Easy-Touch™
Low Voltage Performance Verification Manual
Version 2018.2.0

CIRRIS®
SYSTEMS

Easy-Touch™
Low Voltage Performance Verification Manual
Version 2018.2.0
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Cirris Systems
401 North 5600 West
Salt Lake City, UT 84116
USA

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Introduction

The Easy-Touch Performance Verification Kit allows you to verify the calibration and proper operation of the Easy-Touch tester. Each performance verification kit has a life cycle of two years from the time of purchase. At the end of two years, you can recalibrate or replace the kit. The components for this performance verification kit are tested with instruments traceable to the National Institute of Standards and Technology (NIST).

Easy-Touch Performance verification should be done annually and any time the tester is not operating properly. If a step in the performance verification procedure fails, send the tester back to Cirris for repair. No external adjustments can be made to fix the tester.

For information on setting up a quality system that meets national quality standards such as ANSI/NC SL Z540-1, and ISO 10012-1, see the appendix of this manual.

Setting Up

Performance Verification Certificate and Data Sheet

You will find the Easy-Touch Performance Verification Certificate and the Easy-Touch Verification Data Sheet at the end of this manual. These documents can be used to record verification data for your records. If you plan to use these documents, make photocopies to maintain master copies for future use.

Install Add-On Scanners

The examples in this manual use an Easy-Touch with no expansion boxes.

Install add-on scanners if you have any. For instructions, see your Easy-Touch Getting Started Guide.

Note: Before performing any of the tests in this manual, remove all adapters from the tester (including from the add-on boxes) except for the adapters needed for verification. Failing to remove unnecessary adapters could result in the wrong signature and cause a failure even when the tester is functioning correctly.

Plug in the Tester

Plug one end of the power cord into the tester. Plug the other end into a grounded outlet.

Parts List

Make sure you received the following parts:

❑ Zero Ohm Adapter

❑ Capacitance/Fourwire Adapter


❑ Resistor Leak Adapter

Creating a Category

In the Easy-Wire™ software, you can organize test programs into groups by assigning them to different categories. You can also create custom test program categories. The steps below illustrate how to create a category for your verification test files.
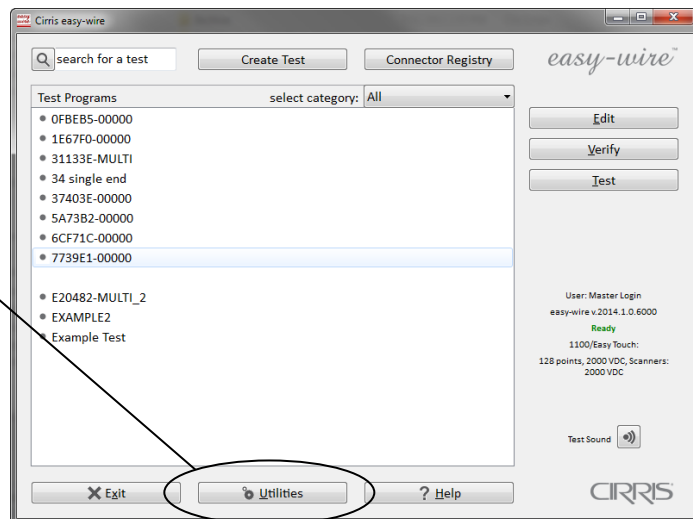
1. On the back of your Easy-Touch tester, push in the power button for a few seconds to power on the tester.
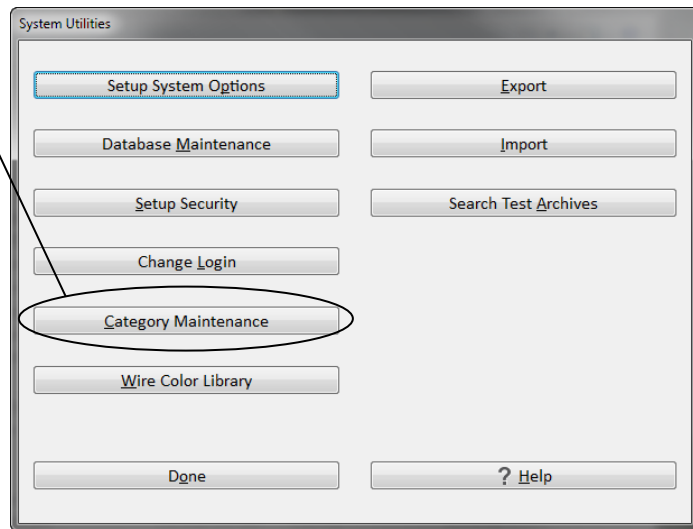

2. When the "User Login" window opens, log in to Easy-Wire.
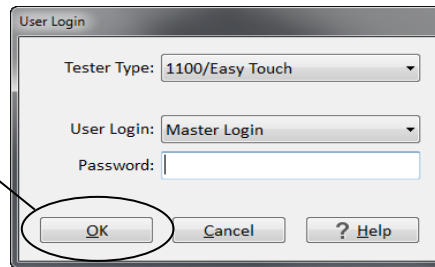
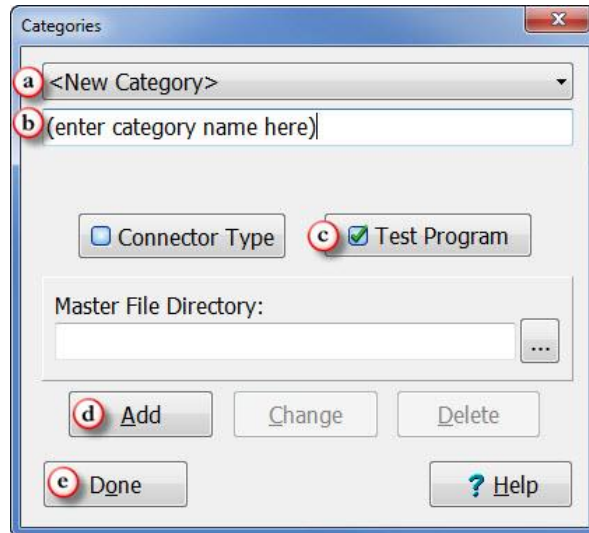3. In the Easy-Wire main menu, press **'Utilities'.**
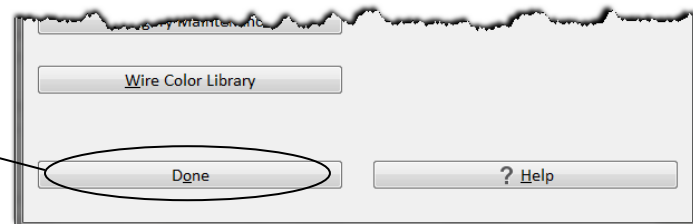
4. Press **'Category Maintenance'.**

5. In the "Categories" window, do the following:

   a. Select <New Category> in the first text box.

   b. Enter a name, such as Verification, for the category in the second text box.

   c. Check the "Test Program" box.

