

# CaptivATE 3.3 Installation & Operation Manual Part Number 150889 A2

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# Preface

CaptivATE<sup>©</sup> is an application that runs under Windows XP. When loaded onto a PC, CaptivATE enhances the productivity of a business by automating the electrical safety testing and saving the results of those tests in a database.

CaptivATE communicates with the instrument(s) via the RS232 Com Port and the USB ports that have the appropriate serial communication adapters. For these adapters to work properly their software drivers must be installed on the testing computer.

## CaptivATE 3.3 Database is Compatible with 3.2

The database of Version 3.3 of CaptivATE is compatible with the database of Version 3.2.

## Note to European Users

In order to change from commas to decimal points when entering decimal fractions, please follow the path to the Customize Regional Options pop-up.



- 1. Click the **Customize** button, and on the **Numbers** page, make the following changes:
- 2. In the **Decimal symbol** text box, enter a decimal point (.).
- 3. In the **Digit grouping symbol** text box, enter a comma (,) and click **OK**.

Numbers	Currency	Time Dat	e Sorting	
Sample				
Positive	123,456	,789.00	Negative:	-123,456,789.00
Dec	imal symbol:	1		*
No.	of digits afte	er decimal:	2	~
Digit	grouping s	ymbol:		~
Digit	grouping:	*****	123,456,3	789 🔽
Neg	ative sign s	ymbol:	-	*
Neg	ative numbe	er format:	-1.1	~
Disp	lay leading	zeros:	0.7	~
List :	separator:		1	*
Mea	surement sy	ustem:	Metric	*



## **1** System Specifications

## 1.1 Hardware Minimum Requirements

- PC with 300MHz Pentium (or compatible) Processor
- 128MB RAM
- 2GB Hard Disk Space (Includes hard disk space required for program files only. Additional hard disk space is required for the database created by CaptivATE.
- One RS232 COM Port and one USB port for each installed instrument after the first. (USB ports require a USB to RS232 Converter capable of 9600 or 19200 Baud)
- Microsoft Compatible Keyboard
- Microsoft Compatible Mouse or other pointing device
- VGA Monitor capable of 800x600 Resolution or higher
- RS232 Communication Cable with 25 Pin D-sub (male) at Guardian 6000, 6100, 6200 side and required termination for customer-supplied PC RS232 port
- RS232 Communication Cable with 9 Pin D-sub (male) at Guardian 6000 Plus, 6100 Plus side and required termination for customer supplied PC RS232 port

#### **1.2 Optional Hardware Requirements**

- Programmable Barcode Scanner
- Microsoft Windows Compatible Network
- Microsoft Windows Compatible printer capable of 8.5" x 11" and 2" x 3" media

#### **1.3 Operating System(s)**

• Microsoft Windows XP

#### **1.4** Software Minimum Requirements

- Microsoft Word 2000 or 2007 (To display Reports)
- Microsoft Excel 2000 or 2007 (To display Historical Searches)
- Localization: English (U.S.)

#### **1.5** Optional Software Requirements

• Microsoft Access 2000 or greater



1.6	Instruments Supported			
	Guardian 6000			
	Guardian 6100	Firmware 1.08 (or higher) RS232 installed (G26) Three Scanners:(1 INT Scanner: 6000-05, Standard; 2 EXT Scanners: 5000-01, -02, -03 or -04, Optional)		
	Guardian 6000 Plus	,	<b>Scanner: 6000-01, -02 or -03, Optional;</b> 1 01, -02, -03 or -04, Optional)	
	Guardian 6100 Plus	Scanners: 5000-01, - G45 40A GB Transfe	T Scanner: 6000-07, Standard; 2 EXT 02, -03 or -04) ormer (Optional) 800VA AC Source W/Remote Option; 61603:	
	Guardian 1010, 1030, 1030S	Ground Bond Tester	Firmware 4.3 (or higher) RS232 installed (G36)	
	Guardian 1050 Ground Bond	l Tester	Firmware 1.0 (or higher) RS232 installed (G36)	
	Guardian 1730T		Firmware 2.0 (or higher) IEEE488 installed	
	Hybrid 2000 AC/DC/IR/DC	R Safety Analyzer	Firmware 1.14 (or higher)	
	Matrix 8000 Scanning System	m - Medical	AC Line Module GBF-2 Module Earth Module AC Line 2 Module General Module	
	Matrix 8000 Scanning System	m - General	AC Line Module GBF-2 Module Earth Module General Module	
	AC Sources	C409_1	$\Gamma$	
		6408-1 61603 61604 61605	Firmware 2.20 (or higher) Firmware 1.10 (or higher) Firmware 1.20 (or higher) Firmware 1.20 (or higher)	



## 2 How to Use This Manual

This manual is part task-oriented and part reference. Online users can click on any page number in the text to go to that page number.

## 2.1 What do you want to do with CaptivATE 3.3?

Displayed in Figure 1 on page 2 is a Use Case diagram for CaptivATE. This UCD shows the users of CaptivATE and what each user can do with the system. The three kinds of users are Administrators, Engineers, and Operators. Click on any page reference in Figure 1 to go to a specific functions. The manual is organized as follows:

#### Administrative Tasks

An Administrator is the only one who can assign users. Other administrative tasks are described in this section, starting in Section 3.

## Software Switches to Automate and Simplify Testing

Software switches (also called checkboxes) can be checked-marked as appropriate for your needs, as described starting in Section 4.

#### Tutorials

The Tutorial Section 5 follows the creation and the running of two tests. Tutorial A includes an Instrument Setup with one test instrument (a QuadTech Hybrid 2000). Tutorial B includes an Instrument Setup with three test instruments (a QuadTech 6100 Plus, an AC Source, and a Matrix 8000).

#### **Reports: Defining, Saving, and Printing**

You can define the type of report you want to generate, the place online where you want to store it, and the optional printer to produce hard copies. The descriptions begin in Section 6.

#### **Historical Search**

An historical search is a way to produce a spreadsheet that includes several reports that can be assembled by date, operator, DUT, etc., as described starting in Section 8.

#### **Reference Section**

For a description of all tabs, screens, labels, and checkboxes, see the Reference Section 11.

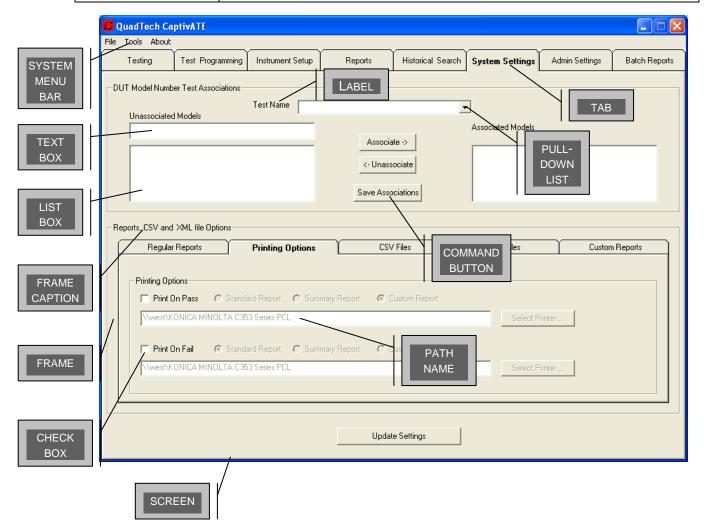
#### 2.2 Hardware Installation

While connecting test instruments to a personal computer, record the com port numbers as described in section 3.12. This will simplify the task of Instrument Setup if you want to program tests at a different PC from the one on which the tests are run.



#### 2.3 Conventions Used in This Manual

Item	How it is represented in this manual
Command Buttons	Button name in bold
Tabs and Screens	Tab or screen name in <i>italics</i> ; e.g. the System Settings screen
System messages	System message in courier font
Path names	Path names in courier font
Cropped screen captures	Where the screen capture has been cropped, cropped sides are represented by dotted lines.
Examples used	Tutorial A) Hybrid 2000, Tutorial B) Sentinel III (Guardian 6100 Plus, an AC Source, and the Matrix 8000).
Software Switches	Software switches are checkboxes that can be toggled on or off to affect a test or a test report.





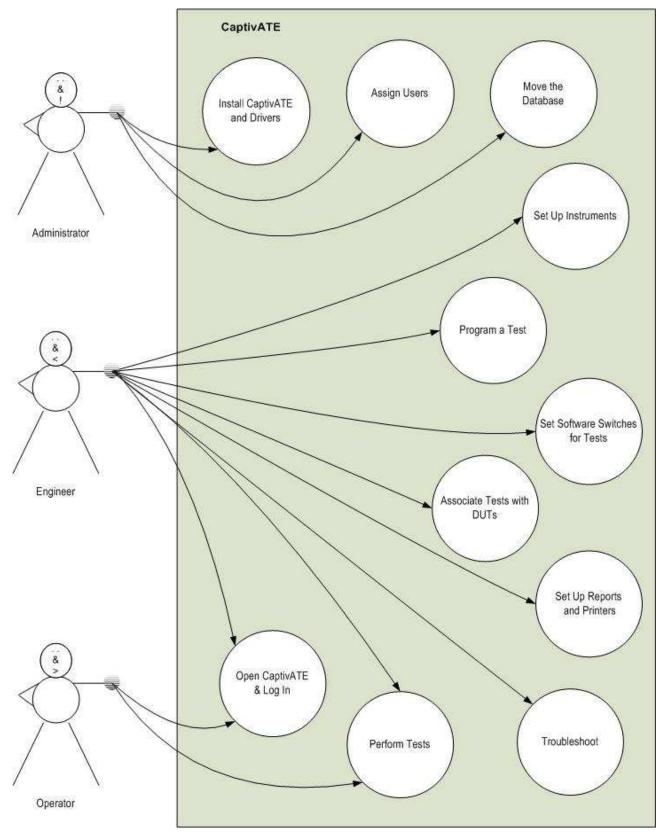


Figure 1 Use Case Diagram: What do you want to do with CaptivATE?





# **3** Administrative Tasks

The only purely administrative task is assigning user IDs, passwords, password effective date, number of days before expiration, and locking or unlocking the password. But one of the most important decisions for an administrator should be made in consultation with the Engineers and the Network Administrator; namely, where the database should go.

## 3.1 Where to Put the CaptivATE 3.3 Database?

There are two possible databases you can use: Microsoft Access and Microsoft SQL Server.

#### 3.1.1 Microsoft Access Database

By default, when you install CaptivATE on a PC, the start-up CaptivATE Access database and associated files are placed in the PC's C:\Program Files\CaptivATE 3.3 folder. That may be fine if CaptivATE is installed on only one PC. But what if you are installing CaptivATE on more than one PC? At each installation, a dialog box is going to ask where you want to put the database. In order to share all CaptivATE test programs, instrument setups, and associations, we recommend that at each installation you put the database **on a shared drive on a network**. By pointing to this location when you install CaptivATE on each PC, there will be one CaptivATE database that all users will share.

There are two possible databases you can use: Microsoft Access and Microsoft SQL Server.

#### 3.1.2 Microsoft Access Database

Access is the default database.

## 3.1.3 Microsoft SQL Server Database (SQL Version of CaptivATE Only)

To select an SQL Server database, perform the following steps.

Make sure that you have purchased the SQL version of CaptivATE.

Request that the Database Administrator create a new database on Microsoft SQL Server, which includes running the scripts in tables.sql. (The tables.sql file is included in the CaptivATE files.)

Run the scripts

Then edit the 7<sup>th</sup> line of setting.txt, adding the name of the SQL Server as instructed by your DBA.

DBServerSQL=<name of server>

## **3.2 Install CaptivATE 3.3**

If there is a previous version of CaptivATE on the PC, uninstall it before installing version 3.3.



Place the CaptivATE 3.3 CD in the CD drive. If the installation does not begin automatically, use Windows Explorer to locate the CD drive (usually Drive D) and display its contents. Click the CaptivATE 3.3 **setup.exe** file to begin the installation manually.

The following End-User License Agreement (Figure 2) is displayed.

Please read the license agreement before proceeding:	
This software end user license agreement ("EULA") is a legal agreement between you (either an individual or a single entity) and QuadTech Inc., (QuadTech). Read this document carefully before completing the installation process and using the Software. It provides a license to use the Software and contains warranty information and liability disclaimers. By installing, copying, or otherwise using the Software, you are confirming your acceptance of this EULA and agreeing to become bound by the terms and conditions of this license agreement. If you do not agree with the terms of this EULA, do not install or use the Software.	CaptivATE
License Types The license is based upon hard/instrumentation installations. That means for each set of instruments you need one copy/license of CaptivATE. You can accept the terms of the license agreement. I do not accept the terms of the license agreement.	Continue Cancel

Figure 2 End-User License Agreement

1. Click the **I accept** option button and click the **Continue** button. You then must select the location to which the files will be copied from the CD to the PC (Figure 3).

Begin Installation of CaptivATE 3.30	
Installation Folder:	
C:\Program Files\CaptivATE 3.30\	
	Change Location
<b>Install</b> Cancel	

Figure 3 CaptivATE "Begin Installation" Pop-up

2. You can accept the default location (C:\Program Files\CaptivATE 3.3) or you can change the location by clicking **Change Location** and then browse to define a new path using Windows Explorer.

## 3. Click Install.

Installation should finish in a few seconds and display a pop-up (Figure 4) offering to create a CaptivATE 3.3 shortcut icon on the desktop.

Figure 4 "Would You Like a Shortcut?"

A pop-up then tells you that the installation of the CaptivATE 3.3 files is complete.





## 3.3 Install the Drivers

For any of the following optional drivers that you have ordered, follow the instructions in the accompanying manual.

