8100

Performance Verification Manual

Version 2023.3.2



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1. Introduction

All Cirris 8100 Base Units ship with a certificate of calibration that's valid for one year. The calibration can be verified using the instructions in this manual in conjunction with an 8100 Performance Check Kit and a calibrated multimeter. The kit includes standards that have been calibrated using instruments with accuracies traceable to the National Institute of Standards and Technology (NIST). The certificate of calibration included with a performance check kit is valid for two years.

1.1 Scope

As described in detail later in this manual, there are two tests that comprise the 8100 Performance Verification - the 8100 Verification Test and the 8100 Zero Ohm Test.

The measurement hardware for an 8100 test system is located in the Base Unit. The 8100 Verification Test is used to ensure that the unit's measurements are within specified tolerances thereby validating that the hardware is functioning properly. Only the performance of the Base Unit is verified in this way.

All the connectors on the Base Unit and on each attached Expansion Unit, are subsequently checked during the Zero Ohm Test to verify that the test system is measuring very low resistance through every connector pin. A typical cause of Zero Ohm failures is connector damage or wear.

Based on these facts, the performance of each Base Unit should be verified separately from other Base Units, but each Base can be attached to as many Expansion Units as desired during the performance verification process. Expansion Units cannot be evaluated separately from a Base Unit.

No adjustments are made to the tester during the verification process. If the tester fails the verification, it indicates that a hardware problem exists, which requires service. Contact information for help and technical support can be found in the Help / Support section of this manual.

Finally, it may be helpful to note that 8100 test systems perform an extensive self-test during every startup. The self-test verifies that all the solid state switches in the system's matrix are functioning properly and performs checks of the measurement circuitry. However, the self-test cannot verify measurements in the same way the 8100 Performance Verification Test does or detect connector damage or wear that can be found during the Zero Ohm Test.

1.2 Calibration Date

8100 Base Units store the calibration date internally. The calibration date is the date of the last performance verification test that resulted in a pass condition or the date of the most recent calibration performed at the Cirris factory, whichever occurred last. This date is automatically updated upon the completion of an 8100 Performance Verification test that ends in a pass condition.

Optionally, the Easy-Wire software can notify users at login if the last successful verification occurred longer ago than one year from the current date. To enable this option, from the Easy-Wire **Main Menu** > **Utilities** > **Setup System Options** > under the **Software Settings** tab, select **Notify when calibration is past due**. Click **OK** when finished.

Setup System Option	s					×
Tester Hardware	Software Settings	Station Info.	Speech	Computer	OPC UA	
⊡ Use sounds to	monitor test statu	s				
🗆 Display debug	y window					
☑ Notify when o	alibration is past du	ue				
□ Edit test prog	rams using the text	format				
Allow auto Sr	nart-Adapter duplic	ate resolution				
⊡ Enable softwa	re support for First	Article Verific	ation / Si	gn Off *		
* This optio	n is system wide. C	Changes will af	fect othe	r stations.		
Select Tester(s) Select which te	sters will be av	vailable to	users of th	nis station	
Current Langua	ge: English			Chan	ge	
✓ <u>O</u> K		× <u>C</u> ancel			? <u>H</u> elp	

1.3 Verification Interval

Cirris recommends performing the performance verification annually at a minimum. However, some organizations may decide to perform the verification more frequently. The performance verification process can also be used when troubleshooting testing or product issues to verify that the tester is measuring accurately.

1.4 Calibration Records

Documenting the result of the Performance Verification is good practice and may be required by a company's quality system. As will be described in this manual, the user will be prompted to save the results for the 8100 Verification Test in a CSV file format. This file documents the date and time of the test and includes all the pertinent results.

The results of the 8100 Zero Ohm Test are displayed at the end of the test. The results can also be printed or exported following the instructions in this manual.

Additionally, a suggested format for an 8100 Performance Verification Certificate is included in the Appendix.

1.5 Quality System

Some suggestions for good practice can also be found in the appendix.

2. Required Items

- The 8100 tester is controlled by the Easy-Wire software. The version of the software must be 2023.2.1.8020 or later. The version can be found on the Easy-Wire Main Menu for quick reference.
- An 8100 Performance Check Kit, which includes two calibrated adapters the 8100 Cal Adapter and the 8100 Zero Ohm Adapter.

Important: Ensure the calibration validity of the standards by verifying that the "due" dates on their calibration stickers extend beyond the current date.