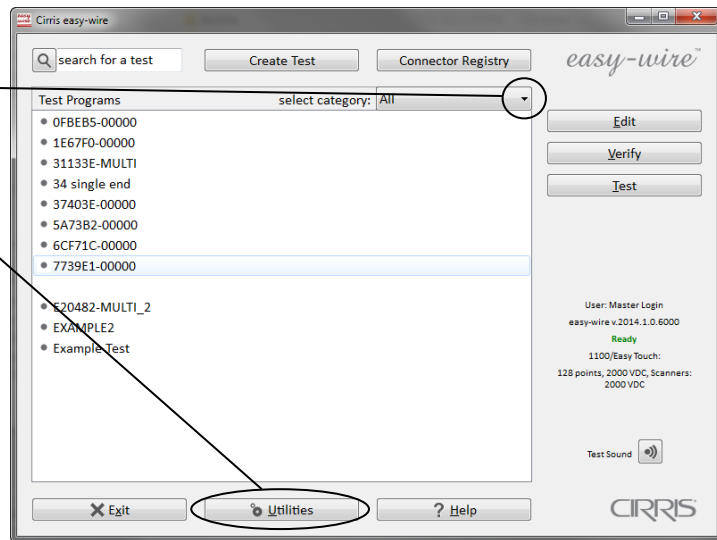   d. Press **'Add'.**

   e. Press **'Done'.**

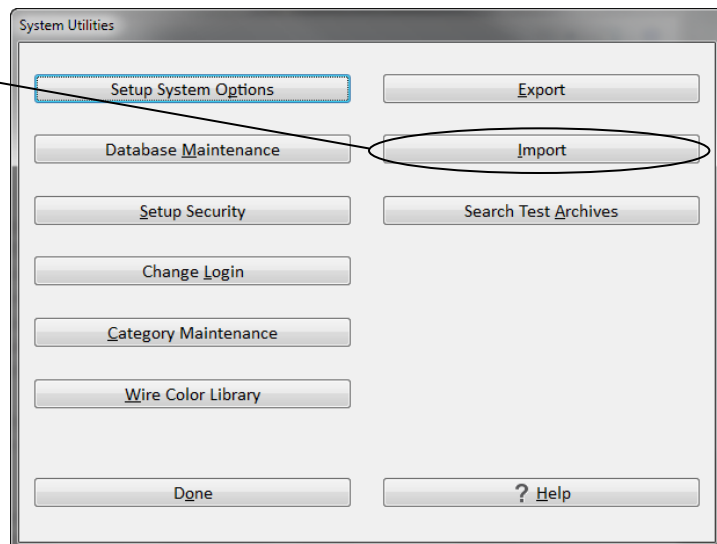6. Press '**Done'** to return to the main menu**.**

Importing the Test Files

1. In the Easy-Wire main menu, select the category you created in the previous section, and then press '**Utilities'.**

2. Press **'Import'.**

3. Press **'Import .WIR File'.**
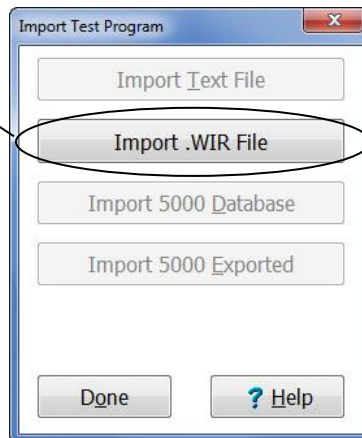
4. Navigate to the file path below:

   ```
   C:\Users\Public\
   Public Documents\
   Cirris\easywire
   \CalFiles\Easy-Touch
   ```


5. Select the following files as shown:

   - 1M Threshold.WIR
   - 4-Wire Measurement.WIR
   - 5M Threshold.WIR
   - 500k Threshold.WIR
   - Cap Measurement.WIR

   Then press **'Open'.**

6. The first test will display, do the following:

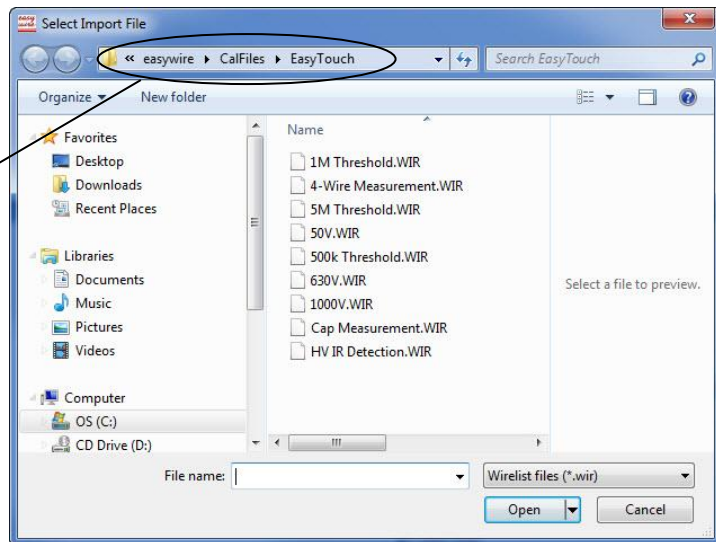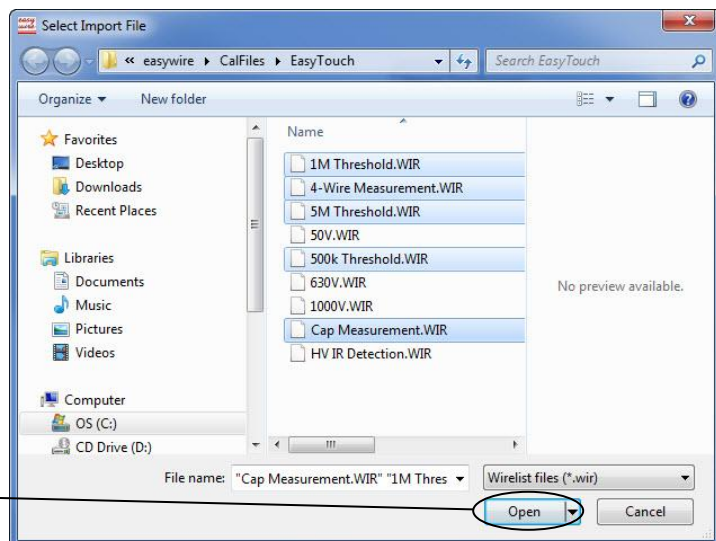   a. From the "Select Category" drop down menu, select the verification file category you created.