USB-to-Serial Communication	on For those who use more than one test instrument in a test
	program, the optional CD, titled USB to Serial
	Converter, converts USB ports on the PC to act like serial communication ports. A cable adapter is included.
IEEE-488	For using the QuadTech 1730T LCR Meter
NIUSB6525	For using National Instruments Digital I/O Card(Optional)

## 3.4 Open CaptivATE 3.3: Administrator

- 1. If a shortcut was created on the Desktop, click the shortcut icon to open CaptivATE 3.3. Otherwise, click Windows **Start**, click **All Programs**, and then find and click CaptivATE 3.3 from the list of programs.
- 2. Very briefly, a splash screen opens and closes, and a pop-up (Figure 5) asks you to click **OK** to define the location for the Access database.

CaptivA	TE 🛛 🛛
♪	The Access Captivate database could not be found in the specified location: \CaptivATE.mdb
	Please select or create Access database in the next step.
	(OK





3. Click OK to display the Access Database Preferences pop-up. The choices are:

Create a new Access database.. For new users (i.e., users who are not upgrading)

Use an existing Access database...For users who want to upgrade and use the existing database

Figure 6 Access Database Preference Pop-Up

(**CaptivATE Medical Option**) If you selected "Use an existing Access database," the message in Figure 7 will be displayed. All of your existing users' passwords will expire in 90 days.



CaptivA	.TE 🔀
⚠	CaptivATE has been updated to enhance user password security. All users' passwords except for the "admin" user will expire in 90 days starting today, 6/17/2008
	(OK

Figure 7 CaptivATE Password Security Pop-up

4. After either selection, use the Microsoft Explorer to browse for the correct folder in which to locate the CaptivATE database file. Only the database file will be here; all the other files installed from the installation CD will stay where they are.

Once the database file has been given its place, the login pop-up appears (Figure 8).

5. Log in with the Administrator's User Name and Password.

## 3.5 Open CaptivATE 3.3: Engineers and Operators

1. Operators and Engineers log in as determined by the Administrator. For all users, CaptivATE opens on the *Testing* screen.

Login	
User Name:	
Password:	
ОК	Cancel

Figure 8 Login Pop-Up

2. To close CaptivATE at any time or from any screen, click **File** and then **Quit**, as shown in Figure 9

🗾 QuadTech Cap	tivATE	QuadTech CaptivATE				
File Tools About Quit	Test Programmine	File	Tools About			
Test Ctrl+T Accept Ctrl+A Stop Ctrl+S	t:	Quit Batch Ctrl+B		Test Program		
Batch Ctrl+B						

Figure 9 File Menu and Quit Command

In Figure 9, the **File** pull-down menu on the left is displayed when you are on the *Testing* screen. From any other screen, the File pull-down menu on the right is displayed.



#### 3.6 Assign Users

Admin Settings screen

						ptivATE	adTech Ca	<b>C</b> (	
							ools About	File	
Batch Reports	Admin Settings	System Settings	Historical Search	Reports	Instrument Setup	Test Programming	Testing		
						s	evice Setting:		
		щ		talled Setup	Ins				
			DUT Mode	•		West Cell 2			
🗖 Always Reload Test									
🔽 Disable Verify Test									
Enable Batch Testing									
T Auto Accept									
_				Project	sters\CaptivATE 3.30			[	
			se Location	Change Databa					
ord				assword	zation Level F		Users		
		▼ 10	671772008		• I	<b>•</b>	1		
		User	Delete	llser	Save				
								L	
			Settings	Update					
ord	valid days Lock passwo	ch Testing It It It It It It It It It It	Enable Bate Auto Acception se Location Password effective 6 /17/2008 Delete	Change Databa assword User		ATCH\CaptivATE Ma	latabase Loca M:\SCR Isers Users		

Figure 10 Admin Settings Screen

## 3.6.1 Add a User

Note: This example shows the screen for the Medical version of CaptivATE which has additional fields of Password Effective Date, Password Valid Days and Lock Password. General version functions exactly the same without password aging or lockout functions.

- 1. Click the *Admin Settings* tab.
- 2. Click the "Users" drop down box and click New User.
- 3. In the User Name pop-up box, enter the new user's login name (50 characters maximum), and then click **OK**.



Users ntesla 💌	Authorization Level	Password 3phase	Password effective date 6 /17/2008	Password valid days	Lock password
	S	ave User	Delete User	]	
		Update	Settings		

Figure 11 Admin Settings: Users

- 4. When you click **OK** in the User Name box, the "Authorization Level" defaults to **Operator**. Change the authorization as desired. In Figure 11 the Authorization Level for the new user is changed to **Engineer**.
- 5. Enter a user password in the **Password** text box.
- 6. Select the number of days for which this password is valid; 10 is the minimum, 370 the maximum.
- 7. If you click the Lock password checkbox, the user cannot log in.
- 8. DON'T FORGET! Click the **Save User** button.

## 3.6.2 Delete a User



Once you delete a user, the system will not allow you to re-use that user name.

**CAUTION**: Before deleting the default administrator name ("admin"), create a user who has Administrative authority. Otherwise there will be no one with the Admin power.

#### **3.7** Move the Database

#### Admin Settings screen

The location of the CaptivATE database should be defined during the software installation process (Page 2). However, if the location of the database must be changed after installation, you can do that in the *Admin Setting* screen.

You can copy the database or you can move the database. Copying the database presents a problem. With more than one copy of the database, it can be difficult to know which database has which test programs.

On the other hand, if you *move* the database to, for instance, a shared folder on a network drive, that is fine because you still have only one database and all users can use it.

If you have more than one user of CaptivATE, be sure to change the location of the database on each PC so that **they all are using the same database**. See Database Location on the *Admin Settings* screen as shown in Figure 12.

1. Click the Admin Settings tab and note the current file path in the Database Location section.



- 2. With Windows Explorer, go to that folder.
- 3. Cut the CaptivATE database file from this location and paste it into another folder (for example, a shared directory).
- 4. Click on the **Change Database Location** button in the *Admin Settings* screen, and click the file path to the new location of the database. A pop-up appears, asking you to OK restart.
- 5. When you click **OK**, CaptivATE closes and restarts.
- 6. To verify the new location, log in and click the Admin Settings tab.
- 7. Check the file path in the Database Location section and verify it matches the file path of the newly moved CaptivATE database.

– Database Loo	cation		
M:\SC	RATCH\CaptivATE Mast	ers\CaptivATE 3.30 Project\Shared	
		Change Database Location	

Figure 12 New Location of the CaptivATE Database on a Shared Network Drive

## 3.8 Idle Auto Log Off

Tools/Options/General screen.

To set the time limit for the CaptivATE application to be idle before any user is automatically logged off, perform the following steps.

Note: Idle Log Off does not close the CaptivATE program. A new user or the previous user may log back in and CaptivATE will continue from the exact point log off occurred. Idle log off only occurs in the Test Tab and will not occur during a test.

- 1. From the System Menu Bar, open the *Tools/Options/General* screen.
- 2. Click the "Idle auto log off..." checkbox.
- 3. Scroll up from the default of 1 minute and set the time. The maximum is 60 minutes.
- 4. Click the **Accept** button.



8	CaptivATE Options			
	Test ✓ Display results in engineering Manual port detection ✓ Replace step mode with the a ✓ Enable instrument calibration ✓ Itgle auto log off after 1	notation Ilias	Reports Instrument Calibrati Sender E-mail customerservice@ Recipient E-mail(s) mkhait@quadtech Days in Advance Alert 1: 10 Test E-mail	iquadtech.com
	Accept		Reset	Exit

Figure 13 "Idle auto log off" Checkbox on Tools/Options/Test Screen

## **3.9** Edit the Settings.txt File

In the application path (the folder in which the CaptivATE system files have been installed) is the *settings.txt* file. You can edit the *settings.txt* file to do the following:

Debug while running a test

#### **3.9.1 Debug: Activation**

To tell the system software that you want to debug CaptivATE while running a test, edit the last line of the *settings.txt* file from

```
Debug=False
```

to

```
Debug=True
```

When CaptivATE is running a file debug.txt will be generated. This file contains detailed information on commands being sent to the various instruments and status of tests.



## 3.10 Enable Instrument Calibration-Due Date Alert

Tools/Options/General screen.

The Cal Due Date (Figure 14) is shown on the Instrument Setup screen..

Com Port	1 •
r i	Cal Due Date
	9 /21 /2008 💌
, , , ,	
Eiguno 14 Cali	bustion Due Data

Figure 14 Calibration Due Date

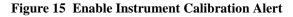
The software can send an email, a set number of days in advance of the calibration due date, to a recipient(s) email address indicating that the calibration of the instruments will be due shortly.

Note: that the software only check this due date and sends an email on initial logon screen during startup. If CaptivATE is continuously running no email will be sent. If CaptivATE is not started during the day the email would be sent, no email will be sent.

To have an email sent perform the following steps:

- 1. Click *Tools/Options/General* to display the screen shown in Figure 15.
- 2. Click the "Enable instrument calibration day alert" checkbox.

aptivATE Options		
Test	Reports	General
<ul> <li>Display results in engineering no</li> <li>Manual port detection</li> <li>Replace step mode with the alia</li> <li>Enable instrument calibration da</li> <li>Idle auto log off</li> </ul>	SMTP server no Sender E-mail	il(s)
Accept	Reset	Exit



- 3. Enter SMTP Server Name (provided by your network administrator)
- 4. Enter the Sender E-mail address
- 5. Enter email address of Recipient E-Mail(s) of the intended recipient(s) of the alert
- 6. Enter Days in Advance for Alert 1 and Alert 2

## **3.11** Change the Cal Due Date

uadTech

CaptivATE's default Cal Due Date for a test instrument is one year from the date that you first introduce it in an Instrument Setup dialog.

Click on the carrot to the right of the Cal Due Date to pop up a calendar. Select appropriate calibration due date for the instrument. The calibration due date can also be enter manually by clicking on the month, day or year in the Cal Due Date box.

										-	
Instrument S	etup Reports	Historical Search	System Settin	gs )	Ad	min S	etting	js j	B	atch F	Reports
-	,										
	Baud Rate		Com Port	1	-						
	Guardian 6100 Plus	Serial Number 123		Cal Du 6 /17	ue Da 7/200		-	-			
E	6000-07 (internal)	1235			Mon		ne 20 Wed			·	
	None			31 7	1 8	2 9	3 10	4 11	5 12	6 13	
	None			14 21	15 22	16 23	17 24	25	19 26	20 27	
	None			28 5	29 6	30 7	1 8	2 9	3 10	4	
	None			2	Tod	lay: I	<u>8/17</u>	/200	18		

Figure 16 Changing the Cal Due Date



## 3.12 Com Port Numbers: Preparing for Instrument Setup from a Remote PC

This section is relevant in situations where you are connecting more than one test instrument to the PC.

Com Port numbers can be different from one PC to another. When you are setting up more than one instrument, and you are doing it on a remote PC—i.e., a different PC from the one that actually has the test instruments connected to it—what about the com port numbers? How can you be sure that the com port numbers in your Instrument Setups are the same ones that are on the PC that will be running the tests?

Figure 17 shows the problem graphically, using as an example a PC with three test instruments.

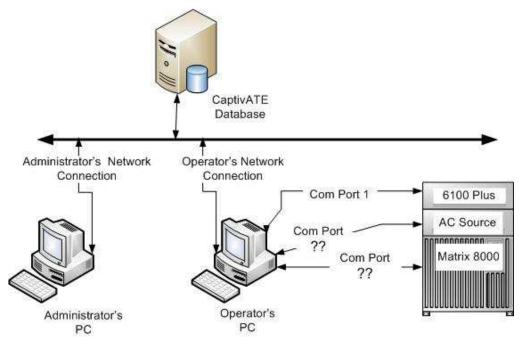


Figure 17 Com Port Confusion: Multiple Test Instruments

## **3.12.1** Finding Out What Com Ports are Being Used

The following procedure describes how to find out what Com Ports are being used by the PC that has the test instruments connected to it.

- 1. To obtain the list of test instruments and their respective com ports, click the Windows **Start** button.
- 2. In order, click the following icons: Control Panel, System, Hardware, Device Manager, and Ports.



3. Click the "+" symbol in front of Ports. The displayed list includes the name of each test instrument and its corresponding Com Port number.



# 3.12.2 Adapting the Remote PC to Match the Com Port Numbers

The manual port detection selection check box controls which com ports are shown in the instrument setup screen. If checked all 10 com ports can be selected. If unchecked then only available com ports are shown.

On the remote PC, perform the following steps to make available all 10 com ports selections.

Tools/Options/General screen

1. Change the Manual port detection software switch, circled in Figure 18, to check-marked.

6	CaptivATE Options		
	Test	Reports	General
	Display results in engineering	notation	
	Manual port detection		
	• 🔽 Replace step mode with the a	alias	
	Enable instrument calibration	date alert	
	🗖 Idle auto log off		
		1	
	Accept	Reset	Exit

Figure 18 "Manual Port Detection" Pop-up

When you start assigning Com Port numbers, the pull-down list will display all the Com Ports that are available, as shown in Figure 19.

Baud Rate	9600 💌 Com Port Serial Number	1 • 1 •
Guardian 6100 Plus 6000-07 (internal)	123	3 4 5 6 8 ▼
None	,	7
None 🔽		

Figure 19 Instrument Setup on a Remote PC with Manual Port Detection

With the Manual port detection selected, therefore, the remote PC has the full range of Com Ports to choose from during Instrument Setup.



# 4 Software Switches to Automate and Simplify Testing

#### 4.1 Associate DUT Model Numbers with Test Names

To help automate the test process, you can "associate" tests with DUTs. Once you associate a DUT Model with a Test Name and prepare to run a test, the following happens:

On the *Testing* screen, when you select an associated DUT Model Number, the Test Name box is automatically filled with the test name that is associated with that DUT Model. The cursor goes to the Serial Number text box.

For a description of the Associations buttons and text boxes, see Table 19 on page 2.

System Settings screen

The following example associates a Hybrid 2000 test program with DUT "1221".