• A calibrated multimeter capable of measuring DC voltage within the range of .1 to 2.0 volts with an accuracy of ± 1%, such as a Fluke 80 Series meter or equivalent. The input impedance of the meter must be 10 Megohms ± 10%. Bench multimeters, such as Keysight units, typically do not meet this impedance requirement.

8100 Cal Adapter



8100 Zero Ohm Adapter





Calibrated Meter



3. Preparation

The measurement hardware for an 8100 test system is located in the Base Unit. Therefore, during the verification process it is only necessary to attach the 8100 Cal Adapter to connector J1 on the Base Unit to verify the measurement accuracy of the tester. However, each connector on the Base and on each attached Expansion Unit will be checked using the Zero Ohm adapter to verify that there is very low resistance through every connector pin. The performance of each Base Unit should be verified separately, but each Base can be attached to as many Expansion Units as desired during the process.

3.1 Test System Setup

See the 8100 Getting Started Guide or 8100 User Manual for guidance on setting up the 8100 test system. Either document can be downloaded from the 8100 Product Document & Software page on the Cirris web site.

Note: Before adding or removing 8100 units from an existing system, close the Easy-Wire software and disconnect the Base USB cable from the PC. After completing the changes, reconnect the Base USB cable and restart the Easy-Wire software.

Setup:

- 1. Connect any Expansions that will be included in the verification process to the Base as described in the 8100 *Getting Started Guide* or 8100 User Manual.
- 2. Remove any test cables that are connected to the Base and Expansion Units.
- 3. Ensure that the units are connected to the PC controller and power using USB cable(s) as required.
- **4.** Open the Easy-Wire software. Easy-Wire can be opened using the desktop shortcut or from the Windows Start button, expanding the Cirris Systems Corporation content, and selecting Easy-Wire.



3.2 Create the Calibration Category

On the Easy-Wire **Main Menu**, click the **Select Category** drop-down arrow to see if the **Calibration** category already exists. If it does, skip to this step. Cirris Easy-Wire _ \times Search easy-wire" Q Create Test Connector Registry Select Category: All 😂 🖶 Test Programs <u>E</u>dit Revisi All Test Program List • 2678967-502 B Verify • 2678967-503 В • 64 Ribbon J1 J2 Test • 64 Ribbon J1 J2 Sample 64 Ribbon Sample В Licensed • 6432786-503 A View Licens 80053 Transorb Antistatic Pigtail iDM 12/6/2012

Satur Sustan Oations	Europet
Setup System Options	Export
Database <u>M</u> aintenance	<u>I</u> mport
Setup Security	Test <u>A</u> rchive Report
Change <u>L</u> ogin	Search Test Archives
Category Maintenance	Connector Generator
<u>W</u> ire Color Library	
oftware Lice <u>n</u> se Management	
D <u>o</u> ne	? <u>H</u> elp

If the Calibration Category does not already exist,

1. From the Main Menu > Utilities > Category Maintenance.

2. In the Categories dialog, enter **Calibration** as a New Category, select the **Test Program** check box, and click **Add**.

Return to the Easy-Wire Main Menu.



3.3 Import the Calibration Files

Import the 8100 Performance Verification files.

- 1. On the Easy-Wire Main Menu, select **Calibration** from the **Select Category** drop-down list.
- Ciris Easy-Wire – × Search Q Create Test Connector Registry easy-wire Test Programs Select Category: Calibration Edit Test Program List Revisi Calibration V I est Ucensed
- 2. From the Main Menu > Utilities > Import.



3. In the Import Test Program dialog, select **Import Text File**.



- Navigate to folder: C:\Users\Public\Documents\ Cirris\easywire\CalFiles\8100. Select both the 8100 Zero Ohm.txt and 8100VerificationTest.txt files and click Open to import the files.
- Easy-Wire will display a message indicating the files were successfully imported. Click OK to return to the Utilities menu and then Done to return to the Main Menu.

As the **Calibration** category was selected in Step 1, the test program files will be located in this category.



easywire	
2 Test Program(s) successfully in	nported.
	OK

4. The Verification Test

- From the Easy-Wire Main Menu, with the Calibration category still selected, highlight the 8100VerficationTest and click Test to open the Test Window.
- 2. Follow the instructions in the Test Window and install the 8100 Cal Adapter on connector J1 on the Base Unit. J1 is the bottom connector on the Base Unit (points 1 64).

Click **Start** to begin the verification test.