   b. Press **'Import'.**

   c. The next test will display. Continue to press **'Import'** until each file is imported.
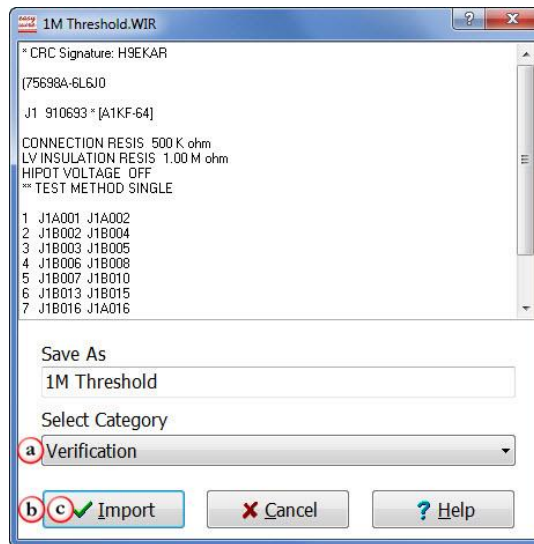
7. Press **'Done'.**
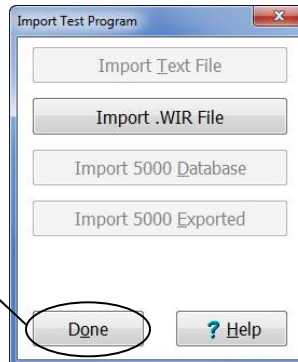
8. Press **'Done'** to return to the main menu.
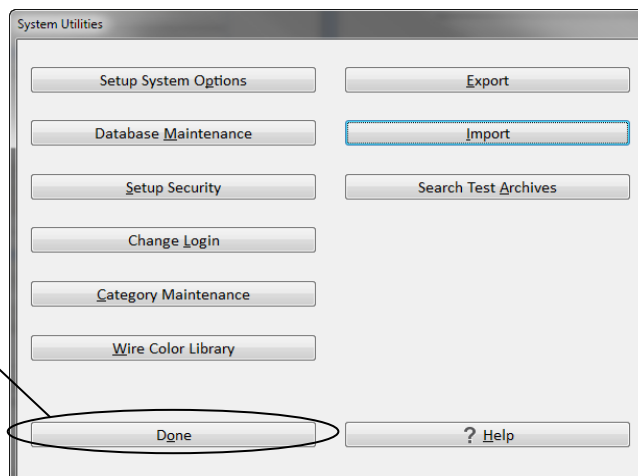
Note: To ensure that you always have the correct test files, re-import the files any time you update Easy-Wire or if you have not run the test in a while. Re-importing test files guarantees version control.

Signal Routing System Test

1. Install the Zero Ohm Adapter in the J1-J2 position as shown.
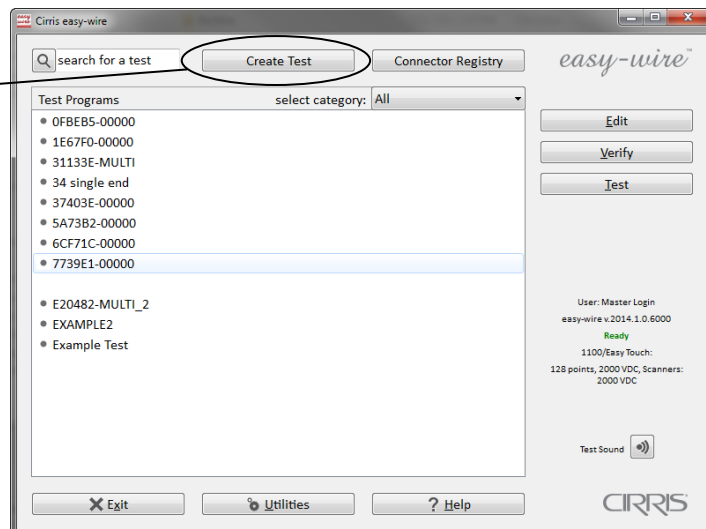
2. In the Easy-Wire main menu, press **'Create Test'.**

3. Press **'Learn Signature Test Program].**
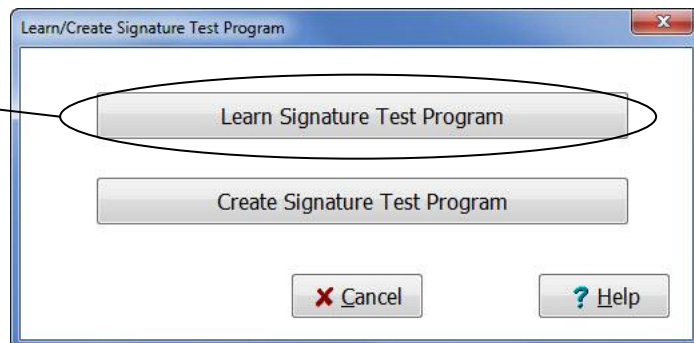
4. In the "Learn Attached Device" window, do the following:

    a. Set the "Connection Resistance" to 0.1 Ohm.
    b. Set the "LV Insulation Resistance" to 5.00 MOhm.
    c. Clear all component boxes.
    a. If your software contains the **"Use Defaults For Adapters With Shared Signatures"** box, make sure it is checked.
    d. Click **'Learn Attached Device'.**
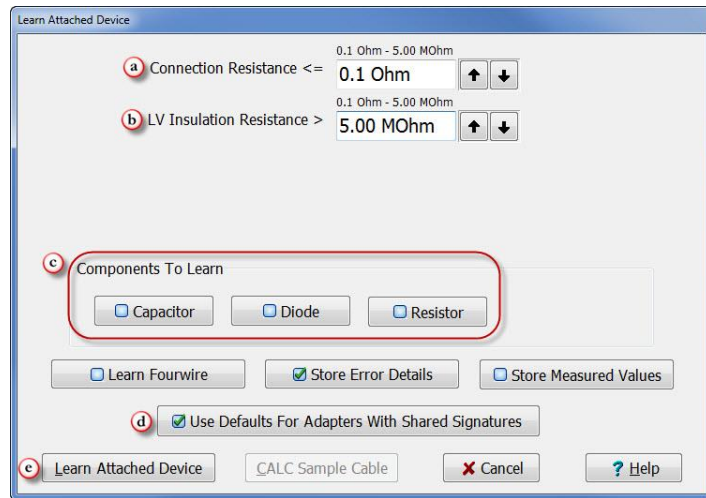
> **Note:** If your software does not have the "Use Defaults for Adapters With Shared Signatures" box, a window will appear prompting you to select an adapter. Select the first adapter in the list.

5. To view the signature, press **'Save As',** but <u>do not save the test!</u>

6. If the displayed signature matches the correct signature on the verification sheet under "Signal Routing System Test," check off Pass; otherwise check off Fail.
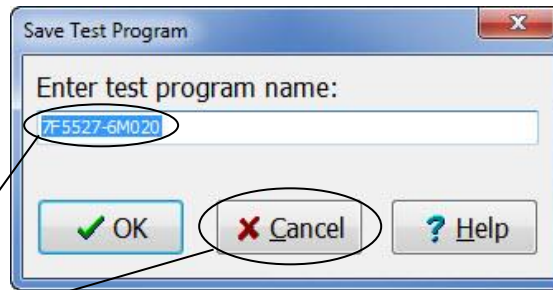
7. When you are finished viewing the signature, press **'Cancel'.**