📕 QuadTech Ca	ptivATE						
File Tools About							
Testing	Test Programming	Instrument Setup	Reports	Historical Search	System Settings	Admin Settings	Batch Reports
DUT Model Numb	er Test Associations —	Test Name					
Unassociated	IMODEIS				Associated Models		
			Associa <- Unasso Save Asso	ociate			
					1		

#### 1. Enter a Test Name.

CuadTech CaptivATE						
File Tools About						
Testing Test Programm	ng Instrument Setup	Reports	Historical Search	System Settings	Admin Settings	Batch Reports
DUT Model Number Test Associatio		1 2000 Test Program 1 Associa <- Unass Save Asso	ate ->	Associated Models		

2. Enter an Unassociated Model name or number.



	QuadTech CaptivATE		
	File Tools About		
ĺ	Testing Test Programming Instrument S	etup Reports Historical Search	System Settings Admin Settings Batch Reports
	DUT Model Number Test Associations Test Name	Hybrid 2000 Test Program 1 💌	]
		Associate ->	Associated Models
		Save Associations	

3. Click the **Associate** button. The DUT Model # (in this example, 1221) moves to the Associated Models list box.

File Tools About       Testing       Test Programming       Instrument Setup       Reports       Historical Search       System Settings       Admin Settings       Batch Report         DUT Model Number Test Associations       Test Name       Hybrid 2000 Test Program 1       Image: Construction of the second	📕 QuadTech Cap	aptivATE						
DUT Model Number Test Associations Test Name Hybrid 2000 Test Program 1 Unassociated Models Associate -> 1221	File Tools About							
Test Name Hybrid 2000 Test Program 1 Unassociated Models Associate -> 1221	Testing	Test Programming	Instrument Setup	Reports	Historical Search	System Settings	Admin Settings	Batch Reports
Associate -> 1221			Test Name Hybrid	l 2000 Test Program 1		·		
Save Associations				<- Unass	ociate			

Figure 20 System Settings . . . DUT Model Number Test Associations

4. Click the **Save Associations** button. All text boxes and list boxes are cleared. When DUT Model 1221 is selected on the Testing screen, "Hybrid 2000 Test Program 1" automatically appears in the Test Name box.

#### 4.1.1 Unassociate a DUT Model with a Test

To unassociate (dissociate) a DUT Model that has been associated with a Test Name,

- 1. Click a Test Name.
- 2. Highlight a Model in the list box labeled Associated Models and click the **Unassociate** button. The Model returns to the list box labeled Unassociated Models.
- 3. Click the **Save Associations** button.

## 4.1.2 Multiple Tests Associated with One DUT Model #

#### Testing screen

When there is more than one test associated with a DUT Model, the system responds as shown in Figure 21. In this example, the DUT Model named "hipot" is associated with four tests. Highlight one of the test names and click **OK**.



🗖 QuadTech Ca	ptivATE						
File Tools About	Test Programming	Instrument Setup	Reports	Historical Search	System Settings	Admin Settings	Batch Reports
		matament octop	noporto		oyacan ookanga	Admin ockinge	Baterritopone
DUT Model	#: hipot		Please sel	ect the correct tes	st		
Serial #:			1030S-Tes 1030S-Tes	-2			
Test Name:			1030S-Tes G6100P 3 :				
						poep	ot
			<u> </u>	0.K.	Cancel		

Figure 21 Multiple Tests Associated with the Same DUT Model #

## 4.1.3 Software Switches to Use with Associations

#### Tools/Options/Test screen

The following software switches are found on the Test tab of Tools/Options.

5	CaptivATE Options								
	Test	Reports	General						
,	Display associated DUTs only     Display associated programs only								
•••	I         Usplay associated programs only           I         I           <								
	<ul> <li>Enable computer buzzer on failure</li> <li>Enable DUT serial number</li> </ul>								
	✓ Enable operator run offset	1							
	<ul> <li>Retain Memory Locations</li> <li>Verify On Start Up</li> </ul>								
	Clear All Memory Locations								
	Accept	Reset	Exit						

Figure 22 Tools/Options/Test: Software Switches for Associations

Display associated DUTs only	On the <i>Testing</i> screen, when a program is selected, only the DUT Model #'s that are associated with that program are displayed. Test Name Field is locked out.
Display associated programs only	On the <i>Testing</i> screen, when a DUT Model # is selected, only the test programs that are associated with a DUT are displayed.



## 4.2 Retain Memory Locations

To improve test time memory locations can be retained when CaptivATE is closed. On startup of CaptivATE memory locations are reloaded from a file eliminating the often time consuming operation of Loading Setups to each instrument. The offset values are also retained.

Note: If Retain Memory Locations is checked a Perform Offset button will appear on the Testing Tab. For operators the Perform Offset button can be disabled by unchecking Enable Operator Run Offset. Always Reload Tests on the Admin Tab will be disabled and greyed out as shown in Figure 24.

## Tools/ Options/Test screen

There are two main reasons to retain the memory locations: To avoid reloading long tests, and to save offsets.

When a CaptivATE test program is loaded to a test instrument, it stores the relevant steps of the program in its volatile memory. The contents of these memory locations can be saved by checking the Retain Memory Locations checkbox. When CaptivATE is closed memory locations and offsets are saved to a file. By retaining memory locations, you can avoid the time taken to reload a test during the next CaptivATE session. When the test starts, CaptivATE will immediately display the Danger icon, indicating that the loading phase is skipped and the measurements are being performed right away. Note if when Retain Memory Locations is unchecked memory locations will be cleared and the current CaptivATE session will be closed.

6	CaptivATE Options									
	Test		Reports	Genera						
	Display associated DUTs only									
	Display associated programs only									
	✓ Display failure comment window									
	✓ Enable computer buzzer on failure									
	Enable DUT serial number									
	Enable operator run offset									
	Fletain Memory Locations									
	Verify On Start Up									
	Clear All Memory Locations									
	Accept		Reset	Exit						

Figure 23 "Retain Memory Locations" Checkbox



QuadTech Ca	2						
ile Tools About							
Testing	Test Programming	Instrument Setup	Reports	Historical Search	System Settings	Admin Settings	Batch Reports
─ Device Setting	js Please Select	Ins	alled Setup	<ul> <li>✓ DUT Mode</li> <li>✓ Always Rei</li> <li>✓ Disable Ver</li> <li>✓ Enable Bat</li> <li>✓ Auto Accept</li> </ul>	oad Test ify Test ch Testing		

Figure 24 "Always Reload Test" Checkbox

It is not recommend to enable this feature during debugging test programs or modifying test programs. To empty the *MemoryLocation.txt* file, clear the Retain Memory Locations check box and turn off CaptivATE. This is recommended if instruments are changed or feature was used when programming new test programs.

## 4.2.1 Verify on Start-Up

If Verify on Start Up is checked the first time a test program is accessed during a new session the software will verify that the program in the instrument's memory matches the test program. If the program does not match a warning will be issued and all retained memory locations will be cleared. The next time the test program is run it will load the test program into instrument's memory.

Note: If Retain Memory Locations is checked a file memory locations.txt will be updated with information on instrument memory locations being used

le <u>E</u> dit F <u>o</u> rmat <u>V</u> iew <u>H</u> elp	
,1501,1,LOAD,Hybrid 2000,8/1/2008 2:03:18 PM,+9.900000E+37 ,1501,2,LOAD,Hybrid 2000,8/1/2008 2:03:18 PM,+0.000000E+00 ,1501,3,LOADandSAVE,Hybrid 2000,8/1/2008 2:03:18 PM,+9.900000E+37	

The syntax of the first line of the file is as follows:

 Table 1 Syntax of a Line in MemoryLocations.txt

Character String in the MemoryLocations.txt File	Meaning
2	Memory location in the Hybrid 2000
1501	ID number of this test program ("Hybrid 2000 Test Program 1")
1	Step number
Hybrid 2000	Test Instrument
8/1/2008 2:03:18 PM	Date and time
+9.900000E +37	Offset (for the insulation resistance, which is out of range)



# 150889

## 4.3 Enable DUT Serial Numbers

#### Tools/ Options/Test screen

To require the Operator to enter a Serial Number for the DUT before running a test, you can click the Enable DUT serial number checkbox. Then you can choose whether to have the serial number entered manually or incremented automatically.

1. In the *Tools/ Options/Test* screen (Figure 25), click the **Enable DUT serial number** checkbox. The default is Manual.

6	CaptivATE Options		
	Test	Reports	General
	<ul> <li>Display associated DUTs only</li> <li>Display associated programs of</li> <li>Display failure comment windo</li> <li>Enable computer buzzer on fa</li> <li>Enable DUT serial number</li> <li>Enable operator run offset</li> </ul>	C Auto	ber Entry
	Retain Memory Locations     Verify On Start Up     Clear All Memory Locations     Accept	Reset	Exit

Figure 25 Tools/Options/Test Screen: Enable DUT Serial Number

2. To automate the entry of serial numbers, click the **Auto** button.



S CaptivATE Options					
	Test	Reports	General		
	<ul> <li>Display associated DUTs only</li> <li>Display associated programs only</li> <li>Display failure comment window</li> <li>Enable computer buzzer on failure</li> <li>Enable DUT serial number</li> <li>Enable operator run offset</li> </ul>	Initial Serial Num Manual Auto Initial Number A-11-2008080	<ul> <li>Increment on Pass</li> <li>Increment on Fail</li> <li>Operator Accessible</li> <li>Serial Number Alert</li> </ul>		
	Retain Memory Locations     Verify On Start Up     Clear All Memory Locations	Select incrementing group of the Serial number using Shift key with the Left and Right keys or by sweeping the mouse over target portion of the number.			
Accept Reset Exit					

Figure 26 Tools/Options/Test Screen: Operator Accessible

Table 2 shows **Enable DUT serial number**, **Manual/Auto**, and the **Operator Accessible** checkboxes (Figure 26) in all of their combinations, with results in the right column.

Enable DUT serial number	Manual/ Auto	Operator Accessible	Is the <b>Edit</b> Button Displayed on the <i>Testing</i> Screen?
Checked	Manual	Not Displayed	<b>Edit</b> button is not displayed on the <i>Testing</i> screen. Operators must enter a serial number via the keyboard. For users with Admin or Engineer status, the <i>Tools/Options/Test</i> screen displays as in Figure 25.
Checked	Auto	Checked	<b>Edit</b> button is displayed on the <i>Testing</i> screen for all users as in Figure 27. When a user with Admin or Engineer status presses the <b>Edit</b> button, the <i>Test</i> screen displays as in Figure 26. When a user with Operator status presses the <b>Edit</b> button, the <i>Tools/Options/Test</i> screen displays as in Figure 28.
Checked	Auto	Unchecked	Edit button is displayed on the <i>Testing</i> screen for users with Admin status only. Users with Engineer status can open the <i>Tools/Options/Test</i> screen and then check the Operator Accessible box.
Unchecked	Not Displayed	Not Displayed	<b>Edit</b> button is not displayed on the <i>Testing</i> screen. Users with Admin or Engineer status can open the <i>Tools/Options/Test</i> screen and then check the <b>Enable DUT serial number</b> box.

 Table 2 Checkboxes & Buttons Affecting the Automatic Increment of the Serial Number



📕 QuadTech CaptivATE									
File Tools About	_								
Testing Test Programming Instrume	nt Setup Reports	Historical Searc	h System Settings	Admin Settings	Batch Reports				
DUT Model #: 1221 Serial #: Edit A-11-20080806-0000									
Test Name: Hybrid 2000 Test Pro	gram 1	•							
Perform Offset Accept Stop / Reset									
Test ID: 1502. Memory locations for	<sup>r</sup> this test have beer	n saved togethe	er with offsets						
Step Mode	Output	Measure	Offset Value	Calc/Real	Status				
1 IR-1 0.5kV									
2 AC HIPOT 0.5kV									
3 IR-2 0.6kV									

Figure 27 *Testing* screen with Edit Button

As shown in Figure 28, an Operator who has access to the **Edit** button can edit the serial number.

6	CaptivATE Options		×
	Test	Reports General	
	<ul> <li>Display associated DUTs only</li> <li>Display associated programs of</li> <li>Display failure comment windo</li> <li>Enable computer buzzer on fail</li> <li>Enable DUT serial number</li> </ul>	inly Manual Increment on Pass Increment on Fail Mute Serial Number Alert	
	<ul> <li>Enable operator run offset</li> <li>Retain Memory Locations</li> <li>Verify On Start Up</li> <li>Clear All Memory Locations</li> </ul>	Initial Number A-11-20080806-0000 Select incrementing group of the Serial number using Shift key with the Left and Right keys or by sweeping the mouse over target portion of the number.	
	Accept	Reset Exit	

Figure 28 Tools/Options/Test Screen as Displayed to a User with Operator Status



# 4.3.1 Edit the Initial Serial Number

When the screen displays as in Figure 28, you can edit the serial number that is currently in the field and click **Accept**, or you can type a new string of characters and click **Accept**.

Note: Only the portion of serial number that is highlighted will be automatically incremented. Only alpha and/or numeric characters can be incremented. A message will be displayed to the operator if the serial number being incremented rolls over. Message is shown below.

CaptivA	TE 🛛 🔀
⚠	Overflow has occurred in the incrementing group for the next DUT. It has been reset to 0
	ОК

The last serial number for the CaptivATE session will be saved and will be restored on start up.

Highlighting Hints:

- Hold the left key of the mouse and sweep the cursor over a portion of the serial number.
- Place the cursor to the left of the first character in the portion, and hold down a Shift key while pressing the → key. OR
- Place the cursor to the right of the first character in the portion, and hold down a Shift key while pressing the ← key.

#### Table 3 How to Edit the Serial Number

Do you want to edit the current serial number or enter a new string?							
If editing the current serial number.	If entering a new string.						
The default serial number is 123. Highlight a portion of the serial number and click <b>Accept</b> . The characters in that portion of the serial number will be incremented. In the example shown in Figure 28, the	Delete the current serial number if there is one.						
edited serial number is A-11-20080806-0000. The portion of the serial number that is highlighted is <i>0000</i> . In subsequent tests, therefore, those four characters, starting with <i>0000</i> , will be incremented through <i>9999</i> , after 9999 the increment group will overflow and be restarted at 0000.	Enter a new character string as the serial number. Click <b>Accept.</b>						
Do you want to increment the whole serial number?							
If YES	If NO						
To counteract a highlighted portion, click once in the serial number field. Click <b>Accept</b> . The serial number will increment from the right-most	Select a portion of the serial number as described above.						
character to the left-most character.							