C Test Program - [8	100VerificationTest	- Single Test]			- 🗆 ×
At	tac	h tł	ner	n Sta	art
<u>S</u> tart	Retest	<u>A</u> boi	t		
					4%
Monitors	Errors	Operator Note	Net List	Probe View	
Test Name	8100Verifica	ationTest			
To test the	e measure	ement syste	em:		
1) Install 2) Start tl	LV Adapte ne test.	er on J1.			
D <u>o</u> ne			3	Reports	? <u>H</u> elp



3. The Test Window will display a Testing status and the 8100 Verification Assistant Window will open. The Verification Assistant Window displays results as they are logged, which can take several minutes, and it will display further instructions.



B100 Verification Assistant		
	Testing	Done
Test List Selected Test Result		
Test(s) Resistance *******	Result(s)	
1M ohms	Passed	
100K ohms	Passed	
10K ohms	Passed	
1K ohms	Passed	
100 ohms	Passed	
100 ohms, gain 0.1	Passed	
10 ohm 4W, gain 10	Passed	
1 ohm 4W, gain 100		
4W Resistance		
1.0 ohm		
10.0 ohm		
Capacitance ************************************		
1.8 nF		
LV Voltage		
2 Volts		
Update Cal Date		
Update cal date to 7/17/2023		

 When instructed in the 8100 Verification Assistant Window, set the meter to measure DC Voltage and connect the positive (red) meter lead to the jack marked + on the adapter and the negative (black) meter lead to the position marked — on the adapter.

Click **Okay** after the meter is connected and when ready to proceed.

100 Verification Assistant			
Connect the motor leade t	to the UV Test Adapter. Set	the motor to VDC	
Okay	o the LV Test Adapter. Set	Abort	Done
Test List Selected Test Result			
Test(s)	Result(s)		
Resistance ************************************			
1M ohms	Passed		
100K ohms	Passed		
10K ohme	Passed		
Tore of this			



5. As instructed in the 8100 Verification Assistant Window, enter the meter reading in the text box and click **Okay**.

8100 Verification Assistant		
Enter the meter reading: 1.999 VDC	Okay Abort	
	45	Done
Test List Selected Test Result		
Test List Selected Test Result Test(s)	Result(s)	
Test List Selected Test Result Test(s) Resistance	Result(s)	
Test List Selected Test Result Test(s) Resistance I/I ohms	Result(s) Passed	

6. If all the measurements, and the meter reading, are within acceptable limits the verification test will pass and the 8100 Verification Assistant Window will display a Passed condition. The user will be prompted to save the 8100 Verification Data Report in a CSV formatted file. Navigate to the preferred location and enter the desired name before saving the file.

See an example of the results file on the following page.

8100 Verification Assistant		
	Passed	Done
Test List Selected Test Result		
Test(s) Resistance	Result(s)	
1M ohms	Passed	
100K ohms	Passed	
10K ohms	Passed	
1K ohms	Passed	
100 ohms	Passed	
100 ohms, gain 0.1	Passed	
10 ohm 4W, gain 10	Passed	
1 ohm 4W, gain 100	Passed	
4W Resistance		
1.0 ohm	Passed	
10.0 ohm	Passed	
Capacitance ************************************		
1.8 nF	Passed	
LV Voltage		
2 Volts	Passed	
Update Cal Date ************************************		
Update cal date to 7/17/2023	Passed	

	> Public > Public Documents > Cirris >	eacuarite > Ver	Ph O Sear	ch Ver
	7 Public 7 Public Documents 7 cinis 7	easywire / Vei 🗸 🗸	U > Jean	
Organize 👻 New folder				8== -
Templates	^ Name ^	Date modified	Туре	Size
Videos		No items match your sea	rch.	
Pictures				
Videos				
🟪 OS (C:)	~			
File name: 230714 S	N 1001B Verification			
Save as type: CSV (*.cs	v)			

		Save R
	Passed	
		Do
Test List Selected Test Result		
Test(s)	Beaut(a)	

Click Done when finished to close the 8100 Verification Assistant Window finish the test.