8. In the Test Program Editor, press **'Done'.**
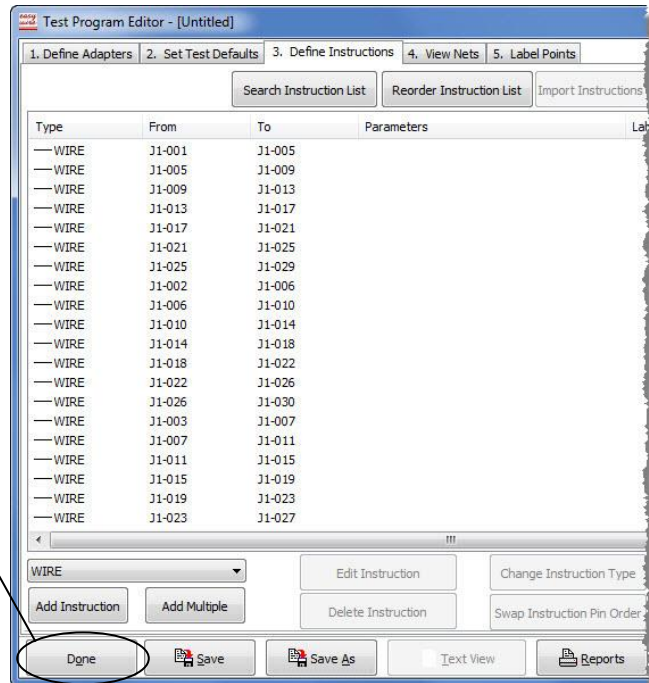
9. Select "Abandon changes and return to the main menu" and press **'OK'.**
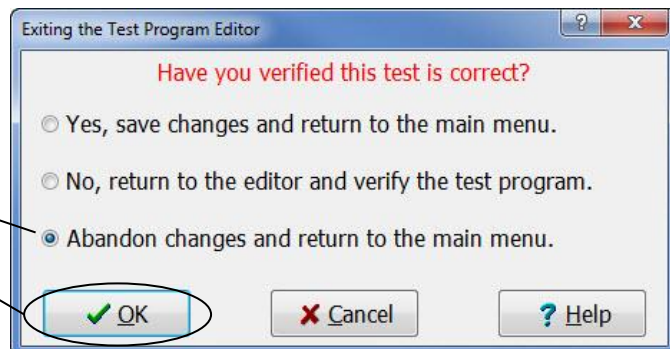
10. Install the Zero Ohm Adapter in the J3-J4 position, and repeat steps 2-9. In step 7, you can compare the signature with the correct signature in Table 1 on the next page.

11. If you installed add-on scanners, move the Zero Ohm Adapter to each subsequent "J" position and repeat steps 2-9 for each test.

Table 1 lists the correct signatures for the adapter "J" positions.

Zero Ohm "J" Position Signatures			
"J" Position	Correct Signature	"J" Position	Correct Signature
J1-J2	7F5527-6M020	J17-J18	8CE799-6M020
J3-J4	94C424-6M020	J19-J20	18483C-6M020
J5-J6	5CC1A1-6M020	J21-J22	3476BF-6M020
J7-J8	D3A34A-6M020	J23-J24	B5D5D5-6M020
J9-J10	51A15E-6M020	J25-J26	1E83A5-6M020
J11-J12	C50EFB-6M020	J27-J28	8A2C00-6M020
J13-J14	E93078-6M020	J29-J30	A61283-6M020
J15-J16	719A99-6M020	J31-J32	3BA461-6M020

Table 1

12. Remove the Zero Ohm Adapter.

## Resistance Measurement System Test

1. Install the Resistor Leak Adapter in the J1-J2 position as shown.


2. In the Easy-Wire main menu, press **'Create Test'**.
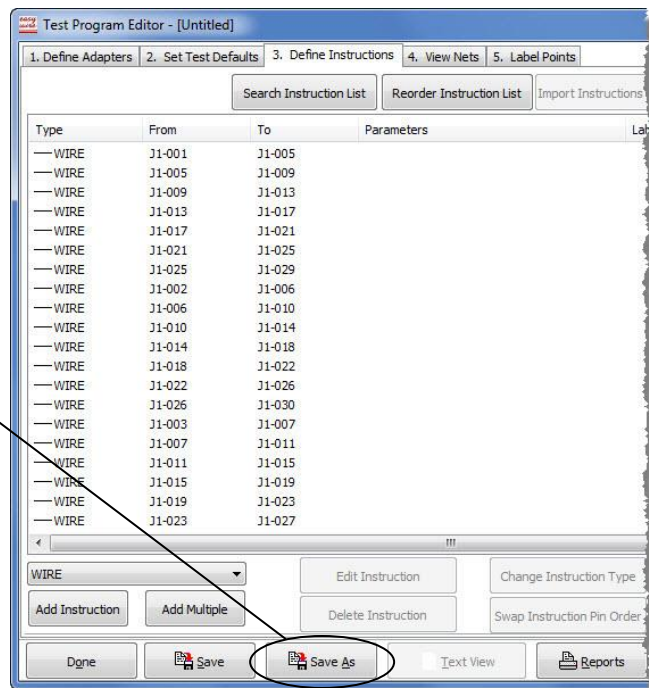

3. Press **'Learn Signature Test Program'**.

4. In the "Learn Attached Device" window, do the following:

   b. Set the "Connection Resistance" to 0.1 Ohm.
   c. Set the "LV Insulation Resistance" to 5.00 MOhm.
   d. Clear all component check boxes.
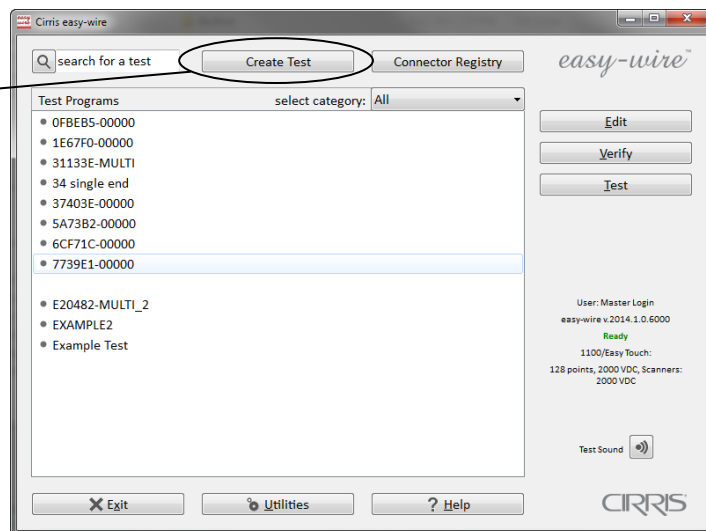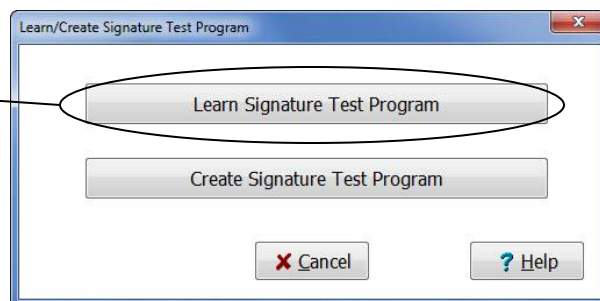   e. If your software contains the **"Use Defaults For Adapters With Shared Signatures"** box, make sure it is checked.
   f. Click **'Learn Attached Device'.**
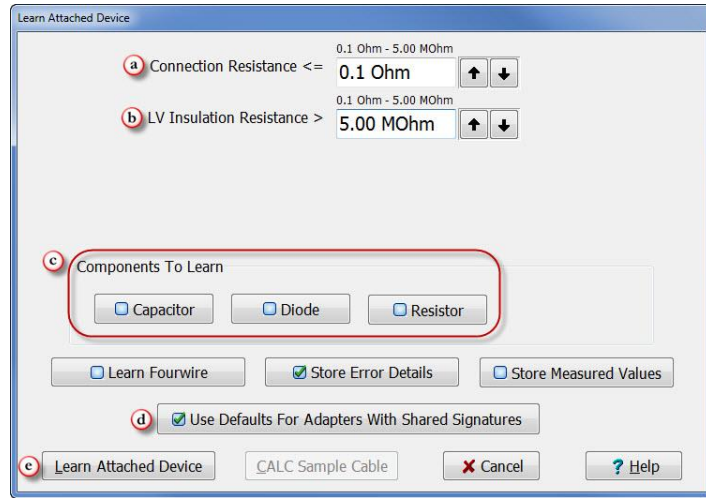
Note: If your software does not have the "Use Defaults for Adapters With Shared Signatures" box, a window will appear prompting you to select an adapter. Select the first adapter in the list.