#### 4.3.2 Serial Number Alert

When you check the Serial Number Alert check box shown Figure 26, the pop-up in Figure 29 is displayed the first time the Test Tab is accessed. This is designed to help an operator remember to check the serial number when automatic incrementing is being used.

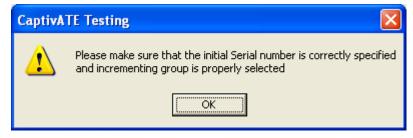


Figure 29 Serial Number Alert Pop-up



# 4.4 **DUT Model # to Previous**

Admin Settings screen

🖸 QuadTech Ca	aptivATE						
File Tools About							
Testing	Test Programming	Instrument Setup	Reports	Historical Search	System Settings	Admin Settings	Batch Reports
⊢ Device Settin	js  Please Select	Ins	talled Setup	DU Model     Always Rek     Disable Ver     Enable Bate     Auto Accep	bad Test ify Test ch Testing		

Figure 30 Set DUT Model # to Previous

Whatever DUT Model # was entered on the *Testing* screen in the previous test will be displayed automatically in that text box to begin the next test.

# 4.5 Auto Accept Test Results

#### Admin Settings screen

To automatically accept all test results (i.e., saving and/or printing all test results), click the checkbox shown in Figure 31.

📕 QuadTech Ca	ptivATE						
File Tools About							
Testing	Test Programming	Instrument Setup	Reports	Historical Search	System Settings	Admin Settings	Batch Reports
⊂ Device Setting	s Please Select	Ins	talled Setup	DUT Model     Always Rek     Disable Ver     Enable Bate     Auto Accep	oad Test ify Test ch Testing		

Figure 31 Auto Accept Test Results

Default is uncheck-marked. When checked, without the operator having to click the **Accept** button after a test, the results of the test are saved to the database and printed as defined in Section 6.



# 4.6 Enable Operator to Run Offsets

*Tools/Options/Test* Popup

6	CaptivATE Options									
	Test		Reports		General					
	🔲 Display associated DUTs onl	,								
	Display associated programs only									
	☑ Display failure comment window									
	🔽 Enable computer buzzer on f	ailure								
	Enable DUT serial number									
	🔲 Énable operator run offset									
	Retain Memory Locations									
	🔽 Verify On Start Up									
	Clear All Memory Locations									
	Accept		Reset	Exit						

Figure 32 Tools/Options/Test: Enable Operator Run Offset

Default is uncheck-marked. When checked, the operator can perform an offset by clicking the **Perform Offset** button on the *Testing* screen.

📕 QuadTech Capt	ivATE										
File Tools About											
Testing	Test Programming Instrume	nt Setup Reports	Historical Sea	rch System Settings	Admin Settings	Batch Reports					
DUT Model #: 1221											
Serial #:	Serial #:										
Test Name:	Hybrid 2000 Test Pro	igram 1	-								
	1			Test	Acce	pt					
Perform Offset				Stop	) / Reset						
Test ID: 1502	Memory locations fo	r this test have be	en saved togeth	er with offsets							
Step	Mode	Output	Measure	Offset Value	Calc/Real	Status					
1 IR-1 0.5k	V										
2 AC HIPC	T 0.5kV										
3 IR-2 0.6k	V										

Figure 33 *Testing* Screen: Perform Offset

This offset is the same kind of offset that is performed when you click the Requires Offset checkbox on the *Test Programming* screen.

When you Retain Memory Locations is checked, the offset is also saved.



#### 5 **Tutorials**

There are two tutorials, A and B. Each tutorial takes you from Instrument Setup through Testing, with branches to Reports, Admin Settings, System Settings, and the other screen and pop-ups that come into play.

Tutorial A has one test instrument, a Hybrid 2000. Tutorial B has the three test instruments that comprise the QuadTech Sentinel III: Guardian 6100 Plus, AC Source, and Matrix 8000,

Tutorial B is different in that it requites you to determine more than one Com Port. The test program created in Tutorial B also deals with steps that are unique to the Guardian 6100 Plus.

#### 5.1 **Tutorial A: One Test Instrument**

An Instrument Setup is a procedure for naming and specifying the settings of the instrument(s) with which you will be performing the tests. One setup can contain instructions for more than one instrument.

In the following example, the setup is for one test instrument, a QuadTech Hybrid 2000.

Note: Are you setting up more than one instrument? The Instrument Setup procedure is the same regardless of the number of instruments.

# 5.1.1 Instrument Setup

1.

Instrument Setup screen

Testing	Test Programming	Instrument Setup
Select a Setup		
		•
ge Guardian 600	10	~
- Guardian 610	10	
- Guardian 620	10	Hybrid 2
- Guardian 600	10 Plus	
- Guardian 610	10 Plus	
- Guardian 101	-	
- Guardian 103	-	
- Guardian 103		
Guardian 105	i0	
- Hybrid 2000		
AC Source 64		
AC Source 6	1603	
Hybrid 2000		
Hybrid 2000		

Crror! Reference source not found.Click on Hybrid

- 2. Accept the default Baud rate
- 3. Accept the default com port 1.
- 4. Enter a serial number for the test instrument.
- 5. Save the setup by clicking the **Save** button and filling in a name, as in Figure 34.



🛱 Save	Instrument Setup		×
			,
Hybrid	2000 Setup		
	Save As	Cancel	

Figure 34 Save Instrument Setup Dialog Box

6. Click the **Save As** button.

### 5.1.2 Install the Setup

In order to program a test and run a test using an Instrument Setup, you have to "install" the Instrument Setup on the *Admin Settings* screen.

Admin Settings screen

1. In the Installed Setup text box, select the setup you just created, named "Hybrid 2000 Setup," as in Figure 35.

Testing	Test Programming	Instrument Setup	Reports	Historical Search	System Settings	Admin Settings	Batch Report		
Davias California									
Device Setting	js	Ins	talled Setup						
	Hybrid 2000 Setup		•	🔽 DUT Model	# to previous				
******		*******		Always Reload Test					
				🔽 Disable Verify Test					
				🔲 Enable Batch Testing					
				📃 Auto Accep	ıt				

Figure 35 Install the Setup on the Admin Settings Screen

2. Click the Update Settings button and see the pop-up window as shown in Figure 36.



QuadTech C	aptivATE						
Tools Abou	L				,,		
Testing	Test Programming	Instrument Setup	Reports	Historical Search	System Settings	Admin Settings	Batch Reports
- Device Settin	08						
	2- 2	Install	ed Setup				
	Hybrid 2000 Setup		<b>_</b>	DUT Model	80 80		
				Always Relo	oad Test		
				🔽 Disable Veri	fy Test		
				🔲 Enable Bato	h Testing		
				Auto Accep	t		
		(	144				
		Captiv/	ATE				
\\eas	\home\plevy\CAPTIVA	TE 3.3		ok			
Users							
Users	Authori	zation Level Pas	sword	Password effective	date Password	l valid days Lock pa	ssword
	•	•		7 /31/2008	• 10	<u> </u>	
		Save Us	er	Delete	User		
				i			
			Upda	te Settings			

# Figure 36 Admin Settings Pop-up

The setup that you just installed will appear on the Test Programming screen, as shown in Figure 37.



# 5.2 Program a Test

Test Programming screen

### **Rules of Test Programming**

- When you enter a parameter value that is outside the limits, CaptivATE issues an error message.
- CaptivATE does not allow a comma (,) to be entered as a decimal point in a parameter text box. You must use a period (.) as a decimal point. (See Note to European Users on Page 2.)
- The equal sign (=) and the semi-colon (;) must **not** be entered in any text box.
- To remove a step, click on the step to highlight it, and click **Remove.**
- To clear the Test Sequence list box and start again, click **Cancel** instead of Save. All previously programmed steps of that sequence will be lost.
- Do not modify test programs while other CaptivATE users are running them.
- Setups manually programmed in an instrument's memory that conflict with the settings in CaptivATE are over-written by CaptivATE after terminating the test on the first try.
- If two Presets are programmed for the same instrument, they must be separated by a step (mode) from that instrument. Otherwise, when the Disable Verify Test software switch is uncheck-marked, a failure will occur.
- When programming a test in which there are more than one test instrument: Program the test sequence in the order in which you want CaptivATE to execute it.

See the message: "Hybrid 2000 Setup." The text box below, CaptivATE displays only the test instruments included in that particular Instrument Setup.

📕 QuadTech Ca	ptivATE						
File Tools About							
Testing	Test Programming	Instrument Setup	Reports	Historical Search	System Settings	Admin Settings	Batch Reports
Select a Test							
		▼					
"Hybrid 2000 Se	tup" setup:						
₽ Hybrid 2000							
ia No Instrument M	odes						
l'							

Figure 37 Test Programming Screen: Installed Setup Is Highlighted

1. Click the Hybrid 2000 "+" to show the modes, as in Figure 38.



In the Tutorial A Test Program, there are three modes or steps:

Insulation Resistance

AC Hipot

Insulation Resistance

2. Click the Insulation Resistance mode. The text boxes are displayed as in Figure 38.

📕 QuadTech Capti	ivATE						
File Tools About							
Testing	Test Programming	Instrument Setup	Reports	Historical Search	System Settings	Admin Settings	Batch Reports
Select a Test: "Hybrid 2000 Setup Preset AC Hipot DC Hipot DCR Open/Short Che #: No Instrument Mode	tance eck	Vol 0 Mo IR Sc	mp Time (sec) ode Alias ⊱1 0.5 k∨ canner Box	Mode: Insulation Resist High Limit (Mohm) 0 Fall Time (sec) 0 <u>CH1 CH2</u> V Off V Off V	Low Limit (Mohm 1.0 Range (mA) Auto	▼ CH5 CH6	<u>сн</u> <i>с</i> н 8
Test Sequence:          Insulation Resistant         Requires Offset	nce Hybrid 2000 Remove			Sav	eC	ancel	

Figure 38 Test Programming: Insulation Resistance as First Step

- 3. Enter 0.5 kV in the Voltage text box, and enter an optional alias in the Mode Alias text box.
- 4. Enter AC Hipot. The Voltage text box (kV) is required. Mode Alias is optional.



📕 QuadTech CaptivATE						
File Tools About						
Testing Test Programming	Instrument Se	tup Reports	Historical Search	System Settings Admi	in Settings	Batch Reports
Select a Test:	•	Instrument: Hybrid 2000		Level in Steed)	Test Time (	
"Hybrid 2000 Setup" setup:		Voltage (kV) 0.5	High Limit (mA) 0.500	Low Limit (mA)	Test Time (s 3.0	ec)
		Ramp Time (sec) 0 Mode Alias	Fall Time (sec) 0	Arc Limit (mA)	Real Limit (n 0	<u>nA)</u>
- Open/Short Check #- No Instrument Modes		AC HIPOT 0.5kV		<u>CH 3 CH 4 CH 5</u> Díf ▼ Off ▼ Off ▼		<u>CH7 CH8</u> ff ▼Off ▼
Test Sequence:           1         Insulation Resistance Hybrid 2000           2         AC Hipot Hybrid 2000						

Figure 39 Test Programming: AC Hipot as the Second Step

5. Enter Insulation Resistance. The Voltage text box (kV) is required. Mode Alias is optional.

🖸 QuadTech Ca	ptivATE						
File Tools About							
Testing	Test Programming	Instrument Setup	Reports	Historical Search	System Settings	Admin Settings	Batch Reports
Select a Test: "Hybrid 2000 Set Preset - AC Hipot - DC Hipot - DCR - DCR - DPreset - DCR - DCR - No Instrument M	sistance Check	Voll Ran 0 Mo IR Sc	tage (KV) 5 mp Time (sec) de Alias -2 0.6 KV canner Box	Mode: Insulation Resist High Limit (Mohm) 0 Fall Time (sec) 0 <u>CH1 CH2</u> Off Off Off	Low Limit (Mohn 1.0 Range (mA) Auto CH 3 CH 4	3.0 	<u>сн</u> г <u>сн</u> в
2 AC Hipot Hybrid	tance Hybrid 2000 2000 tance Hybrid 2000						
🔲 Requires Offsel	Remove			Save	e (	Cancel	

Figure 40 Test Programming: Insulation Resistance as Third Step

6. Click the **Save** button. A pop-up window appears as in Figure 41.



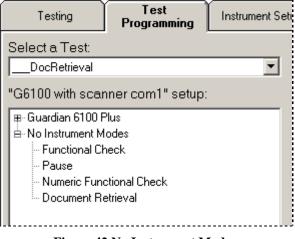
Save Test	×
Hybrid 2000 Test Program 1	
Save As	Cancel

Figure 41 Save the Test Program

7. Enter a name for the test program, and click the Save As button,

### 5.3 "No Instrument" Modes

No Instrument Modes allows a variety of functions to be accessed during the test sequence such as creating a pause or displaying a work instruction. As shown in the sections below, these modes are Functional Check, Numeric Functional Check, Virtual Pause, Timed Virual Pause and Document Retrieval. The example shown below uses a Guardian 6100 Plus, all supported instruments listed in section 1.6 can be used.



**Figure 42 No Instrument Modes** 



# 5.3.1 Functional Check

Functional Check allows the programmer of the test to send instructions to the Operator. The same thing can be done with a Virtual Pause. But during a Functional Check, the Operator, depending upon the results after carrying out the instructions, clicks either the **Pass** button or the **Fail** button. The test will continue on a PASS. The test will be stopped on a Fail.

Functional Ch	eck						
Verify the Fun	Verify the Functional Check by clicking either PASS or FAIL						
En	ter Comments Here. Maximum	n 50 Characters					
Fu	inctional check						
	PASS	FAIL					

Figure 43 Functional Check Pop-Up during the *Testing* Phase

For instance, the instructions of a Functional Check might tell the Operator:

Please verify there is a serial number on the back of the DUT.