Example of the Verification Data Report:

Cirris 401 North 5600 W Salt Lake City UT 84											
Salt Lake City UT 8	Inc.										
	est 1116										
	1110										
verification Passed	d Date: 7/14	4/2023 8:19	:31 AM								
easy-wire 2023.2.1	.8020 mea	surement s	ystem ID 0	with 256 p	oints. Unit	ID: 230714	SN 1001B	Verificatior	ı		
*************	*******	*********	*******	*******	******						
Test Group: Resista	ance Pass	;ed **********	*******	********	*****						
Test	Test	Average	Expected	Exp.	Exp.	Number	Meas.	Meas.	Std.		
Name	Result	Measured	Value	Max	Min	Samples	Max	Min	Dev.	Units	Trouble
====	======			====	====		=====	=====	====	=====	======
1M ohms	Passed										
-Resistance	Passed	1.001	1	1.02	0.98	1000	1.001	1	0	MOhms	
100K ohms	Passed										
-Resistance	Passed	99.9	100	102	98	1000	100	99.9	0	KÜhms	
-Resistance	r asseu Passed	10.01	10	10.2	۵ø	1000	10 01	10	٥	kOhme	
1K ohms	Passed	10.01	10	10.2	5.0	1000	10.01	10	0	NOTITIS	
-Resistance	Passed	1	1	1.02	0.98	1000	1.001	0.999	0	kOhms	
100 ohms	Passed	_	_						-	-	
-Resistance	Passed	100.1	100	102.1	97.9	1000	100.2	100	0	Ohms	
100 ohms	gain 0.1	Passed									
-Resistance	Passed	100.1	100	102.1	97.9	1000	100.2	100	0	Ohms	
10 ohm 4W	gain 10	Passed	40	10 201	0 700	4000	10.001	0.000	0.000	Ohm	
-4WResistance	Passed	9.993 Paccod	10	10.201	9.799	1000	10.001	9.988	0.002	Ohms	
1 UIIII 4 W	Baccod	1 0001	1	1 021	0.070	1000	1 0010	0.0005	0.0005	Ohme	
Name	Result	Measured	Value	Max	Min	Samples	Max	Min	Dev.	Units	Trouble
====				====	====	======	=====	=====	====	=====	======
1.U Ohm	Passed	1 000 4	1	1 021	0 070	1000	1 0010	0 000	0.0005	Ohme	
10.0 ohm	Passed	1.0004	1	1.021	0.979	1000	1.0019	0.999	0.0005	Unitis	
-4WResistance	Passed	9.993	10	10.201	9.799	1000	10.002	9.988	0.002	Ohms	
	*******	******	*******	*******	******						
*****	ítance Pa	ssed									
**************************************	*******	*****	******	****	*******						
**************************************	********* Test	********** Δνρrασο	Fynected	********* Fxn	******** Fxn	Number	Meas	Meas	Std		
******************** Test Group: Capaci ***** Test Name	********* Test Result	********** Average Measured	Expected Value	Exp. Max	Exp.	Number Samples	Meas. Max	Meas. Min	Std. Dev.	Units	Trouble
******************* Test Group: Capaci ******************* Test Name ====	********* Test Result ======	********** Average Measured =======	Expected Value	********** Exp. Max ====	********* Exp. Min ====	Number Samples ======	Meas. Max =====	Meas. Min =====	Std. Dev. ====	Units =====	Trouble
**************************************	********* Test Result ===== Passed	********** Average Measured =======	Expected Value =======	********** Exp. Max ====	********* Exp. Min ====	Number Samples ======	Meas. Max =====	Meas. Min =====	Std. Dev. ====	Units =====	Trouble
******************** Test Name ==== 1.8 nF -Capacitance	Test Result ===== Passed Passed	Average Measured ======= 1.804	Expected Value ========	********** Exp. Max ==== 2.03	********* Exp. Min ==== 1.57	Number Samples ====== 1000	Meas. Max ===== 1.822	Meas. Min ===== 1.783	Std. Dev. ==== 0.006	Units ===== nF	Trouble
******************** Test Name ==== 1.8 nF -Capacitance	Test Result ===== Passed Passed	*********** Average Measured ======= 1.804	Expected Value ======= 1.8	********** Exp. Max ==== 2.03	********* Exp. Min ==== 1.57	Number Samples ====== 1000	Meas. Max ===== 1.822	Meas. Min ===== 1.783	Std. Dev. ==== 0.006	Units ===== nF	Trouble ======
**************************************	Test Result ===== Passed Passed	Average Measured ======== 1.804	Expected Value ======= 1.8	*********** Exp. Max ===== 2.03	********* Exp. Min ==== 1.57	Number Samples ====== 1000	Meas. Max ===== 1.822	Meas. Min ===== 1.783	Std. Dev. ==== 0.006	Units ===== nF	Trouble
**************************************	Test Result ===== Passed Passed **********	Average Measured ======== 1.804	Expected Value ======== 1.8	*********** Exp. Max ==== 2.03	********* Exp. Min ==== 1.57 ********	Number Samples ====== 1000	Meas. Max ===== 1.822	Meas. Min ===== 1.783	Std. Dev. ==== 0.006	Units ===== nF	Trouble
**************************************	Test Result ====== Passed Passed tage Pass *********	Average Measured ======= 1.804 **********	Expected Value ======= 1.8	Exp. Max ===== 2.03	********* Exp. Min ===== 1.57 ********* Exp.	Number Samples ====== 1000 Number	Meas. Max ===== 1.822 Meas	Meas. Min ===== 1.783 Meas	Std. Dev. ==== 0.006	Units ===== nF	Trouble
**************************************	Test Result Passed Passed tage Pass Test Result	Average Measured 	Expected Value ======= 1.8 ********* Expected Value	Exp. Max ==== 2.03	********* Exp. Min ==== 1.57 ******** ******** Exp. Min	Number Samples ====== 1000 Number Samples	Meas. Max ===== 1.822 Meas. Max	Meas. Min ===== 1.783 Meas. Min	Std. Dev. ==== 0.006 Std. Dev.	