5. Record each value displayed in the "Hardware Status Update" window on the verification data sheet under "Resistance Measurement System Test". If the value is between the minimum and maximum limits shown in Table 2, check off Pass, otherwise check off Fail.
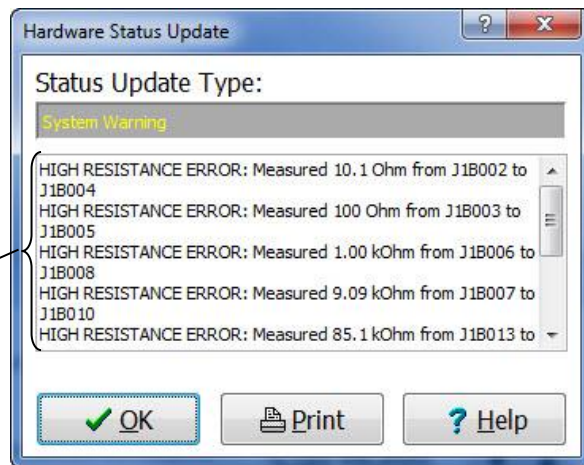
Resistance Measurement			
Resistor Positions	Correct Resistance	Minimum Limit	Maximum Limit
J1B002-J1B004	10.00 Ω	9.80 Ω	10.20 Ω
J1B003-J1B005	100.0 Ω	98.9 Ω	101.1 Ω
J1B006-J1B008	1,000 Ω	989.9 Ω	1,010.1 Ω
J1B007-J1B010	9,090 Ω	8,999 Ω	9,181 Ω
J1B013-J1B015	85.00K Ω	84.15K Ω	85.85K Ω
J1B016-J1A016	404.1K Ω	363.69K Ω	444.51K Ω
J1A020-J1A021	3.806M Ω	3.4254M Ω	4.1866M Ω
J1A022-J1A023	592.0K Ω	532.8K Ω	651.2K Ω

Table 2

6. When you are done recording the values, press **'OK'.**
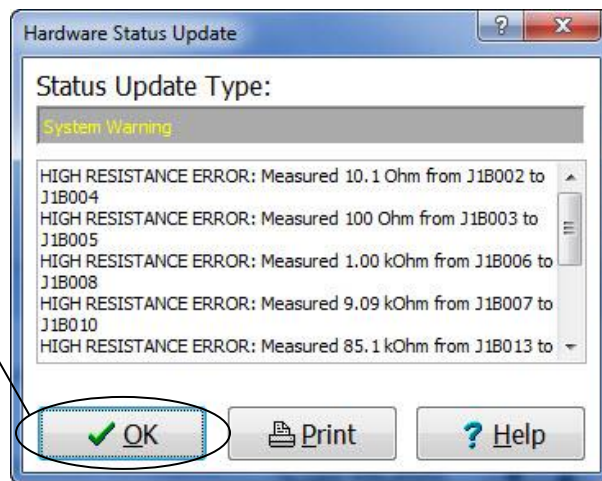
7. Press **'Cancel'** to return to the main menu.
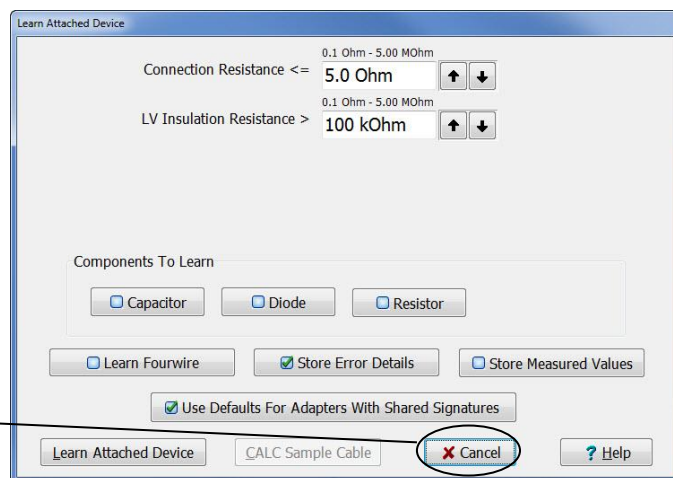
Resistance Threshold System Test

500k Ω

1. Ensure that the Resistor Leak Adapter is in the J1-J2 position as shown.

2. In the Easy-Wire main menu, select the "500k Threshold" test program from the list, and press **'Test'.**

   Note: The proper category must be selected to view the verification files as a group.

3. When the information bar at the top displays "Ready to Test", press **'Start'.**
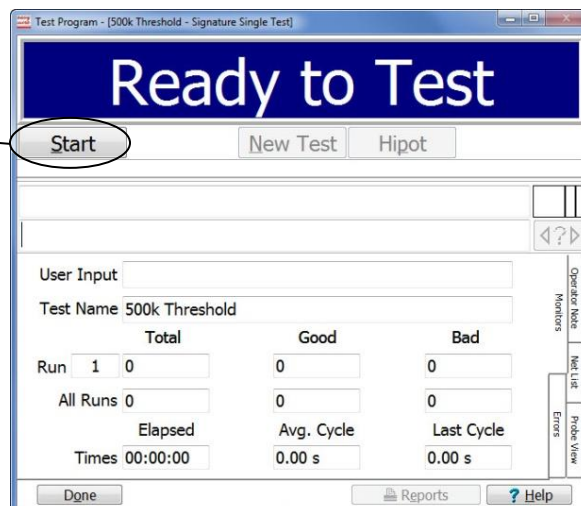
4. The test window should display "HIGH RESISTENCE ERROR". If the failed points are from J1B016 to J1A016, check off Pass on the verification sheet under "Resistance Threshold System Test, 500k Ω"; otherwise check off Fail.
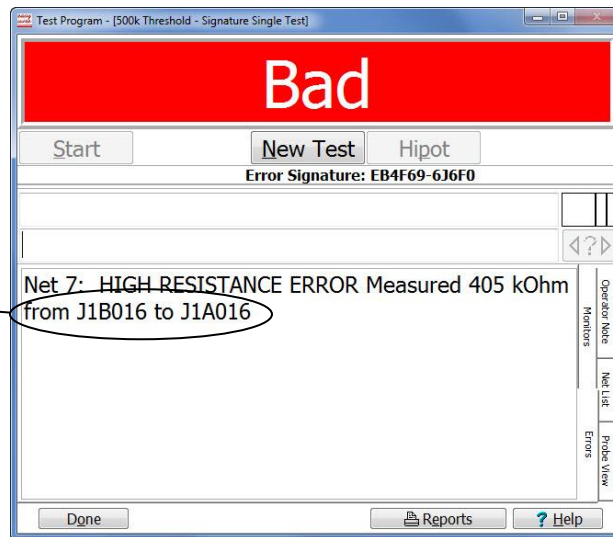
Note: The actual measured value for this part of the test is irrelevant and does not need to be recorded.