Or

Please press the **ON** button of the DUT and verify the message 'ACME Patient Monitor' is displayed on the LCD within three seconds.

In the first example, if there is a serial number, the Operator clicks the **Pass** button and the test proceeds, if not he clicks **Fail**.

In the second example, if the message is displayed within the allotted time, the Operator clicks the **Pass** button and the test proceeds; if not, he clicks **Fail**.

The Operator can also enter a comment in the text box labeled "Enter Comment Here." These responses are saved to the database.

# 5.3.2 Numeric Functional Check

Like a Functional Check, the programmer gives the Operator an instruction, and during the test the Operator responds. For example, if DUT is an oven, the instruction might be "Please read the thermometer and enter the temperature of the oven in the text box labeled `Enter Numeric Value Here'."

The Operator's input must be a number.



The CaptivATE software compares the numeric value entered by the Operator with the High and Low limits as defined by the programmer during the Numeric Functional Check step in the *Test Programming* phase.

# 5.3.3 Virtual Pause

Virtual Pause is a step that delays the test and/or passes messages to the Operator. During the test, when the message has been received, and the instructions carried out or the delay completed, the Operator clicks the **Continue** button to proceed to the next step.

### 5.3.4 Document Retrieval

Document Retrieval is a step that displays a document in a separate window. The document can be any document chosen by you in the Test Programming phase. The Document Type radio buttons should be used to select if the document is a Microsoft Office Document or other document such as pdf, jpg, txt etc.

Note that not all Office documents are supported by Microsoft Office Document Type, such as templates are not allowed.

Note that Ctrl-C, to continue a test, will not work when displaying pdf documents.

In Figure 44, the selected document is a .doc file, which when the step is reached, will open a window displaying the 150889 rev b.doc document.

Document Type     Microsoft Office     Other	
Document Location N:\SCRATCH\OEM\Captivate\Captivat	e 3.3\Datasheets\150889 rev b.doc
Mode Alias	Select Document ]

Figure 44 Document Retrieval Text Boxes

### 5.3.5 Timed Virtual Pause

Timed Virtual Pause is identical to Virtual Pause with an additional timer. Once the time out seconds has elapsed the next step will be executed. During the test, when the message has been received, and the instructions carried out or the delay completed, the Operator can also click the **Continue** button to proceed to the next step.



Virtual Pause		
Time out (seconds)		
, Mode Alias		
MOUE Allas		
1		

# 5.4 "Requires Offset" Check Box

An offset procedure is one in which the resistance or current carried by connectors and cables of the test instruments is calculated and "zeroed" to assure accurate measurements. When you check-mark this box (lower left of the *Test Programming* screen), it sets the stage for an offset procedure. An offset procedure is carried out just before the test is run. The system pop-up prompts the Operator to disconnect the DUT and connect the offset test cables.

When the "Requires Offset" check box on the *Test Programming* screen is check-marked. The following procedure is required while running that test:

- 1. As the test is loading, a pop-up message box instructs you to remove connections to the DUT and, if necessary, connect the offset test fixtures. Click **OK**.
- 2. At the end of performing an offset, a pop-up box tells the Operator to disconnect the offset fixture and connect the DUT.

ile Tools Abou							
Testing	Test Programming	Instrument Setup	Reports	Historical Search	System Settings	Admin Settings	Batch Reports
	III 6			7			
DUT Mode	#: Domestic			-			
DUT Mode Serial #:	I #: Domestic			-			

3. Click **OK**. Allow the test to start. Results of the offset procedure are displayed in Figure 45.

Fest Name	: K924 Domestic		Y			
				Test	Accept	
				Stop /	Reset	
Testing in prod	arocc					
resund in proj	3,600					
Step	Mode	Output	Measure	• Offset Value •	Calc/Real	Status
	Mode	Output	Measure NA	Offset Value NA	•	Status NA
Step 1 Preset	Mode				NA	
Step 1 Preset	- Mode : Short Check	NA	NA	NA 0.268 nF	NA NA	NA
Step 1 Preset 2 Open/s	Mode Short Check	NA 66 V	NA 0.0 pF	NA 0.268 nF 1.900 mΩ	NA NA NA	NA Pass
Step 1 Preset 2 Open/5 3 Ground 4 AC Hip	Mode Short Check	NA 66 V 25.00 A	NA 0.0 pF 0.100 mΩ	NA 0.268 nF 1.900 mΩ 75.0 μA	NA NA NA	NA Pass Pass



#### Figure 45 Testing screen Showing Offset Values

#### 4. Enter DUT Model #, Serial #, and select a Test Name

*Note:* When you enter a DUT Serial #, please avoid the following nine characters: \/:\*? " <> | In CSV, these characters will be replaced with underscores (\_).

#### 5.5 Flags Seen During Tests

Flags display	on backgrounds	in these circumstances
Loading Test, Please Wait	YELLOW	The first time this particular test is run OR When the software switch is ON (Error! Reference source not found., Page Error! Bookmark not defined.)
Verifying Test	ORANGE	When the software switch is ON. (Error! Reference source not found., Page Error! Bookmark not defined.)
	YELLOW	While a test is running.
X Test Failed	RED	When a specified limit has been breached at any step (mode).
VTEST PASSED	GREEN	When the DUT has remained within limits during all steps.

#### Table 4 Flags Seen During Tests

CaptivATE allows the instruments to receive the results of the tests; namely PASS or FAIL; the user can then press the **Accept** button to store the results in the CaptivATE database. As defined in the *System Settings* screen (Figure 74 on Page 2), an electronic test report will be created, saved, and printed.



#### 5.6 Stop/Reset Button

You can stop the testing process at any point by clicking Stop/Reset.

One Click Tw	wo Clicks
screen Mo Turns off the buzzer and enables manual ma	esets test list boxes unless "DUT lodel # to Previous" is check- larked on the <i>Admin Settings</i> creen.

Testing	Test Programming	Instrument Setup	Reports	Historical Search	System Settings	Admin Settings	Batch Report
	· · ·				1	·	
DUT Model	#: stop click		2				
Serial #:	serial numbe	21		]			
Test Name:	stop button	chick.	2	]			
							7 - P
					Test	Accep	ot
		••••			110000	Accep Reset	ot
	icked. Test stopp				110000		
	icked. Test stopp Made		itput	Measure	110000		Status

Figure 46 Test Stopped

# 5.7 Display Failure Comment Window

When a test fails and the Tools/Options/Test software switch is ON (Figure 47), the Failure Comment pop-up is displayed. The Operator must enter a comment of up to 50 characters.

CaptivATE Options			×
Test	Reports	General	Ì
<ul> <li>✓ Display associated DUTs of ✓ Display associated program</li> <li>✓ Display failure comment with</li> <li>✓ Enable computer buzzer of</li> </ul>	ns only ndow		

Figure 47 Tools: Software Switch, Failure Comment

Text box pops up when a test fails (Figure 48). A failure comment must be entered; a "Failure Comment" section is created in the Standard Report of this test.

Í	🖻 Failure Comment
	In step 7, Low Lim was 4mA instead of 0.
	Continue

Figure 48 Failure Comment



# 5.7.1 Batch Testing

One other choice before starting a test is whether you want to run a batch of tests. See Batch Tests and Batch Reports in Section 7.

# 5.7.2 Test Procedure

Testing screen

- 1. Select or Enter a DUT Model #.
- 2. Verify that the Serial Number displays automatically.
- 3. Verify that the Test Name associated with the DUT Model# displays automatically.

🗖 QuadTech CaptivATE						
File Tools About						
Testing Test Programming In	strument Setup Reports	Historical Sear	ch System Settings	Admin Settings	Batch Reports	
DUT Model #: 1221						
Serial #: Edit abcd200808041	efg					
Test Name: Hybrid 2000 Te	st Program 1	•				
Perform Offset Accept Stop / Reset						
Test ID: 1501. Memory locatior	ns for this test have bee	en saved togeth	er with offsets			
Step Mode	Output	Measure	Offset Value	Calc/Real	Status	
1 IR-1 0.5kV						
2 AC HIPOT 0.5kV						
3 IR-2 0.6kV						

Figure 49 Testing Screen: All text boxes filled in

4. Click the **Perform Offset** button.



5. Click OK to begin the offset.





- 6. Start the test in one of the following ways:
  - a. Click **OK** to continue.
  - b. Press the **Test** button,
  - c. Select Test from the File menu
  - d. Press the Ctrl-T keys.
  - e. Scan the "Test" bar code with a barcode scanner.

🗖 QuadTech CaptivATE						
File Tools About						
Testing Te	st Programming Instrumer	it Setup Reports	Historical Sea	rch System Settings	Admin Settings	Batch Reports
DUT Model #:	1221		Ŧ	Verify	ing Test	
Serial #: Edit	abcd200808041efg					
Test Name:	Hybrid 2000 Test Pro	gram 1	V			
Perform Offset Stop / Reset						
Start Verify Tes	t. Test ID: 1501					
Step	Mode	Output	Measure	Offset Value	Calc/Real	Status
1 IR-1 0.5kV						
2 AC HIPOT	0.5kV					
3 IR-2 0.6kV						

Figure 50 *Testing* screen: Verifying test



## **5.8** Tutorial B: Three Test Instruments

In the following example, the setup is for three test instruments: an AC Source, a Matrix 8000, and a Guardian 6100 Plus. This set of test instruments is the QuadTech Sentinel III product.

Note: Are you setting up only one instrument? The Instrument Setup procedure is the same regardless of the number of instruments.

An Instrument Setup is a procedure for naming and specifying the settings of the instrument(s) with which you will be performing the tests. One setup can contain instructions for more than one instrument.

### 5.8.1 Instrument Setup

Instrument Setup screen

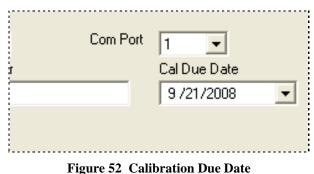
- 1. Click the *Instrument Setup* tab. The *Instrument Setup* screen is displayed. A list of QuadTech test instruments is displayed in the list box.
- 2. Select as an instrument the 6100 Plus by double-clicking on its name, as shown in Figure 51. The instrument name then appears in the lower list box window.

File       Tools       About         Testing       Test Programming       Instrument Setup       Reports       Historical Search       System Settings       Admin Settings       Batch Reports         Select a Setup <ul> <li>Guardian 6000</li> <li>Guardian 5100</li> <li>Guardian 6100</li> <li>Guardian 6000 Plus</li> <li>Guardian 6000 Plus</li> <li>Guardian 6000 Plus</li> <li>Guardian 1010</li> <li>Guardian 1010</li> <li>Guardian 1030S</li> <li>Guardian 1030S</li> <li>Guardian 1050</li> <li>Hybrid 2000</li> <li>AC Source 6408-1</li> <li>None</li> <li>None</li></ul>
Select a Setup  Guardian 6000 Guardian 6100 Guardian 6100 Guardian 6100 Guardian 6100 Flus Guardian 6100 Flus Guardian 6100 Flus Guardian 1010 Flus Fluardian 1010 Fluardian 101
Guardian 6000   Guardian 6100   Guardian 6100   Guardian 6100 Plus   Guardian 6100 Plus   Guardian 6100 Plus   Guardian 6100 Plus   Guardian 1010   Guardian 1010   Guardian 1030S   Guardian 1030S   Guardian 1030S   Guardian 1030S   Guardian 1030S   Guardian 1030S   None   AC Source 6408-1   None
Save Delete

Figure 51 Instrument Setup screen

- 3. Accept the default baud rate, which is set by the software to either 9600 or 19200.
- 4. The PC com port that accepts the 9-pin D-connector is always Port 1.

- 5. Enter a Serial Number for the 6100 Plus.
- 6. The Calibration Due Date (Figure 52) is defaulted to one year from the date on which the instrument was set up. To change the Cal Due Date, see or to request an email alert when the Cal Due Date is imminent, see section 3.9.



- 7. In the list box, double-click on the name of the AC Source, 6408.
- 8. Connect a USB cable from the PC through a serial converter adapter to the AC Source.
- 9. Open the Com Port pull-down list. Now what com ports are shown to be connected? COM PORTS 1 and 4. Therefore, when you assign a Com Port to the AC Source during Instrument Setup, assign it Com Port 4.
- 10. Select 4 from the Com Port pull-down list and enter a Serial Number for the AC Source.
- 11. In the list box, double-click on Matrix 8000.
- 12. Connect a USB cable from the PC through a cable adapter to the Matrix 8000.
- 13. Open the Com Port pull-down menu.

Com Ports 1, 4, and 6 are being used, which tells us that the USB connection made to the Matrix 8000 was from Com Port 6. Com Port 1 • 1 • 4 6 8 • 8 /13/2008 •

Figure 53 Com Port Pull-down with Three Instruments Connected

# 5.8.2 Finish the Setup

- 1. Select 6 from the Com Port pull-down list and enter the serial number of the Matrix 8000.
- 2. When the instruments have each been included, click on **Save** at the bottom of the *Instrument Setup* screen. A "Save Instrument Setup" pop-up box appears.



🖻 Save Instrument Setup	×
Sentinel III Captivate Demo	
Save As Cancel	

Figure 54 Save Instrument Setup Pop-Up

3. When the instruments have each been included, click on **Save** at the bottom of the *Instrument Setup* screen. A "Save Instrument Setup" pop-up box appears.

🗟 Save	Instrument Setup		×
			_
Sentine	el III Captivate Demo		
	Save As	Cancel	

Figure 55 Save Instrument Setup Pop-Up

4. Click Save As.

#### 5.8.3 Install the Setup

#### Admin Settings Screen

You must specify one Instrument Setup per test. Once you have saved an Instrument Setup, you must "install" it as follows before using it to run a test.

