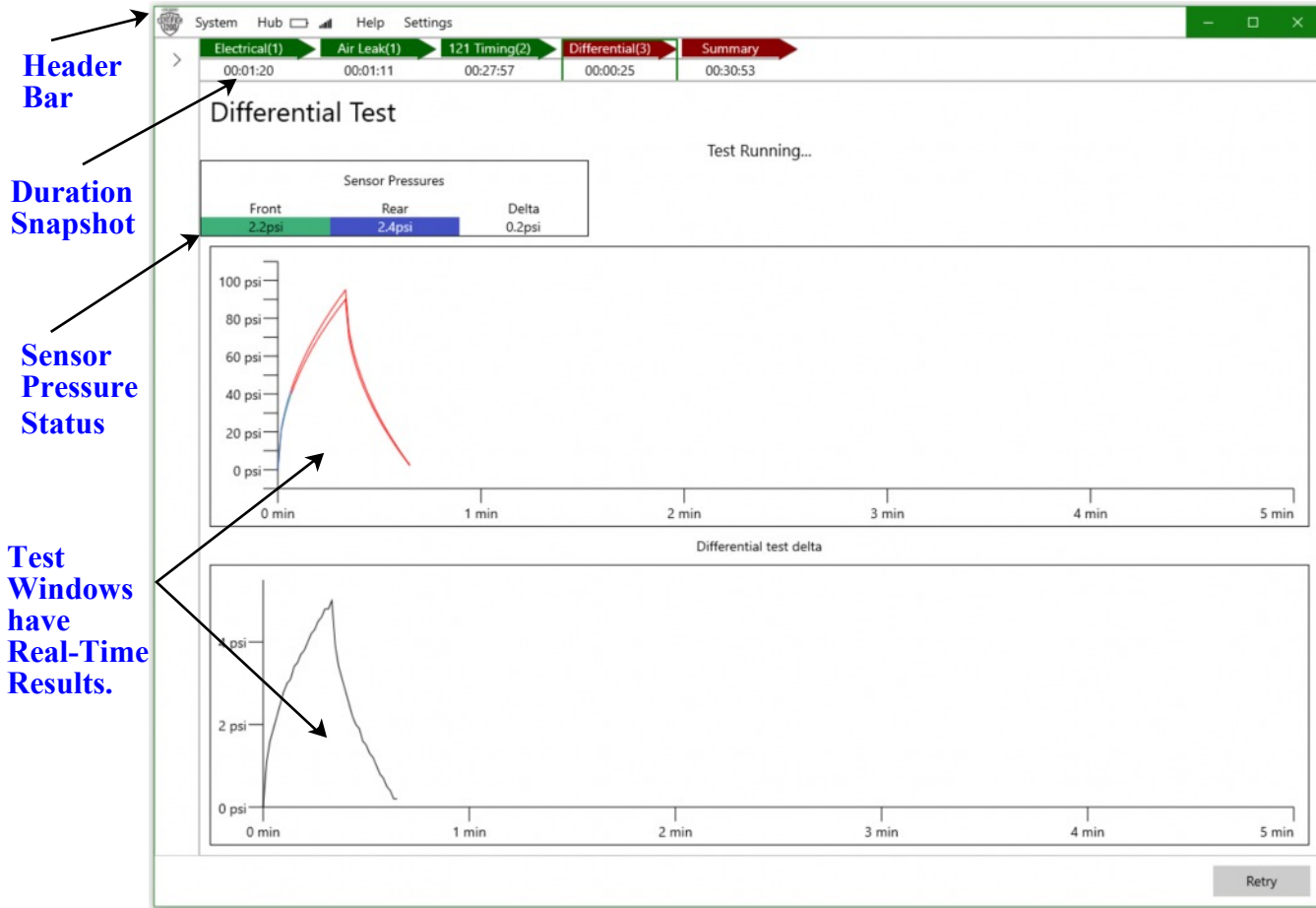
**This snapshot shows the 121 Timing Test has passed.**

**Values of all attached and selected sensors are displayed.**

Duration of the 121 Timing test is displayed.

“Service Charge” and “Service Release” times are displayed.