5. Press **'Done'** to return to the main menu.
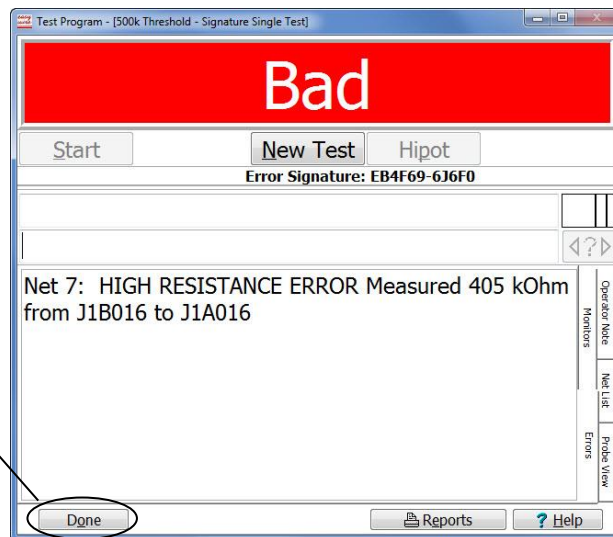
1M Ω

1. Ensure that the Resistor Leak Adapter is in the J1-J2 position as shown.

2. In the Easy-Wire main menu, select "1M Threshold" and press **'Test'.**

3. When the information bar at the top displays "Ready to Test", press **'Start'.**

6. The test window should display "HIGH RESISTENCE ERROR". If the failed points are from J1A022 to J1A023, check off Pass on the verification sheet under "Resistance Threshold System Test, 1M Ω"; otherwise check off Fail.
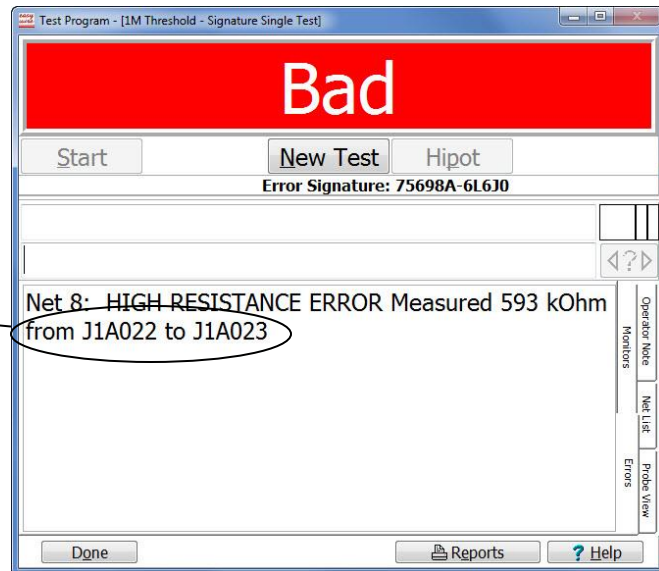
Note: The actual measured value for this part of the test is irrelevant and does not need to be recorded.

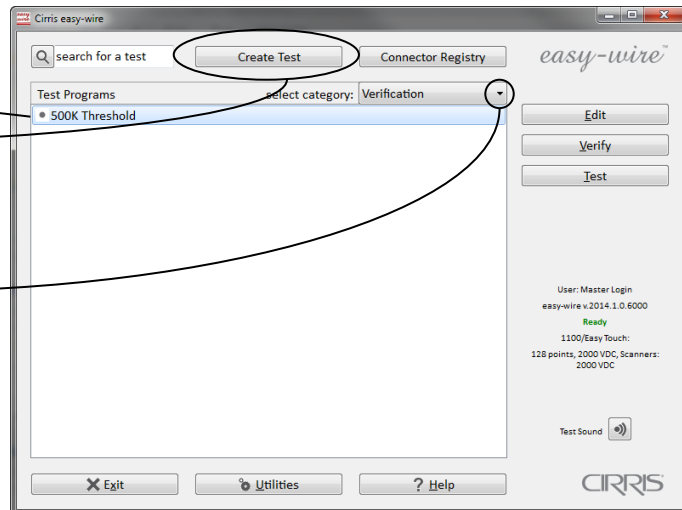4. In the test window, press **'Done'** to return to the main menu.

5M Ω

1. Ensure that the Resistor Leak Adapter is in the J1-J2 position as shown.

2. In the Easy-Wire main menu, select "5M Threshold" and press **'Test'.**

3. When the information bar at the top displays "Ready to Test", press **'Start'.**

7. The test window should display "HIGH RESISTENCE ERROR". If the failed points are from J1A020 to J1A021, check off Pass on the verification sheet under "Resistance Threshold System Test, 5M Ω"; otherwise check off Fail.
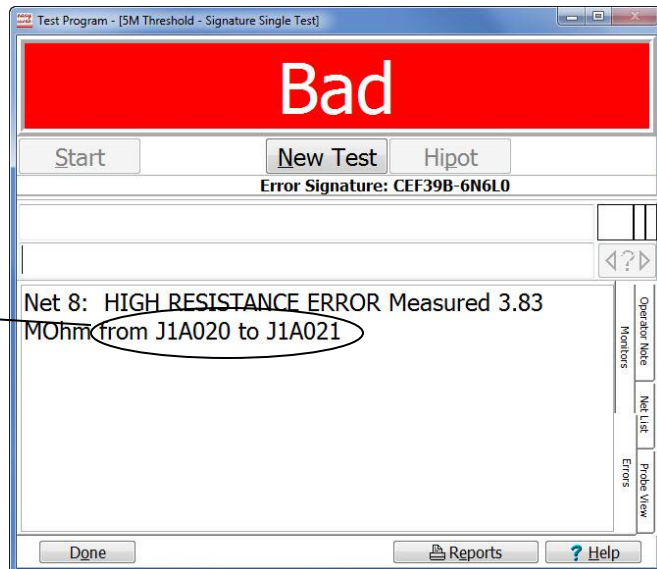
Note: The actual measured value for this part of the test is irrelevant and does not need to be recorded.