- 1. Click the *Admin Settings* tab.
- 2. From the Installed Setup drop down box, click an instrument setup as in Figure 56.

🗖 Quad	Tech Ca	uptivATE		
File Too	ls About			
Te	sting	Test Programming	Instrument Setup	Reports H
Dev	ice Setting	js	Ins	talled Setup
		Sentinel III Captivate	Demo	•
Fi	gure 56	Admin Settings:	Selecting an In	stalled Setup

NOTE: Changes to any of the Device Settings must be followed by clicking the **Update Settings** button at the bottom of the Admin Settings screen. Once you update ant setting, the message shown Figure 57 appears.



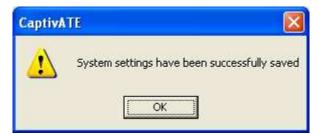


Figure 57 Updated System Settings Pop-up

# 5.8.4 Program a Test

The sample program that will be created here is for a Sentinel III, which contains three instruments

Note: Are you programming only one instrument? The Instrument Setup and the Test Programming are the same, regardless of the number of instruments.

# Test Programming screen

The Test Programming screen displays the instruments that are in the setup selected on the Installed Setup box on the *Admin Settings* screen.

📕 QuadTech Ca	ptivATE		
File Tools About			
Testing	Test Programming	Instrument Setup	
Select a Test:			
·			
"Demo Sentinel	III" setun:		
"Demo Sentinel	· ·		
🖶 Guardian 6100 F	Plus		
	Plus 13		
■ Guardian 6100 F ■ AC Source 6160	Plus 13 dical)		
⊞ - Guardian 6100 F ⊞ - AC Source 6160 ⊞ - Matrix 8000(Med	Plus 13 dical)		

# Figure 58 Test Programming: Included Instruments

# AC SOURCE 61603

The AC Source maintains a stable voltage, which in our example is 120V. An AC Source is programmed into Step 1

- Start building a test sequence by clicking the AC source, and expand the command tree by clicking the "+" next to the respective instrument as shown in Figure 58.
- 2. Double click on a test step command. The command will be added to the Test Sequence window. The right side of the *Test Programming* screen will display the test parameters for the selected step.

📕 QuadTech Ca	ptivATE	
File Tools About		
Testing	Test Programming	Instrument Setu
Select a Test:		
		•
"Demo Sentinel	III" setup:	
"Demo Sentinel ■ Guardian 6100 F AC Source 6160 - AC Source - Fetch Power - Fetch Voltag - Fetch Voltag - Fetch Curren # Matrix 8000(Mec # No Instrument M	Factor ge t t	
L.	<b>50</b> S4 1	

Figure 59 Step 1: AC Source



UuadTech CaptivATE					
File Tools About					
Testing Test Programming Instrument Sel	tup Reports	Historical Search	System Settings	Admin Settings	Batch Reports
Select a Test:	Instrument: AC Source 6 Voltage (V) 120 Slew Rate (V/ms) 1	1603 Mode: AC Source Frequency (Hz) 60 Overcurrent Delay (sec 1	Voltage Limit (V)	Current Lim	it (A)
Test Sequence:          1       AC Source AC Source 61603         Image: Comparison of the sequence o		Save	» Ca	ancel	

Figure 60 AC Source: Test Programming Boxes

# **Guardian 6100 Plus**

The Guardian 6100 Plus is the main instrument in the test, driving voltage and current into Steps 3 (Figure 63), 5 (Figure 65), 7 (Figure 67), and 9 (Figure 69).



Testing Test Programming	Instrument Setup	Reports	Historical Search	System Settings	Admin Settings	Batch Reports
Select a Test: Demo Sentinel III" setup: ■ Guardian 6100 Plus ■ Preset AC Hipot ■ DC Hipot ■ Ground Bond ■ Insulation Resistance ■ Open/Short Check ■ Leakage Current ■ LC Infinite ■ LC Fetch ■ Stop ■ AC Source 61603 Test Sequence: 1 AC source AC Source 61603 ■ Insulation Resistance Guardian 6100	Volta 1 Ram 0 Mode 1R-1 500 Nor Nor	ge (kV) o Time (sec) o Alias kv nner Box 0-07 (internal) ie ie	100 Plus Mode: Insulatio High Limit (M Ohms) 0	n Resistance Low Limit (M Ohi 1.0	3.0	(sec) <u>CH 7 CH 8</u>

Figure 61 Insulation Resistance: Step 2

### **MATRIX 8000**

The Matrix 8000 is a modular mainframe with up to eight modules which can be configured to automate testing of device with multiple connections.

There are two versions of the QuadTech Matrix 8000: General and Medical. The one used in this example is the Medical. It is programmed into Steps 2 (Figure 62), 4 (Figure 64), 6 (Figure 65), and 8 (Figure 68). When programming the Matrix 8000, the modules must match those programmed in the Instrument Setup.



📕 QuadTech Ca	ptivATE						
File Tools About							
Testing	Test Programming	Instrument Setup	Reports	Historical Search	System Settings	Admin Settings	Batch Reports
Select a Test		-					
I "Demo Sentinel	III" setup:	-					
Matrix 8000(Met     AC HIPOT: E     AC HIPOT: E     AC HIPOT: L     AC HIPOT: L     AC HIPOT: L     AC HIPOT: A     AC HIPOT: A     AC HIPOT: S     AC HIPOT: A     AC HIPOT: C     AC HI	Iceal) IOP ive Parts to PE, Enclo ive Parts to SIP/SOP IC Line to Earth IC Line to GB (Twin PC inclosure, Accessible IC Line 2, Earth, GB iB (1) ive Parts to SIP/SOP	non-PE rt) Parts, AP to Parts non-F					
☐ Requires Offse	t Remove			Save	·C.	ancel	

Figure 62 Step2: Matrix 8000 Ground Bond

le Tools About							
Testing	Test Programming	Instrument Setup	Reports	Historical Search	System Settings	Admin Settings	Batch Reports
elect a Test:  Guardian 6100  Preset AC Hipot DC Hipot DC Hipot Cound Bon Insulation R Open/Shot Leakage Cu LC Infinite LC Fetch Sto 1 AC Source AC AC HIPOT: GE C Forund Bond I AC Source AC C C Encound Bond C Encoun	d esistance Check irrent Source 6408-1	GB GB Not 4.0 Gr Gr Sc	t Time (sec) de Alias Dund Bond PE Str anner Box 00-07 (internal)	Current (Amps) 30 Twin Port Off	- High Limit (m Ohr 100.0	0	n Ohms)
Requires Offs	et			Sav	e	ancel	

Figure 63 Step 3 Guardian 6100 Plus: Ground Bond (with Alias)



File Tools About	Test	Instrument Setup	Y	Reports	0.5	I Search	System Settings	Admin S		ch Reports
Testing	Programming	Instrument Setup	2	Heports	Historica	i Search	System Settings	Admin S	ettings Bat	ch Heports
AC HIPOT: AC HIPOT: AC HIPOT:	Live Parts to PE, Enclo Live Parts to SIP/SOP AC Line to Earth AC Line to GB (Twin Po	sure, or AP	ALC: NOT THE OWNER	8000 AC HIPOT: AC 0601-1 Reference		arth				
AC HIPOT: AC HIPOT: AC HIPOT: AC HIPOT: AC HIPOT: AC HIPOT: Sest Sequence: 1 AC Source AC 2 AC HIPOT: GE 3 Ground Bond I	Live Parts to SIP/SOP General. AC Line 2. Ea	Parts non-F	2 3 4 5 6 7	Module Type ACLINE GBF-2 EARTH ACLINE2 GENERAL GENERAL GENERAL GENERAL		CH 1 High	CH2 High	HJ VOW	3 <u>CH4</u>	×
Requires Offs	et				ļ	Save		Cancel	J	

Figure 64 Step 4: Matrix 8000 AC HIPOT AC Line to Ground

Testing	Test Programming	Instrument Setup	Reports	Historical Search	System Settings	Admin Settings	Batch Reports
elect a Test: Guardian 6100 Pk Preset - AC Hipot - DC Hipot - Ground Bond - Insulation Resi - Open/Shot Cf - Leakage Curre - LC Infinite - LC Infinite - LC Fetch - Stop - Stop - Stop - Stop - AC HIPOT: GB (1 - Ground Bond Gu - AC Hipot Guardie	is stance ieck nt iurce 6408-1 ) Matrix 8000 ardian 5100 Plus ardian 5100 Plus	Volta Volta I.5 Ram O Hip Sca Figure Nor	ot Mains to Gro nner Box 0-07 (internal) ie	High Limit (mA) 0.500 Are Limit (mA) 0 bund CH 1 CH 2 Figh T Progr	Low Limit (mA) 0 Arc Filter 3-230 CH 3 CH 4 Off I CH 4 CH	V <i>ote</i> : Set	cH 7 CH 8
Requires Offset	1			Sav	e   C	Cancel	

Figure 65 Step 5: Guardian 6100 Plus AC Hipot (with Alias)



est Sequence: AC Source AC Source 6409-1 2 AC HIPOT: GB (1) Matrix 8000 3 Ground Bond Guardian 6100 Plus 4 AC HIPOT: AC Line to Earth Matrix 8000 5 AC Hipot Guardian 6100 Plus 5 GENERAL 0 ff 0 ff	Testing	Test Programming	Instrument Setu	φĺ	Reports	Historica	I Search	Syste	m Settings	Ad	min Settir	ngs	Batch	Report
Ground Bond       Insulation Resistance: Mains to Chassis         Earth Leakage: Class I       Earth Leakage: Class I         Earth Leakage: Specified Power Supply       Image: Class I         Image: Class I       Image: Class I	DC HIPOT: DC HIPOT: DC HIPOT: DC HIPOT: DC HIPOT: DC HIPOT:	AC Line 2, Earth, GB GB (1) Live Parts to SIP/SOP General, AC Line 2, Ea	e Parts non-l 📩 non-SELV 👝	<u>SM9</u> Mains	36 (Subclause 19 connection through	I. <b>4 f]:</b> Eart AC Line M	fodule and f	PE conn	nection throu	igh GB I	Module.	vithout A	.pplied Pa	art.
1 AC Source AC Source 6408-1 2 AC HIPOT: GB (1) Matrix 8000 3 Ground Bond Guardian 6100 Plus 4 AC HIPOT: AC Line to Earth Matrix 8000 5 ACH Hipot Guardian 6100 Plus 5 GENERAL 0 ff  0 ff  0 ff  0 ff	Ground Bon Insulation R Earth Leaka Earth Leaka Enclosure L	d esistance: Mains to Ch ige: Class I ige: Specified Power Si eakage	upply	<u>Slot #</u> 1 2	Module Type ACLINE GBF-2		<u>CH 1</u> Off Low	- 	<u>CH 2</u> Off Off	-	대3			-
	AC Source AC AC HIPOT: GB Ground Bond ( AC HIPOT: AC AC HIPOT: AC	) (1) Matrix 8000 Guardian 6100 Plus ) Line to Earth Matrix 80 dian 6100 Plus	000	4 5 6 Z	ACLINE2 GENERAL GENERAL GENERAL			• •	Off Off	of ▼ Of ▼ Of	f f f	- Off	f f f	

Figure 66 Step 6 Matrix 8000 Earth Leakage Class I

📴 QuadTech CaptivATE						
File Tools About						
Testing Test Programming	Instrument Se	etup Reports	Historical Search	System Settings	Admin Settings	Batch Reports
Select a Test:		– Guardian 6100 Plus Lea	akage Current			
	-	High Limit (mA)	Low Limit (mA)	Test Time (sec)	Device	
B-Guardian 6100 Plus Preset	~	6.000	0	3.0	D4: UL28	i01-1 💌
- AC Hipot - DC Hipot		Line	Ground Switch	Meter	Power	
Ground Bond		L0: Normal 💌	OFF: Open 💽	M0: L-G	▼ Voltage	•
- Open/Short Check		High Limit	Low Limit			
<ul> <li>Leakage Current</li> <li>LC Infinite</li> </ul>		0	0			
- LC Fetch	~	Mode Alias				
<	>	Earth Leakage Nor	mal Polarity No Fault			
Test Sequence:		Scanner Box				
1 AC Source AC Source 6408-1 2 AC HIPOT: GB (1) Matrix 8000 3 Ground Bond Guardian 6100 Plus 4 AC HIPOT: AC Line to Earth Matrix 80 5 AC Hipot Guardian 6100 Plus 6 Earth Leakage: Class I Matrix 8000		6000-07 (internal)		<u>CH3 CH4 C⊢</u> )# <u>▼</u>	<u>15 CH6</u>	<u>CH 7 CH 8</u>
7 Leakage Current Guardian 6100 Plus		None	•			
☐ Requires Offset Remove			Save	Canc	el	

Figure 67 Step 7 Guardian 6100 Plus Leakage Current (with Alias)



Testing	Test Programming	Instrument Setup		Reports	Historical	Search	Syst	em Settings		Admin Setti	ngs	Batch	n Report
– DC HIPOT: AU – DC HIPOT: GI	P/SOP to Accessible C Line 2, Earth, GB B (1) ve Parts to SIP/SOP	Parts non-I	5M93	8000 Earth Leakagr 36 [Subclause 19 connection through	.4 f): Earth						witho	ut Applied F	Part.
	eneral, AC Line 2, Ea	-		3 (External Volt)	1	ctive Earth)		S10 (Function		Earth)			
- DC HIPOT: GI Ground Bond	B (2)		DFF	<u> </u>	GE_OF	F	•	FE_OFF		_			
Earth Leakage	istance: Mains to Ch a: Class I a: Specified Power Si	¥	<u>ilot #</u> 1	Module Type ACLINE	-	CH 1 Off	-	CH 2 Off	•	<u>CH 3</u>		<u>CH 4</u>	
Enclosure Lea			2	GBF-2	<b>.</b>	Low	-	Off	•				
st Sequence:			3	EARTH	-	Off	•	Off	•	Off	•	Off	•
			4	ACLINE2	<u>*</u>								
AC Hipot Guardia	an 6100 Plus	100	5	GENERAL	*	Off	•	Off	•	Off	•	Off	•
Leakage Current	Class I Matrix 8000 : Guardian 6100 Plus Class I Matrix 8000		<u>6</u>	GENERAL	-	Off	•	Off	•	Off	•	Off	•
			Z	GENERAL		Off	•	Off	•	Off	•	Off	•
			<u>8</u>	GENERAL	-	Off	•	Off	•	Off	•	Off	•
Requires Offset					Ĺ	Save	8		Can	cel			

Figure 68 Step 8 Matrix 8000 Earth Leakage Class I

Testing Test Programming	Instrument Setup	Reports	Historical Search	System Settings A	Admin Settings	Batch Reports
Eduardian 6100 Plus     Preset     AC Hipot     DC Hipot     DC Hipot     Do Hipot     Ground Bond     Insulation Resistance     Open/Short Check     Leakage Current     LC Infinite     LC Fetch     Sto     Sto     Sto     Sto     Sto     Cource AC Source 6408-1     AC HIPOT: GB (1) Matrix 8000     Ground Bond Guardian 6100 Plus     Earth Leakage: Class I Matrix 8000     Leakage: Class I Matrix 8000     Leakage: Current Guardian 6100 Plus     Earth Leakage: Class I Matrix 8000     Leakage: Current Guardian 6100 Plus	High 6.0 Line L1 High 0 Mod E8 Sc 60 Nd	Reverse	Low Limit (mA) 0 Ground Switch OFF: Open Low Limit 0 rerse Polarity No Faul <u>CH1</u> <u>CH2</u>	1	Device D4: UL26 Power Voltage	01-1 <b>•</b> • 24.7 CH 8
Requires Offset			Save	Canc	el	

Figure 69 Step 9 Guardian 6100 Plus Leakage Current (with Alias)



## 5.8.5 Save the Program

When all the steps have been defined, click the **Save** button and enter a name for the test in the pop-up text box. Then click **Save As**.