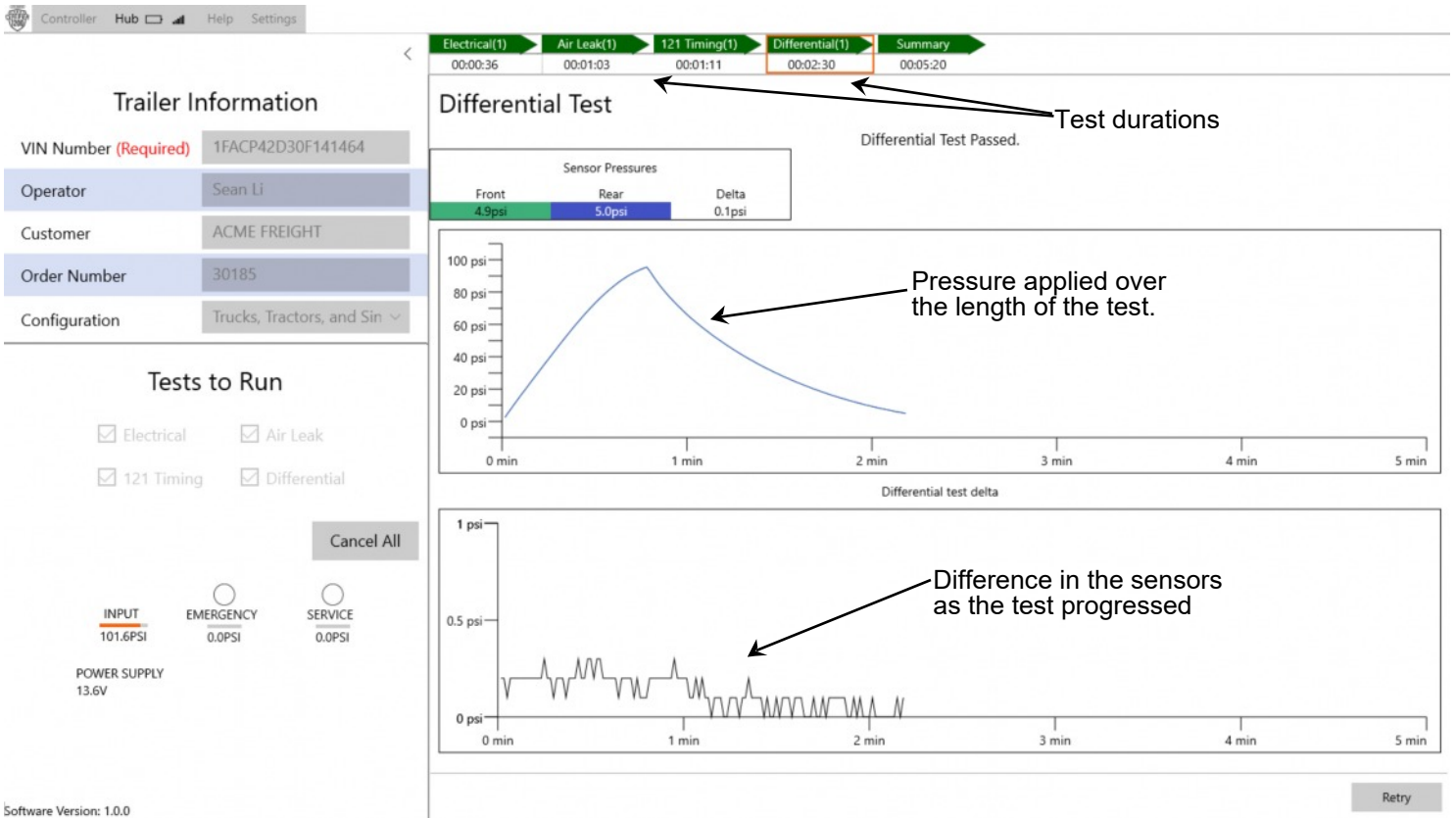
## Differential Test While Running



### Differential Pressure Test:

- ▶ **Header bar** - Additional options available in the drop downs.
- ▶ **Duration snapshot values** - Times of each previous test and the current Differential test are displayed.
- ▶ **Sensor Pressure Status** - Front and Rear sensor values and the Delta between them are displayed.
- ▶ **Test Window** - Shows Real-Time results