Units ===== nF Units	Trouble
**************************************	Test Result Passed Passed tage Passes Test Result ======	Average Measured 	Expected Value 1.8 ******** Expected Value =======	Exp. Max ==== 2.03	********** Exp. Min ==== 1.57 ******** ******** Exp. Min ====	Number Samples ====== 1000 Number Samples ======	Meas. Max ===== 1.822 Meas. Max =====	Meas. Min 1.783 Meas. Min =====	Std. Dev. ==== 0.006 Std. Dev. ====	Units nF Units	Trouble
**************************************	Test Result Passed Passed tage Passes Test Result ===== Passed	Average Measured 	Expected Value 1.8 ******** Expected Value =======	Exp. Max ==== 2.03	********* Exp. Min ==== 1.57 ******** ******** Exp. Min ====	Number Samples ====== 1000 Number Samples ======	Meas. Max ===== 1.822 Meas. Max =====	Meas. Min ===== 1.783 Meas. Min =====	Std. Dev. ==== 0.006 Std. Dev. ====	Units nF Units	Trouble
**************************************	Test Result Passed Passed tage Passes Test Result ===== Passed Passed	Average Measured 	Expected Value 1.8 Expected Value 2	Exp. Max ==== 2.03	******** Exp. Min ==== 1.57 ******** Exp. Min ==== 1.89	Number Samples ====== 1000 Number Samples ======	Meas. Max ===== 1.822 Meas. Max ===== 2.0009	Meas. Min ===== 1.783 Meas. Min ===== 2.0009	Std. Dev. ==== 0.006 Std. Dev. ==== 0	Units nF Units 	Trouble
**************************************	Test Result Passed Passed tage Passed tage Passed Result ===== Passed Passed Passed Passed	Average Measured 	Expected Value 1.8 Expected Value 2 2 2	Exp. Max ==== 2.03	Exp. Min ==== 1.57 ******** Exp. Min ==== 1.89 1.89	Number Samples ====== 1000 Number Samples ====== 1 1	Meas. Max ===== 1.822 Meas. Max ===== 2.0009 1.999	Meas. Min ===== 1.783 Meas. Min ===== 2.0009 1.999	Std. Dev. ==== 0.006 Std. Dev. ==== 0 0	Units nF Units ===== V V	Trouble
**************************************	Test Result Passed Passed tage Passed tage Passed Test Result ====== Passed Passed Passed	Average Measured 	Expected Value ======= 1.8 ***********************************	Exp. Max 2.03 	Exp. Min ==== 1.57 ******** Exp. Min ==== 1.89 1.89	Number Samples ====== 1000 Number Samples ====== 1 1	Meas. Max ===== 1.822 Meas. Max ===== 2.0009 1.999	Meas. Min ===== 1.783 Meas. Min ===== 2.0009 1.999	Std. Dev. ==== 0.006 Std. Dev. ==== 0 0	Units nF Units ===== V V	Trouble
**************************************	Test Result Passed Passed tage Passed tage Passed tage Passed Passed Passed Passed Passed	Average Measured 	Expected Value ======= 1.8 ********* Expected Value ======= 2 2	Exp. Max ==== 2.03	Exp. Min ==== 1.57 ******** Exp. Min ==== 1.89 1.89	Number Samples ====== 1000 Number Samples ====== 1 1	Meas. Max ===== 1.822 Meas. Max ===== 2.0009 1.999	Meas. Min ===== 1.783 Meas. Min ===== 2.0009 1.999	Std. Dev. ==== 0.006 Std. Dev. ==== 0 0	Units nF Units V V	Trouble
**************************************	Test Result Passed Passed tage Passed tage Passed Test Result ====== Passed Passed Passed Passed	Average Measured 	Expected Value ======= 1.8 ******** Expected Value ======= 2 2 ********	Exp. Max ==== 2.03 	******** Exp. Min ==== 1.57 ******* Exp. Min ==== 1.89 1.89	Number Samples ====== 1000 Number Samples ====== 1 1	Meas. Max ===== 1.822 Meas. Max ===== 2.0009 1.999	Meas. Min ===== 1.783 Meas. Min ===== 2.0009 1.999	Std. Dev. ==== 0.006 Std. Dev. ==== 0 0	Units nF Units ===== V	Trouble
**************************************	Test Result Passed Passed Passed tage Passed tage Passed result Passed Passed Passed Passed Passed Passed	Average Measured 	Expected Value ======= 1.8 ******** Expected Value ====== 2 2 ********* Expected	Exp. Max ==== 2.03 	******** Exp. Min ==== 1.57 ******* Exp. Min ==== 1.89 1.89 1.89	Number Samples ====== 1000 Number Samples ====== 1 1 Number	Meas. Max ===== 1.822 Meas. Max ===== 2.0009 1.999 Meas.	Meas. Min ===== 1.783 Meas. Min ===== 2.0009 1.999 Meas.	Std. Dev. ==== 0.006 Std. Dev. ==== 0 0 0	Units nF Units ===== V V	Trouble
**************************************	Test Result Passed Passed Passed tage Passed tage Passed Passed Passed Passed Passed Passed Passed Passed Passed Passed Passed Passed	Average Measured 	Expected Value ======= 1.8 ******** Expected Value ====== 2 2 ******** Expected Value	Exp. Max ==== 2.03 ********* Exp. Max ==== 2.11 2.11 ********** Exp. Max	******** Exp. Min ==== 1.57 ******* Exp. Min 1.89 1.89 ******** Exp. Min	Number Samples ====== 1000 Number Samples ====== 1 1 Number Samples	Meas. Max ===== 1.822 Meas. Max 2.0009 1.999 Meas. Max	Meas. Min ===== 1.783 Meas. Min 2.0009 1.999 Meas. Min	Std. Dev. ==== 0.006 Std. Dev. ==== 0 0 0 Std. Dev.	Units nF Units V V Units	Trouble