4. In the test window, press **'Done'** to return to the main menu.

Capacitance Measurement System Test

1. Install the Capacitance/4-Wire Adapter in the J1-J2 position as shown.

2. In the Easy-Wire main menu, select "Cap Measurement" from the list, and press **'Test'.**
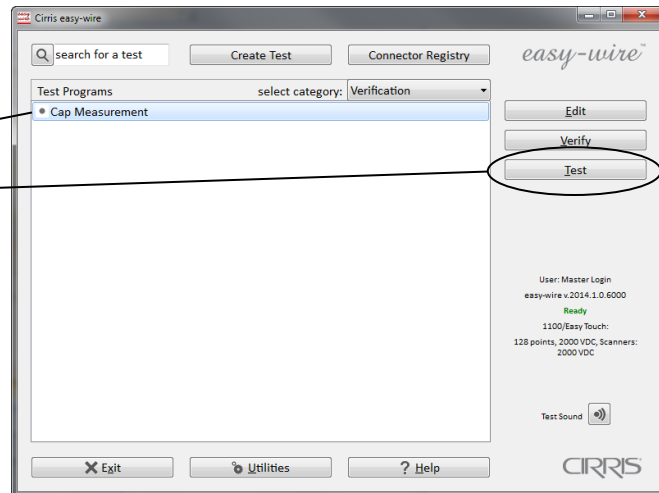
3. When the information bar reads "Ready to Test", press **'Start'.**
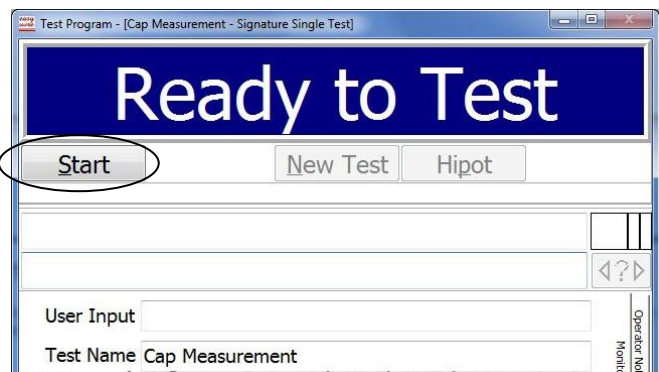
4. The test window should display "BAD CAPACITOR". Record the Measured Value on the verification data sheet under "Capacitance Measurement System Test."

   If the measured value is between the minimum and maximum limits shown in Table 6 below, check off Pass on the verification sheet; otherwise check off Fail.
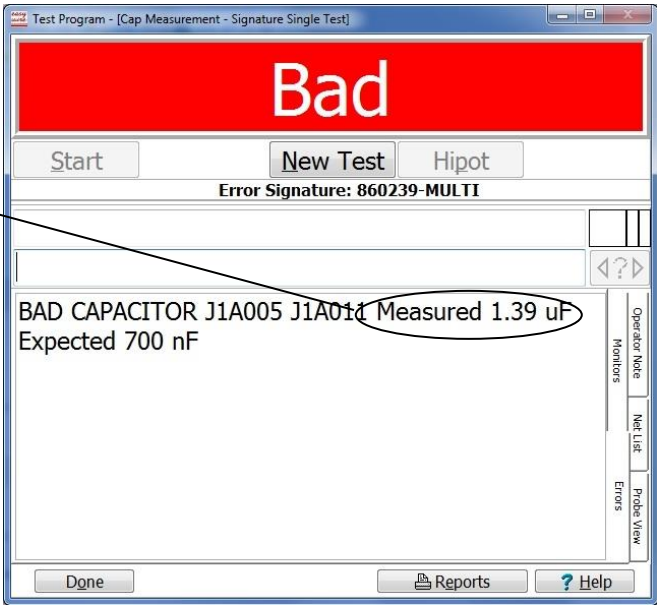
Capacitance Measurement		
Correct Capacitance	Minimum Capacitance	Maximum Capacitance
1.41 µF	1.27 µF	1.55 µF

Table 6

5. Press **'Done'** to return to the main menu.
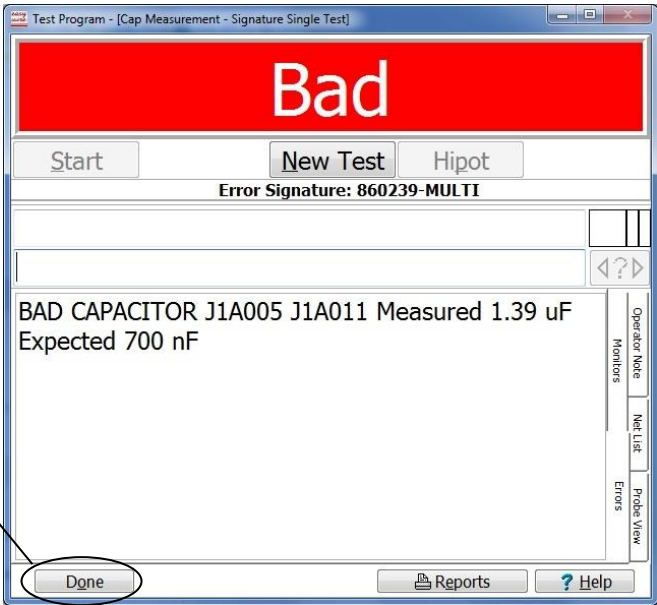
4-Wire Measurement System Test

1. Ensure that the Capacitance/4-Wire Adapter is in the J1-J2 position as shown.

2. In the Easy-Wire main menu, select "4-Wire Measurement" from the list, and press **'Test'.**
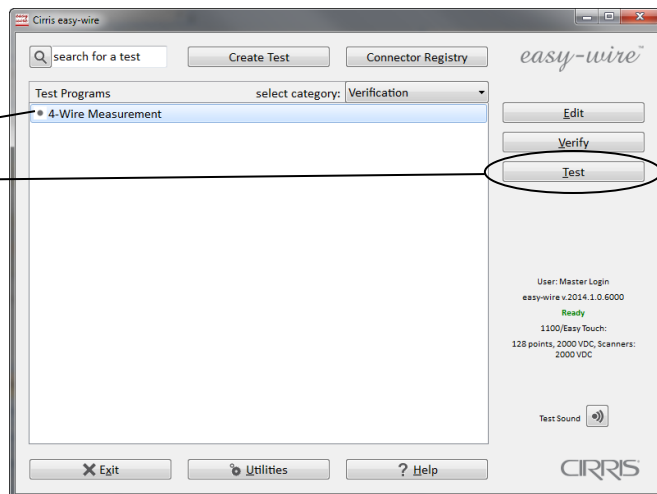
3. When the information bar displays "Ready to Test", press **'Start'.**

4. The information bar will read "Bad".

5. Verify that failed points are J1A001 and J1A003.

6. If the measured value is between 191 and 209 mOhm, check off Pass on the verification data sheet under "4-Wire Measurement System Test"; otherwise, check off Fail.

7. Press **'Done'.**

Test Program - [4W_TEST - Signature Single Test]

Bad

Start   New Test   Hipot

Error Signature: 29E3F7-MULTI

Monitors | Errors | Operator Note | Net List | Probe View

BAD 4W RESISTOR J1A001 J1A003 Measured 197 mOhm
Expected 1 mOhm

Done   Reports   ? Help
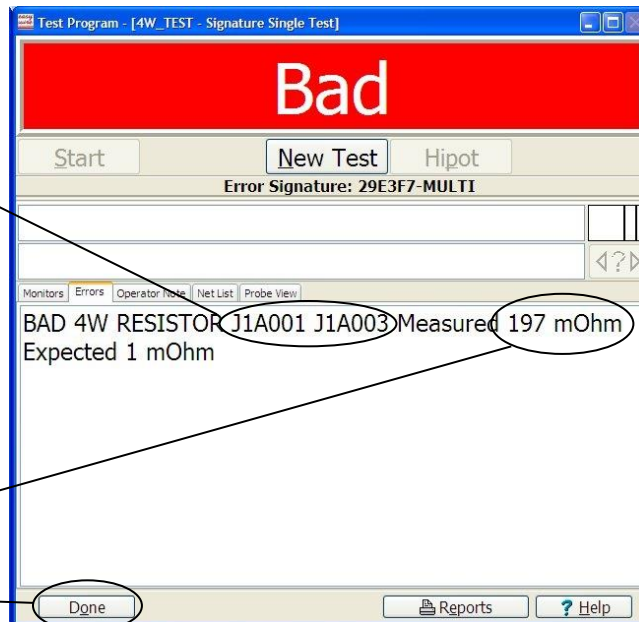
8. Remove the Capacitance/4-Wire Adapter from the tester.