## PASSED DIFFERENTIAL TEST



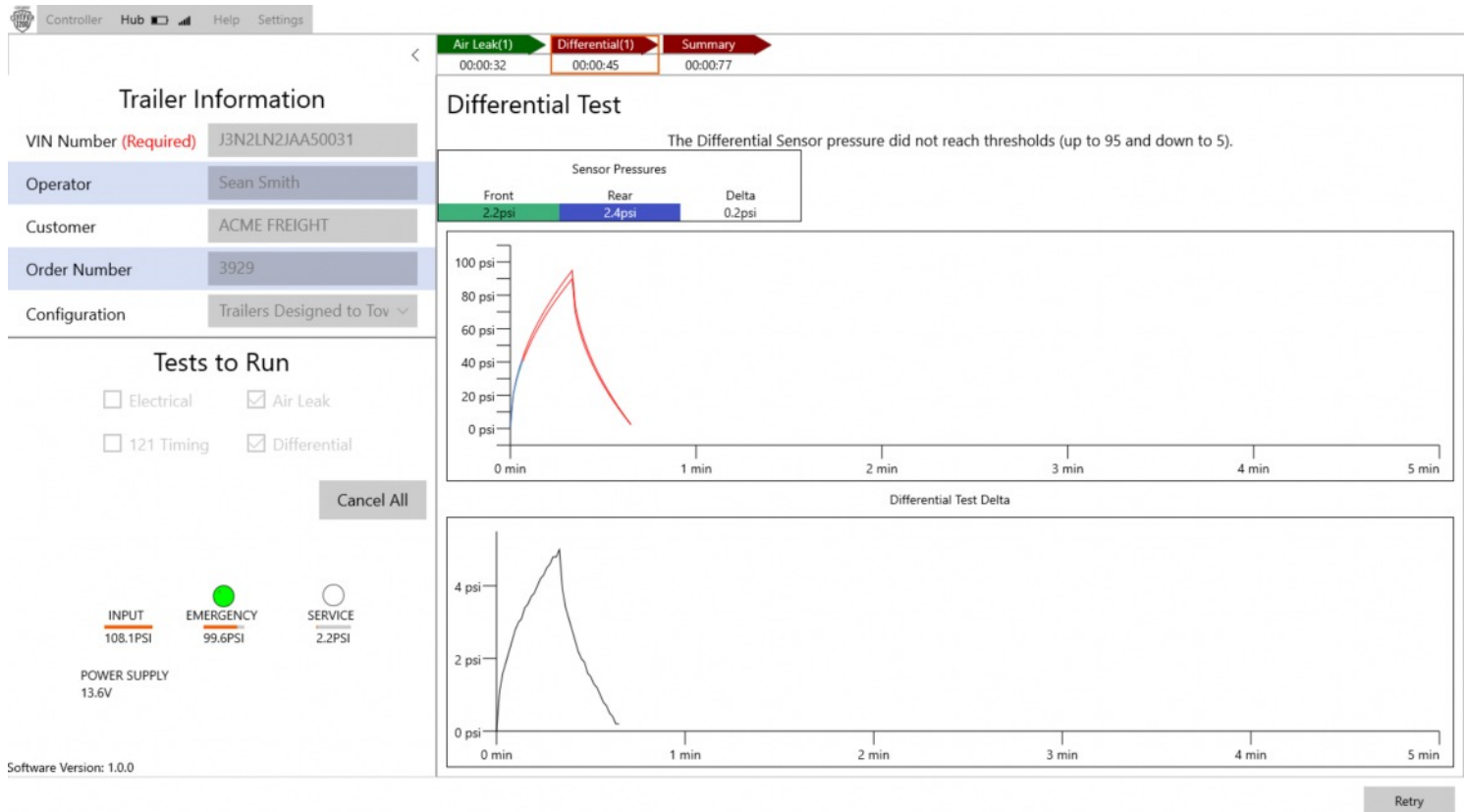
**This snapshot shows the Differential Test has passed.**

**Air value supplied and the difference between the sensors in use are shown on 2 charts.**

Duration of the previous tests, the Differential Test and the total of all tests are displayed.