# 5.8.6 Run a Test

Follow the Test Procedure Section 5.7.2.

#### 5.9 Modes and Aliases

You can substitute aliases for the default node names. You can define these aliases with names that are more meaningful than the default mode names. Mode Aliases can be added or changed in the Test Programming Tab. When the software switch shown in Figure 70 is check-marked, the alias name will replace all default step mode names in reports for that test.

5	CaptivATE Options		
	Test	Reports	General
	<ul> <li>Display results in engineering</li> <li>Manual port detection</li> <li>Replace step mode with the a</li> <li>Enable instrument calibration</li> <li>Idle auto log off</li> </ul>	lias	
	Accept	Reset	Exit

**Figure 70 Software Switch for Aliases** 

In Table 5, the left-hand column shows the default mode names in Tutorial B, while the userdefined aliases are shown in the right-hand column.

#### Table 5 Default Step (Mode) Names and Their Possible Aliases

Default Step (Mode) Name	Alias
Ground Bond	Ground Bond PE Stud
AC Hipot	Hipot Mains to Ground
Leakage Current	Earth Leakage Normal Polarity No Fault
Leakage Current	Earth Leakage Reverse Polarity No Fault

Note: To enable the alias to be included in a test report, set the software switch in Tools/Options/General, shown in Figure 82.



# **5.10** Stop Mode (6100 Plus)

The Stop mode is unique to the 6100 Plus. When the Stop mode is executed in a test program, it will immediately shut down the output of the Guardian 6100 Plus.



**WARNING** No Instrument Modes such as Virtual Pause **will not shut down** the Guardian 6100 Plus. You must use the **Stop mode** to shut down the G6100 Plus.

# 5.11 LC Infinite and LC Fetch Modes

LC Infinite and LC Fetch are relevant to the Guardian 6100 Plus, They are another way to measure leakage current and can significantly reduce test time especially when used with the Matrix 8000. LC Infinite instructs the Guardian 6100 to perform an LC measurement continuously. LC Fetch is then used to make a measurement of the LC value.

🗳 QuadTech CaptivATE						
File Tools About						
Testing Test Instrum	ent Set	up Reports	Historical Search	System Settings	Admin Settings	Batch Reports
Select a Test:	•	- Guardian 6100 Plus LC Ir				
E-Guardian 6100 Plus	^	High Limit (mA) 0.5999	Low Limit (mA)	Test Time (sec)	Device D4: UL26	01-1 💌
- AC Hipot - DC Hipot - Ground Bond - Insulation Resistance		Line L0: Normal 💌	Ground Switch OFF: Open	Meter M0: L-G	<ul><li>Power</li><li>✓ Voltage</li></ul>	•
Open/Short Check     Leakage Current     LC Infinite		High Limit	Low Limit			
LC Fetch Stop ⊟- Guardian 1010	~	Scanner Box 6000-07 (internal)		<u>CH3</u> CH4 Off ▼	<u>15 CH 6</u>	<u>СН 7 СН 8</u>
Test Sequence:		6000-07 (internal)	<b>-</b>	un 💽		
Functional Check No Instrument     LC Infinite Guardian 6100 Plus     LC Fetch Guardian 6100 Plus		None	• •			
]						

Figure 71 LC Infinite Text Boxes

The LC Infinite will remain on until the End of Test, a Stop Command or another step is encountered in the test sequence that uses the G6100 Plus.



#### Table 6 Text Boxes for LC Infinite

Text Boxes	Function
High Limit	Selected from pull-down: 0.5999mA, 6.000mA, 0.9999mA, or 10.000. The limit of the value captured in the Fetch mode, it should be $\geq$ than the High Limit of LC Fetch.
Low Limit	N/A
Test Time	N/A
Device	Selected from pull-down
Line	Selected from pull-down
Ground Switch	Selected from pull-down
Meter	Selected from pull-down
Power	Voltage, current, or VA
High limit	Voltage, AC Source
Low limit	Voltage, AC Source

📕 QuadTech Ca	ptivATE							
File Tools About								
Testing	Test Programming	Instrument Setup	Reports	Historical Search	System Settings	Admin Settings	Batch Reports	
Select a Test:								
Guardian 6100 F     - Preset     - AC Hipot     - DC Hipot     - Ground Bond     - Insulation Re     - Open/Shott 0     - Leakage Cum     - LC Infinite     - Stop     B: Guardian 1010	l sistance Check		High Limit (mA) 5 Offset Type (* Subtraction Mode Alias	Low Limit (mA)	Test Time 3	n 		
Test Sequence:								

Figure 72 LC Fetch Text Boxes

In combination with the LC Infinite command, use the LC Fetch command to tell CaptivATE to fetch the leakage current measurement data. CaptivATE takes the measurement and compares it to the set High and Low Limits.



#### Table 7 Text Boxes for LC Fetch

Text Boxes	Function			
High Limit	High limit for the value captured in the fetch mode			
Low Limit	Low limit for the value captured in the fetch mode			
Test Time	Duration from the start of LC Infinite to the capture of the data			
Subtraction	The method of displaying leakage current by subtracting the difference between the value captured during the fetch and the value measured during the test. This method should be used for testing LC on most DUTs.			
	$LC_{display} = LC_{meas} - LC_{offset}$			
Square Root	Value is determined by the square root of the difference. This method is normally used for devices that are resistive. $LC_{display} = \sqrt{LC_{meas}^2 - LC_{offset}^2}$			
Manual Fetch	Fetch is prompted by a system message and made when the Operator chooses			
Mode Alias	User-defined alternate name for this step			

As shown in Figure 73, the data captured by LC Fetch is in the Measure column.

🗖 QuadTech CaptivATE								
File Tools About								
Testing Test Programming Instrumen	t Setup Reports	Historical Search	n System Settings	Admin Settings	Batch Reports			
DUT Model #: Cativate Test Demo 3.20								
Test Name: Captivate Test Demo	3.20	<b>-</b>						
		Ē	Test	Accep / Reset	t			
End Testing								
Step Mode	Output	Measure	Offset Value	Calc/Real	Status			
1 AC Source	NA	NA	NA		A NA			
2 Preset	NA	NA	NA		A NA			
3 LC Infinite	NA	NA	NA		A NA			
4 Test Demo for LC Fetch	120 V	35.1 µA	NA	NA	A Pass			

# Figure 73 Results of an LC Fetch



# 6 Reports: Defining, Saving, and Printing

A Report Search differs from an Historical Search as follows:

Report Search	A search for one MS Word document
Historical Search	A search for results of many tests, arrayed on a spreadsheet

Data from all tests is stored in the CaptivATE database. A report is a set of data on one test, formatted as a Word document, and stored in a directory defined by the user. Figure 74 shows the settings on a sample *Reports* screen. The Administrator or Engineer can set the same destination for the reports from all tests from all Operators.

### 6.1 Regular Reports

#### System Settings screen

Figure 74 specifies that for each test that passes and is accepted, a Summary Report (a Word document) will be saved to the PASS directory; and that for each test that fails and is accepted, a Standard Report (a Word document) will be saved to the FAIL directory.

Regular Reports	Printing Options	CSV Files	XML Files	Custom Reports
ave Reports				
🔽 Save On Pass 🛛 🔿 S	Standard Report 🛛 🕥 Summary Rep	port		
M:\SCRATCH\PHILIP\Ca	aptivATE\CaptivATE 3.3\Reports\Pa	355	Select Locati	on
🔽 Save On Fail 💿 S	Standard Report 🛛 🔘 Summary Rep	port		
M:\SCRATCH\PHILIP\Ca	aptivATE\CaptivATE 3.3\Reports\Fa	ail	Select Locati	on )

Figure 74 Regular Reports: Setting the Location





Figure 75 Using Windows Explorer to Define Reports Folders

# 6.2 **Printing Options**

eports, CSV and XML file Option: Regular Reports		CSV Files	XML Files	Custom Reports
Regular Reports	Printing Options	USV Files	XML Files	Custom Reports
Printing Options				
🔽 Print On Pass 🛛 S	itandard Report 🛛 💿 Summary Re	port		
\\west\KONICA MINOLT/	A C353 Series PCL		Select Printer	
Frinc Un Fail (0 :	Standard Report 🛛 C Summary Rep	port	Select Printer	
			Select Finter	
		Update Settings		

Figure 76 Printing Options Tab on the Reports Screen



# 6.3 CSV Files

CSV stands for comma-separated values. CSV files are ASCII text files, which commas separate each column heading and each discreet piece of data.

To save test data to a MES (Manufacturing Enterprise System) CSV files are a convenient transition. The CSV file is written as a text file with the extension .csv. This extension causes the Windows OS to mark it as a MS Excel CSV file, with the corresponding icon in the Windows Explorer.

When Save On Pass and Save on Fail are each checked, as shown in Figure 77, a CSV file will be created after each test. The file name will be as follows:

<serial#>\_mm\_dd\_yyyy\_hh\_mm\_ss.csv

The file is one line unbroken by line feeds or carriage returns. For the example that follows, the file has been broken to show a typical header for a CSV version of a standard report.

The header always contains eight pieces of information, each one bounded by a pair of commas. The field captions, e.g., "DUT Model #:" are hard coded in the program and, therefore will remain constant.

```
DUT Model #: System Test_Case_64,DUT Serial #: System
Test_Case_64,TestName: System Test_Case_64 OSC and offset,TestResult:
Pass,Test Date: 9/18/2007,Test Time: 7:11:06 AM,Operator: admin,Setup
Name: G6000P Com1
```

The standard report version of that same file header is as follows:

DUT Model #: System Test_Case_64	Test Result	Test Date: 9/18/2007
DUT Serial #: System Test_Case_64	Pass	Test Time: 7:11:06 AM
Test Name: System Test_Case_64 OSC		Operator: admin
and offset		Setup Name: G6000P Com1

In the next portion of the file, the first comma (the eighth comma in the whole file) marks the beginning of the test results. The <TEST RESULTS> tag as well as the column headings (Step#, Mode, Output, etc) are hard-coded

,1,Preset,NA,NA,NA,NA,NA

The standard report version of the same portion of the report is as follows:

\*\*\*\*\*\*\*\*\* TEST RESULTS \*\*\*\*\*\*\*\*\*

Step #	Mode	Output	Measure	Offset	Calc/Real	Result
1	Preset	NA	NA	NA	NA	NA

Test results rows, themselves separated by commas, will be repeated until the end of file if no other reporting options are selected or until a tag <TEST DETAIL>, <INSTRUMENTS USED>, etc is encountered.

<TEST DETAIL>,Step #1 Guardian 6000 Plus Preset~Pass Hold (sec)=0.5~ Step Hold (sec)=0.2~ AC Voltage Freq. (Hz)=60~ Ground Bond Freq. (Hz)=60~ IEC-601=Off~ Ground Bond (V)=15.0~ Auto Range=Off~ Soft Gain Control=On~ Scanner #1 HV Channel 3 N/A~N/A~N/A~N/A~N/A~N/A~N/A~N/A

Multiple tilde (~) characters in the CSV file represent commas which are part of the data itself in the CaptivATE.mdb database. These commas were temporarily replaced by tildes in order to preserve the data structure of the file. The application parsing program developed by an individual client will have to replace tildes with the commas after the parsing process is complete. A portion of the CSV file we've been using includes some tildes.

,Step #2 Guardian 6000 Plus Ground Bond~GB Option=None~ Current (Amps)=25~ High Limit (m Ohms)=100.0~ Low Limit (m Ohms)=0~ Test Time (sec)=3.0~ Twin Port=On~ Scanner #1 HV Channel 3 N/A~N/A~N/A~N/A~N/A~N/A~N/A

Regular Reports	Printing Options	CSV Files	XML Files	Custom Reports
Save CSV file				
🔽 Save On Pass				
M:\SCRATCH\PHILIP\Capti	ivATE\CaptivATE 3.3		Select Location	
,				
🔽 Save On Fail				
' Save On Fail			Select Location	
' Save On Fail				
' Save On Fail				
' Save On Fail				

Figure 77 CSVFiles Tab on the Reports Screen

#### 6.4 XML Files

XML stands for Extensible Markup Language. XML files are ASCII text files in which each discreet piece of data is tagged.