7. If any measurements, or the meter reading, is outside acceptable limits, the verification test will fail. If this occurs, messages are displayed that inform the user that the tester's calibration date cannot be updated.

Click **OK** in to close the each message.

		Testing		
			Done	е
Test List Selected Test Result				
Test(s)		Result(s)		
Resistance *******************************	****************			
1M ohms		Passed		
100K ohms	Cirris Fasy-Wire Sof	hwaro	×	
10K altera	Cirris Easy-wire Software		(A)	
10K onms				
1K ohms	Calibration date ca	n not be updated becau	use 1 verification tests	
1K ohms 100 ohms	Calibration date ca failed.	in not be updated becau	use 1 verification tests	
10K ohms 1K ohms 100 ohms 100 ohms, gain 0.1	Calibration date ca failed.	en not be updated becau	use 1 verification tests	
10K onms 1K ohms 100 ohms 100 ohms, gain 0.1 10 ohm 4W, gain 10	Calibration date ca failed.	in not be updated becau	use 1 verification tests	
100 ohms 100 ohms 100 ohms, gain 0.1 10 ohm 4W, gain 10 1 ohm 4W, gain 100	Calibration date ca failed.	in not be updated becau	use 1 verification tests	
10K ohms 11K ohms 100 ohms 100 ohms, gain 0.1 10 ohm 4W, gain 10 1 ohm 4W, gain 100 4W Resistance	Calibration date ca failed.	in not be updated becau	Use 1 verification tests	
10K ohms 1K ohms 100 ohms, gain 0.1 10 ohm 4W, gain 10 1 ohm 4W, gain 100 4W Resistance	Calibration date ca failed.	in not be updated becau	OK	
10x onms 1K ohms 100 ohms 100 ohms, gain 0.1 10 ohm 4W, gain 10 4W Resistance 10.0 ohm 10.0 ohm	Calibration date ca failed.	Passed Passed	Use 1 verification tests	
10x onms 100 ohms 100 ohms 100 ohm 4W, gan 10 10 ohm 4W, gain 100 4W Resistance 1.0 ohm 10.0 ohm	Calibration date ca failed.	Passed Passed	Use 1 verification tests	
10x onms 100 ohms 100 ohms 100 ohms, gain 0.1 1 ohm 4W, gain 10 4W Resistance ************************************	Calibration date ca failed.	Passed Passed	OK	
10x onms 100 ohms 100 ohms 100 ohms 100 ohms 100 ohm 4W, gain 10 1 ohm 4W, gain 10 4W Resistance 1.0 ohm 1.0 ohm 1.0 ohm 1.8 nF	Calibration date ca failed.	Passed Passed Passed	OK	
10x onms 100 ohms (an 0.1 100 ohms (an 10 10 ohm 4W, gain 10 10 ohm 4W, gain 10 10 ohm 4W, Resistance 1.0 ohm 1.0 ohm 1.0 ohm 1.8 nF LV Vottage	Calibration date ca failed.	Passed Passed Passed - FAIL	OK	
Tux onms 100 ohms 100 ohms 100 ohms, gain 0.1 10 ohm 4W, gain 10 4W Resistance 10.0 ohm 10.0 ohm Capacitance 2.Voltage 2.Voltage	Calibration date ca failed.	Passed Passed Passed - FAIL	OK	