## RESULTS of FAILED DIFFERENTIAL TEST



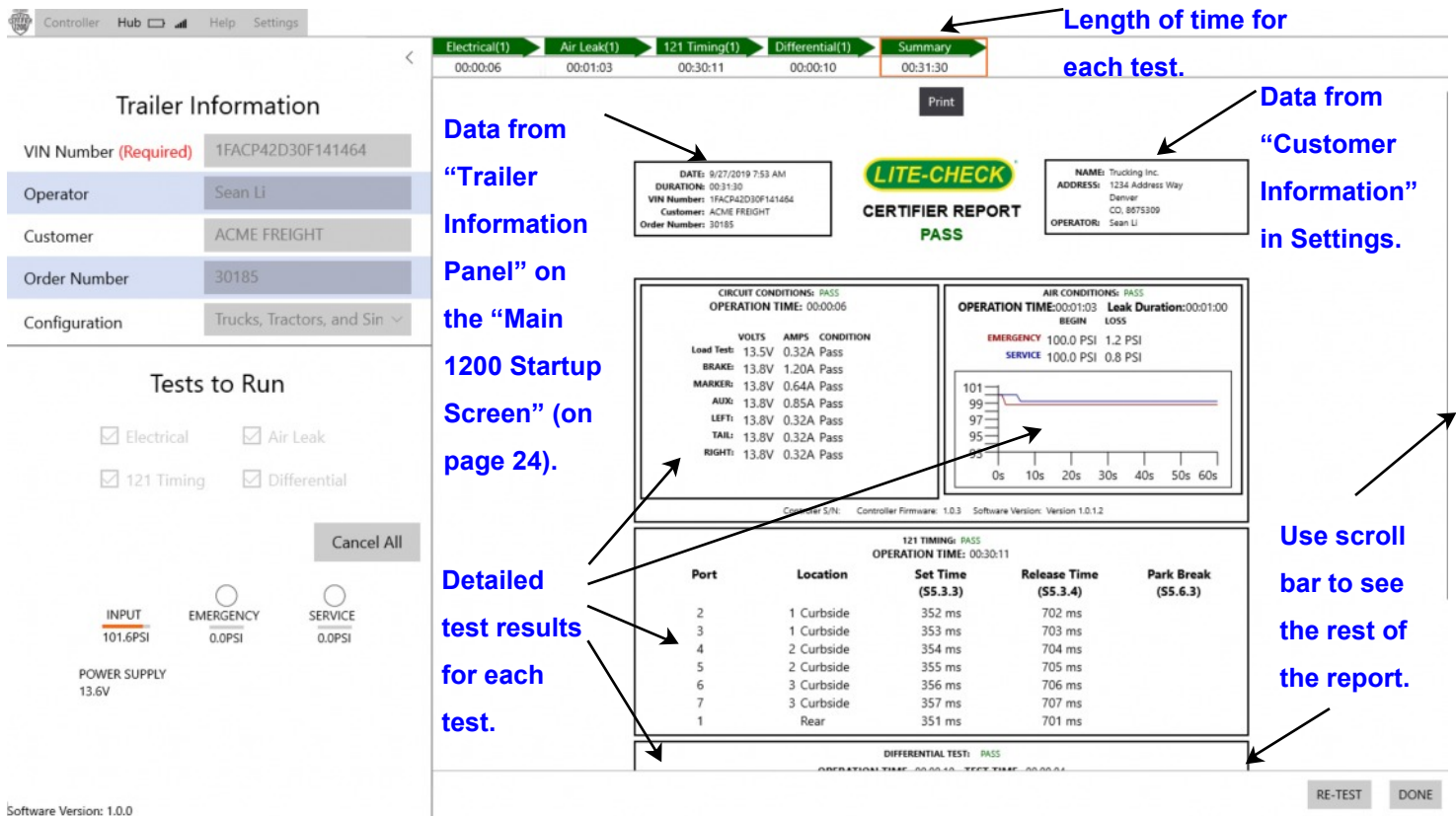
The Air Leak test has passed, as indicated by the **Green** color in the Status bar at the top of the page.

The Differential Test has failed and is marked **Red** in the Status bar at the top of the page.

Also, a reason the for the Differential test failing is posted near the top of the Results portion of the display:

**“The Differential Sensor pressure did not reach thresholds (up to 95 and down to 5).”**

## This “Summary Page” is shown after the test(s) finish.



## “Summary Page = “CERTIFIER REPORT”

**Test Durations:** Top of the page. Shows elapsed times of each test, and the cumulative total time of all tests.

**Trailer Information data:** Taken from the user inputs made earlier on the Main 1200 Startup Screen (page 24).

**Customer Information data:** Specific customer data entered earlier on the “Settings” dropdown.

**Detailed Test Results:** All tests run have been summarized: Electrical, Air Leak, 121 Timing and Differential.

## APPENDIX

### 7-Way Wiring System, Pin Designations

Vehicle-to-Vehicle Cable (ATA/SAE J-560b)

Pin	Circuit	Tester Key	Color
1	Ground		White
2	Marker	MARKER	Black
3	L. Turn	LEFT	Yellow
4	Brake	BRAKE	Red
5	R. Turn	RIGHT	Green
6	Tail Lt.	TAIL	Brown
7	ABS/Aux.	AUX	Blue

## APPENDIX (continued)

### NORMAL POWER-UP PROCEDURE

#### 1. Normal Power-up Procedure:

- ▶ If you will be adding a sensor to the test configuration, be sure the tester and Hub are turned off prior to doing so.
- ▶ If you will be testing a vehicle designed to tow other vehicles, if it's not already attached, you will need to attach a sensor to the quick disconnect on the Differential Kit, and attach the other end of this cable to the "Sensor Port" on the right side of the tester. **NOTE: If you will never test a vehicle used to tow another vehicle, skip this bullet entirely.**
- ▶ If not already powered up, turn the Hub on by using its red button.
- ▶ Supply 110 VAC to the Tester and turn on the Tester using the switch on the left side.
- ▶ Connect the air source. Minimum pressure for the air source is 110 psi at 10 SCFM.
- ▶ Wait about 30 seconds to allow the air tank inside the Tester to pressurize and stabilize.
- ▶ At this time, the "Main 1200 Startup Screen" should be displayed. (A screenshot is shown below.) Near the bottom of the left side of this view, there is an "Input" air pressure reading.
- ▶ Adjust the regulator on the outside of the left side of the 1200 Tester so the input pressure displayed on this screen is between 100 and 105 psi. We recommend 102 psi.
- ▶ The CERTIFIER 1200 Tester is now ready for use.