Appendix

The following information can be used as a guide for setting up a formal quality system in your organization.

Quality Standards

These standards are quality system requirements for organizations that perform quality tests and use calibrated equipment. Establishing a quality system according to the quality standards ensures that tests are done competently and lends credibility to the organization. In the United States, common quality standards include ANSI/NCSL Z540-1, ISO/IEC Guide 25, ISO 10012-1, and the former MIL-STD 45662A.

You can review the ANSI/NCSL Z540 standard referred to above, as well as other helpful metrology information, from the National Conference of Standards Laboratories International (NCSL) at 1-303-440-3339 or www.ncsli.org. You can also review the ISO standards from the International Standards Organization (ISO) at their web site www.iso.org.

In the metrology industry, the word "standards" often refers to a centralized, most accurate unit of measurement regulated by countries. The National Institute of Standards and Technology (NIST) maintains the *national standards* for measurements in the United States.

Good Quality Practices

Quality standards, such as ANSI/NCSL Z540-1 and ISO 10012-1, require several good practices for the calibration industry including the following areas:

Recall System

How do you ensure that your company will remember to send an instrument in for calibration? Use a card file or computerized database recall system. This system includes calibration dates, due dates, calibration sources, and other instrument records. The recall system ensures that instruments are recalibrated in a timely manner.

Verification Labels

How do you know if calibration has been verified without looking for the paperwork? When an instrument's calibration is verified, the quality standards require the instrument to be labeled as such. These labels, which are applied to instruments, have fields for the instrument serial number, verification date, verification due date, and by whom. A good source of inexpensive labels is United Ad Label at 1-800-992-5755.

Accuracy Ratios

Can you use a ruler to calibrate your digital calipers? The answer is no. Wherever possible, quality standards require an accuracy ratio of at least four to one. In other words, the instrument being used to measure the calibrated instrument should be at least four times as accurate as the calibrated instrument.

Performance Verification Certificate

How do you know that an instrument has been verified? The Performance Verification Certificate is a record of who, when, and by what equipment the instrument was verified.   The Easy-Touch Performance Verification Certificate is provided on the next page.

Verification Data Report

How accurate is the calibrated test instrument in relation to its published specifications? Some organizations require the measured values of a calibrated instrument to be written down when that instrument is calibrated. Calibration laboratories typically charge extra to create a data report. However, when an instrument is found to be out-of-tolerance, the quality standards require the out-of-tolerance data be recorded in relation to the instrument specifications. A verification data report can fill this requirement. You can photocopy the Easy-Touch Verification Data Report from the Appendix and fill it out.

Traceability

Traceability refers to each unbroken link of valid verifications going back to national standards such as those maintained by the NIST in the United States. To maintain traceablity, qualified personnel must perform the performance verification under controlled conditions, using correctly calibrated instruments with correct test accuracy ratios.

Several years ago NIST numbers (ie. reference numbers issued on NIST reports) were commonly copied on successive calibration certificates as a means of showing traceability. This practice has been discontinued.   Therefore, if you are writing a performance verification procedure, do not require NIST numbers be copied on reports to show traceability. NIST numbers are sometimes confused with other numbers that calibration laboratories create for reference such as "asset numbers", "NIST trace numbers", "ID numbers", and report numbers. For more information regarding the discontinued use of NIST numbers Cirris can provide a copy of the position paper from the National Conference of Standards Laboratories.

Easy-Touch Performance Verification Certificate

Name and Address of Organization:			
Certificate Number:		**Performed by:**	
Date:		**Due Date:**	
Applicable Quality Standard(s):		**Procedure:** Easy-Touch Low Voltage Performance Verification: Version _____	
Temperature:		**Relative Humidity:**	
Tester Serial Number:			
Instruments used:	**Serial Number**	**Cal. Date**	**Due Date**
Zero Ohm Adapter			
Resistor Leak Adapter			
Capacitance/Fourwire Adapter			
Statement of Traceablility:			
Certified by:			

Easy-Touch Verification Data Sheet

Date: _____
Tester Serial Number: _____
Tests Performed By: _____

Signal Routing System Test

J Position for Adapter	Correct Signature	Displayed Signature	Pass	Fail
J1-J2	7F5527-6M020			
J3-J4	94C424-6M020			
J5-J6	5CC1A1-6M020			
J7-J8	D3A34A-6M020			
J9-J10	51A15E-6M020			
J11-J12	C50EFB-6M020			
J13-J14	E93078-6M020			
J15-J16	719A99-6M020			
J17-J18	8CE799-6M020			
J19-J20	18483C-6M020			
J21-J22	3476BF-6M020			
J23-J24	B5D5D5-6M020			
J25-J26	1E83A5-6M020			
J27-J28	8A2C00-6M020			
J29-J30	A61283-6M020			
J31-J32	3BA461-6M020			

Resistance Measurement System Test

Resistor Positions	Correct Resistance	Minimum Limit	Maximum Limit	Displayed Value	Pass	Fail
J1B002-J1B004	10.00 Ω	9.80 Ω	10.20 Ω			
J1B003-J1B005	100.0 Ω	98.9 Ω	101.1 Ω			
J1B006-J1B008	1,000 Ω	989.9 Ω	1,010.1 Ω			
J1B007-J1B010	9,090 Ω	8,999K Ω	9,181 Ω			
J1B013-J1B015	85.00K Ω	84.15K Ω	85.85K Ω			
J1B016-J1A016	404.1K Ω	363.69K Ω	444.51K Ω			
J1A020-J1A021	3.806M Ω	3.4254M Ω	4.1866M Ω			
J1A022-J1A023	592.0K Ω	532.8K Ω	651.2K Ω			

Resistance Threshold System Test

- **500k Ω**

High Resistance Error between:	Pass	Fail
J1B016 and J1A016		

- **1M Ω**

High Resistance Error between:	Pass	Fail
J1A022 and J1A023		

- **5M Ω**

High Resistance Error between:	Pass	Fail
J1A020 and J1A021		

Capacitance Measurement System Test

Correct Capacitance	Minimum Capacitance	Maximum Capacitance	Displayed Measured Value	Pass	Fail
1.41 µF	1.27 µF	1.55 µF			

4-Wire Measurement System Test

Bad 4W Resistor Error between J1A001 and J1A003	Minimum Value	Maximum Value	Pass	Fail
0.2 Ω ± 2% ± 0.005 Ω	0.191 Ω	0.209 Ω		