A failed result indicates that the Base Unit requires service. Contact your Cirris representative for assistance.

	- 1	FAILED-		Save Results
Test List Calasted Test Desuit	1			Done
Test(s)		Result/s)		
Perintance ******************	**************	(coon(o)		
1M ohms		Passed		
100K ohms		Passed		
10K ohms				
1K ohms	Cirris Easy-Wire Software		×	
100 ohms	Collection data and a		Territory backs	
100 ohms, gain 0.1	failed	t be updated because 2 ve	rification tests	
10 ohm 4W, gain 10	, and a			
1 ohm 4W, gain 100				
4W Resistance *****************	******		OK	
1.0 ohm		Passed		
10.0 ohm		Passed		
Capacitance *******************	*****			
1.8 nF		Passed		
LV Voltage **********************	******			
2 Volts		- FAIL		

Update Cal Date				

5. The Zero Ohm Test

- From the Easy-Wire Main Menu, with the Calibration category still selected, highlight the 8100 Zero Ohm Test and click Test to open the Test Window.
- 2. When the Test Window opens, click **Start** to begin the test.



Abort

 Π

Cirris Easy-Wire

Start

Retest

3. Follow the instructions in the Test Window and install the 8100 Zero Ohm Adapter on connector J1 of the Base Unit. J1 is the bottom connector on the Base Unit (points 1 - 64).

Click **OK** when ready to proceed.

C Test Program - [81	00 Zero Ohm - Sir	ngle Test]			- 🗆 X
	Т	est	ing		
<u>S</u> tart	Retes	t <u>A</u> bo	rt		
					4%>
Monitors	Errors	Operator Note	Net List	Probe View	
User Inp	ut]
Test Nam	ne 8100 Zer	Easy-Wire Software		×]
Run 1	To Atta and	ach the zero ohm ada I then press OK	pter to scanner ada	pter 1]
All Ru	ns 0		OK	Cancel]
	Elapsed	A	vg. Cycle	Last Cycle	-
Time	es 00:00:00	0 n	ns	0 ms]
D <u>o</u> ne			E	🚔 Reports	? Help
255	ANNER		Kunnen		193
192				mma 💭	130
112A	C inter		<u>.</u>	HEAT	i i i i i i i i i i i i i i i i i i i
inta	4				
	Frobe 5	CALIBRATED CIRRIS DATE: 06/19/2 DUE: 06/19/2 BY: Phyllis 7 S/N: 1001-8	23	-	

8100 Zero Ohm Adapte S/N: 1001 – 81ZO **4.** As each connector is tested, the user is prompted to advance the 8100 Zero Ohm Adapter to the next connector position in the test system. If the system consists of only a Base, the user will be prompted to move the adapter through all four connectors. If the system includes Expansion Units, the user will prompted to move the adapter until all connectors on the system have been tested.

After attaching the Zero Ohm Adapter as instructed, click **OK** to continue.

C Test Program - [i	3100 Zero Ohm - S	ingle Test]				×
	Т	esti	ng			
<u>S</u> tart	Retes	t <u>A</u> bor	t			
						Π
Monitors	Errors	Operator Note	Net List	Probe View		
User In	put					
Test Na	me 8100 7 Cirr To	ro Ohm is Easy-Wire Software		×		
Run 1	0 At	tach the zero ohm adap id then press OK	ter to scanner ada	pter 2		
All R	uns 0		OK	Cancel		
	Elapsed	d Av	g. Cycle	Last Cycle		
Tir	nes 00:02:19	9 0 m	S	0 ms		
Done			(=)	A Reports	7 He	In



5. If all the connectors pass the test, the Test Window will display a green **Good** header when the test is complete.



To print or export a copy of the results, click **Reports** and select **Test Report** in the **Report Selection** dialog that opens. Follow the on-screen instructions to save the results before viewing.

Note: The Zero Ohm Test Program can also be revised to automatically print or export the Test Report at the end of the test. See the video referenced at the bottom of this section for additional information about editing reports. The section on Report Outputs starts at 9:32 of the video.



When the report opens, select **Print** from the Menu Bar to print a hard copy or save the report to a PDF file.

Close the report and select **Done** in the Test Window to return to the Main Menu.

The Test Report can also be accessed from the Easy-Wire database **Main Menu** > **Utilities** > **Search Test Archives** to open the **Report View Options** dialog. The results can be searched here by test date or test name. Click the **Help** button in the dialog window for assistance.

A video that describes editing the Test Report format can be found on the Cirris YouTube channel <u>here</u>.

C Test Report			
Print Auto Print Auto Export Options Help			
Print Report	Report -Final	Page Number PAGE	
Save Report to .pdf File	teport i mai	r age Numberr Aut	
Dana 2023.2.1.8020			
Test Results Provide	a By		
Done TEST RESUITS Provide	By	CIRRIS	
Done Test Results Provide	s/N:		
Passed	S/N: Test Date: 7/20/2023	Lot ID: Run Number: 5	

- 6. If any points fail the Zero Ohm Test, a message will be displayed showing the point(s) involved and giving the user the option to select **OK** to accept the errors, or **Retry** to try again. Retrying gives the user an opportunity to ensure that the Zero Ohm adapter is properly positioned and securely attached before clicking **Retry**.
- 7. If the final condition is a failure, the Test Window will display a red **Bad** header and the Errors tab will display a list of the failures.

Units that include points that fail the Zero Ohm Test should be serviced to resolve the issue. Contact your Cirris representative for assistance.



6. Help / Support

For assistance with any of the topics covered in this manual:

- Contact our Technical Support staff by email at TechSupport@cirris.com
- In the United States, contact our technical support team by telephone at 801-973-4600, extension 666 (or ask for Tech Support)
- Outside the United States, call +1-801-973-4600 or visit www.cirris.com to find the Cirris representative that supports your local territory.
- Visit www.cirris.com/learning-center to access articles on Cirris products and other testing subjects.

7. Appendix

The following references and suggestions can be useful to those new to formal calibration and quality practices.

Quality Standards

Quality standards ANSI/NCSL Z540-, Z540.3, and ISO 17025 document requirements for organizations that perform quality tests and use calibrated equipment. Establishing a quality system according to the standards ensures that tests are done competently and lends credibility to the organization.

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 <u>www.ncsli.org</u>. You can also review the ISO standards from the International Standards Organization (ISO) at their web site <u>www.iso.net</u>.

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 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 calibrated 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 (www.unitedadlabel.com).

Calibration and Measurement Uncertainty

Older references to TUR (test uncertainty ratio) or TAR (test accuracy ratio) suggested a 4:1 ratio between the accuracy of the measurement instrument and the accuracy of the instrument being calibrated. For example calibrating a 1% instrument would require an instrument having 0.25% accuracy. However, current thought emphasizes not only the accuracy of the calibrating instrument but also the measurement uncertainty. For example, if the same measurement is repeated ten times, are any of the results different than the others? Differences in the measurements is evidence of measurement uncertainty. Many resources covering the subject are available on the Internet.

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. A suggested 8100 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. As mentioned previously in this manual, the 8100 Verification Data Report and the Zero Ohm Test Report should satisfy this requirement,

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 traceability, qualified personnel must perform the performance verification under controlled conditions, using correctly calibrated instruments with correct test accuracy ratios.

8100 Performance Verification Certificate

Name and Address of Organizat	ion:				
Certificate Number:		Performed by:			
Calibration Date:		Due Date:			
Applicable Quality Standard(s):		Procedure: 8100 Performance Verification Manual, Version			
Temperature:		Relative Humidity:			
Tester Serial Number:					
Instrument Used	Serial Number	Calibration Date	Calibration Due Date		
8100 Cal Adapter					
8100 Zero Ohm Adapter					
Meter					
Statement of Traceability:					
Certified by:					

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