When Save On Pass or Save on Fail are checked, as shown in Figure 78, an XML file will be created after each test. The file name will be as follows: <serial#>\_mm\_dd\_yyyy\_hh\_mm\_ss.xml



Y				
Regular Reports	Printing Options	CSV Files	XML Files	Custom Reports
⊂ Save XML file I Save On Pass				
M:\SCRATCH\PHILIP\CaptivAT	E\CaptivATE 3.3		Select Location	1]
🗖 Save On Fail				
			Select Location	ı
			-1	
		Update Settings		

Figure 78 XML Files Tab on the Reports Screen

A portion of an example XML file follows:

<?xml version="1.0" ?>

<u>-</u> <test>

- <header>

```
<dutmodelnumber>system_test_case_#13</dutmodelnumber>
```

<dutserialnumber>system\_test\_case\_#13 61603</dutserialnumber>

```
<testname>System Test_Case_13 61603</testname>
```

```
<testresult>Pass</testresult>
```

<testdate>9/14/2007</testdate>

```
<testtime>10:29:57 AM</testtime>
```

```
<username>admin</username>
```

```
<setupname>g6100p g6100 61603</setupname>
```

</header>

```
- <teststeps>
```

<u>-</u> <step>

```
<stepnumber>1</stepnumber>
```

<modedisplay>AC Source</modedisplay>

<output>NA</output>

<measure>NA</measure>

<offsetvalue>NA</offsetvalue>

<realorcalculated>NA</realorcalculated>

<stepstatus>**NA**</stepstatus>

</step>

 $\sim \sim \sim \sim$ 



- </teststeps>
- <instruments>
- <instrument>

<name>AC Source 61603</name>

<instrcaldate>9/13/2008</instrcaldate>

- <instrserialnmbr>ac source</instrserialnmbr>
- <scanners />

</instrument>

</instruments>

</test>

#### 6.5 Custom Reports

Access to the Custom Reports tab must be set by QuadTech in the Settings.txt file.

Please contact QuadTech for prices and options.

#### 6.6 Print Step with No Returned (i.e., Null) Values

Tools Options pop-up (Reports tab and General tab)

5	CaptivATE Options			
	Test         ✓       Print results in engineering notation         ✓       Print step with no returned values         ✓       Include test program         ✓       Include instrument setup         ✓       Enable custom report	Reports	General	
	Accept	Reset	Exit	

Figure 79 Software Switches for Reports

In Figure 79, when the "Print step with no returned values" software switch is check-marked, null lines(the ones with N/A in most columns) are printed, as in Figure 80.



DUT Model #: Sentinel III Captivate Demo DUT Serial #: No Serial Number Test Name: Sentinel III test captivate		ıber	Test Result Pass	Test Time: 9:52:10 AM		apivate
Step #	Mode	**************************************	TEST RESULTS :	v offset	Calc/Real	Result
1	AC Source	NA	NA	NA	NA	NA
2	Ground Bond	NA	NA	NA	NA	NA
3	Ground Bond PE Stud	30.01 A	1.800 mΩ	NA	NA	Pass
4	AC HIPOT: AC Line to Earth	NA	NA	NA	NA	NA
5	Hipot Mains to Ground	1.500 kV	13.000 µA	NA	NA	Pass
6	Earth Leakage: Class I	NA	NA	NA	NA	NA
7	Earth leakage Normal Polarity No Fault	120. V	40.013 μA	NA	NA	Pass
8	Earth Leakage: Class I	NA	NA	NA	NA	NA
9	Earth Leakage Reverse Polarity No	120. ∨	40.013 µA	NA	NA	Pass

Figure 80 Standard Report with Null Lines

When the "Print step with no returned values" checkbox is unchecked, null lines are not displayed. These null lines exist as a number in parentheses, as seen in the Step # column in Figure 81. The Step # for Ground Bond PE Stud is "1(3)". This simply means that this is the first step that returns value, and there were two null lines in front of it, which made this step 3 of the total.

DUT Model #: Sentinel III Captivate Demo DUT Serial #: No Serial Number Test Name: Sentinel III test captivate			Test Result Pass	Test Time Operator: Setup Na: setup		
Step #	Mode	Output	Measure	Offset	Calc/Real	Result
1(3)	Ground Bond PE Stud	30.01 A	1.800 mQ	NA	NA	Pass
2(5)	Hipot Mains to Ground	1.500 kV	13.000 µA	NA	NA	Pass
3(7)	Earth leakage Normal Polarity No Fault	120 V	37.576 μA	NA	NA	Pass
4(9)	Earth Leakage Reverse Polarity No	120 V	40.013 µA	NA	NA	Pass

Figure 81 Standard Report without Null Lines

In the Mode columns of Figure 80 and Figure 81, the user-defined alias names are displayed because of the "Replace step mode with the alias" checkbox. This, along with "Display results in engineering notation" is a default.



6	CaptivATE Options				
	Test	Re	ports	General	
	Display results in engineering	notation			
	🦳 Manual port detection				
	Replace step mode with the a	lias			
	Enable instrument calibration	date alert			
	🔲 Idle auto log off				
	Å an and			E.a.	
	Accept		eset	Exit	

Figure 82 Tools/Options/General Screen Software Switches

### 6.7 Run a Report

The *Reports* screen has four filters. Click a date from the Test Date pull-down and click **Search**. Each row represents a test.

1. Click the Create Summary Report button. An example of a Summary Report is as follows:

```
DUT Model #:
Sentinel III Captivate Demo
DUT Serial #:
No Serial Number
Test Name:
Sentinel III test captivate
Test Date, Time:
7/14/2008 2:57:41 PM
Operator:
admin
Test Result:
Pass
```

2. To generate a regular report that includes the maximum amount of data, see Figure 83. On the Tools/Options/Reports pop-up, check the two "Include . . ." checkboxes. (The two "Print. . ." checkboxes are checked by default.



5	CaptivATE Options			
	Test	Reports	General	
	Print results in engineering no	tation		
	Print step with no returned va	lues		
	Include test program			
	Include instrument setup			
	Enable custom report			
	Accept	Reset	Exit	

Figure 83 Tools Options: Software Switches to Display Test Results

## 3. Back on the *Reports* screen, click the **Create Standard Report** button.

### 6.8 Sample of Sentinel III Standard Report

The following sample is run with all *Tools/Options/Reports* checkboxes checked (except Enable custom report) and all relevant *System Settings* checkboxes checked.

DUT Model #: Sentinel III Captivate	Test Result	Test Date: 8/13/2007
Demo	D	Test Time: 2:57:41 PM
DUT Serial #: No Serial Number	Pass	Operator: admin
Test Name: Sentinel III test captivate		Setup Name: Sentinel III Captivate Demo

Step #	Mode	Output	Measure	Offset	Calc/Real	Result
1(3)	Ground Bond PE Stud	30.01 A	1.800 mΩ	NA	NA	Pass
2(5)	Hipot Mains to Ground	1.500 kV	13.000 µA	NA	NA	Pass
3(7)	3(7) Earth leakage Normal Polarity No Fault		40.013 µA	NA	NA	Pass
4(9)	Earth Leakage Reverse Polarity No Fault	120. V	40.013 µA	NA	NA	Pass

#### \*\*\*\*\*\*\*\*\*\* TEST RESULTS \*\*\*\*\*\*\*\*\*

\*\*\*\*\*\*\*\*\*TEST DETAIL\*\*\*\*\*\*\*\*\*

Step #1 AC Source 6408-1 AC Source

Voltage (V)=120, Frequency (Hz)=60, Voltage Limit (V)=130, Current Limit (A)=10

Step #2 Matrix 8000 Ground Bond



label=(Subclause 18 f): GB Modules can only be located in Frame 0 (Master)., Module #1 ACLINE N/A,N/A,N/A,N/A, Module #1 GBF-2 High/Low,Off,N/A,N/A, Module #1 EARTH Off,Off,Off,Off, Module #1 ACLINE2 N/A,N/A,N/A,N/A, Module #1 GENERAL N/A,N/A,N/A,N/A, Module #1 GENERAL N/A,N/A,N/A, Module #1 GENERAL N/A,N/A,N/A,N/A, Module #1 GENERAL N/A,N/A,N/A,N/A

Step #3 Guardian 6100 Plus Ground Bond

GB Option=None, Current (Amps)=30, High Limit (m Ohms)=100.0, Low Limit (m Ohms)=0, Test Time (sec)=4.0, Twin Port=Off, Scanner #1 6000-07 (internal) N/A,N/A,N/A,N/A,N/A,N/A,N/A

Step #4 Matrix 8000 AC HIPOT: AC Line to Earth

description=No 60601-1 Reference, Module #1 ACLINE High,High,N/A,N/A, Module #1 GBF-2 N/A,N/A,N/A,N/A, Module #1 EARTH Low,Low,Off,Off, Module #1 ACLINE2 N/A,N/A,N/A,N/A, Module #1 GENERAL N/A,N/A,N/A,N/A, Module #1 GENERAL N/A,N/A,N/A,N/A, Module #1 GENERAL N/A,N/A,N/A,N/A, Module #1 GENERAL N/A,N/A,N/A,N/A,

Step #5 Guardian 6100 Plus AC Hipot

Voltage (kV)=1.5, High Limit (mA)=0.500, Low Limit (mA)=0, Test Time (sec)=3.0, Ramp Time (sec)=0, Arc Limit (mA)=0, Arc Filter=3-230, Scanner #1 6000-07 (internal) Off,N/A,Off,N/A,N/A,N/A,N/A

Step #6 Matrix 8000 Earth Leakage: Class I

S9/S13 (External Volt)=OFF, S7 (Protective Earth)=GE\_OFF, S10 (Functional Earth)=FE\_OFF, Module #1 ACLINE Off,Off,N/A,N/A, Module #1 GBF-2 Low,Off,N/A,N/A, Module #1 EARTH Off,Off,Off, Module #1 ACLINE2 N/A,N/A,N/A, Module #1 GENERAL Off,Off,Off,Off, Module #1 GENERAL Off,Off,Off, Module #1 GENERAL Off,Off,Off, Module #1 GENERAL Off,Off,Off,Off

Step #7 Guardian 6100 Plus Leakage Current

High Limit (mA)=6.000, Low Limit (mA)=0, Test Time (sec)=3.0, Device=D4: UL2601-1, Line=L0: Normal, Ground Switch=OFF: Open, Meter=M0: L-G, Power=Voltage, Power High Limit (mA)=0, Power Low Limit (mA)=0, Scanner #1 6000-07 (internal) N/A,N/A,Off,N/A,N/A,N/A,N/A

Step #8 Matrix 8000 Earth Leakage: Class I

S9/S13 (External Volt)=OFF, S7 (Protective Earth)=GE\_OFF, S10 (Functional Earth)=FE\_OFF, Module #1 ACLINE Off,Off,N/A,N/A, Module #1 GBF-2 Low,Off,N/A,N/A, Module #1 EARTH Off,Off,Off, Module #1 ACLINE2 N/A,N/A,N/A, Module #1 GENERAL Off,Off,Off,Off, Module #1 GENERAL Off,Off,Off, Module #1 GENERAL Off,Off,Off, Module #1 GENERAL Off,Off,Off,Off

Step #9 Guardian 6100 Plus Leakage Current

High Limit (mA)=6.000, Low Limit (mA)=0, Test Time (sec)=3.0, Device=D4: UL2601-1, Line=L1: Reverse, Ground Switch=OFF: Open, Meter=M0: L-G, Power=Voltage, Power High Limit (mA)=0, Power Low Limit (mA)=0, Scanner #1 6000-07 (internal) N/A,N/A,Off,N/A,N/A,N/A,N/A

\*\*\*\*\*\*INSTRUMENTS USED\*\*\*\*\*\*\*



Instrument	Cal Due Date	Serial Number
AC Source 6408-1	8/13/2008	demo
Matrix 8000	8/13/2008	Demo
ACLINE	8/13/2008	Demo
GBF-2	8/13/2008	Demo
EARTH	8/13/2008	Demo
ACLINE2	8/13/2008	Demo
GENERAL	8/13/2008	Demo
Guardian 6100 Plus	8/13/2008	Demo
6000-07 (internal)	8/13/2008	

### 6.9 CSV (Comma-Separated Value) File: Mapping CSV file to Standard Report

To save test data to a MES (Manufacturing Enterprise System), CSV files are a convenient transition. The CSV file is written as a text file with the extension .csv. This extension causes the Windows OS to mark it as a MS Excel CSV file, with the corresponding icon in the Windows Explorer. One must use MS Notepad to open this file.

The file is one line unbroken by line feeds or carriage returns. For the example that follows, the file has been broken to show a typical header for a CSV version of a standard report.

The header always contains eight pieces of information, each one bounded by a pair of commas. The field captions, e.g., "DUT Model #:" are hard coded in the program and, therefore will remain constant.

DUT Model #: System Test\_Case\_64,DUT Serial #: System Test\_Case\_64,TestName: System Test\_Case\_64 OSC and offset,TestResult: Pass,Test Date: 9/18/2007,Test Time: 7:11:06 AM,Operator: admin,Setup Name: G6000P Com1

The standard report version of that same file header is as follows:

DUT Model #: System Test_Case_64	Test Result	Test Date: 9/18/2007
DUT Serial #: System Test_Case_64	Pass	Test Time: 7:11:06 AM
Test Name: System Test_Case_64 OSC		Operator: admin
and offset		Setup Name: G6000P Com1

In the next portion of the file, the first comma (the eighth comma in the whole file) marks the beginning of the test results. The <TEST RESULTS> tag as well as the column headings (Step#, Mode, Output, etc) are hard-coded

,1,Preset,NA,NA,NA,NA,NA,



The standard report version of the same portion of the report is as follows:

Step #	Mode	Output	Measure	Offset	Calc/Real	Result
1	Preset	NA	NA	NA	NA	NA

******	TEST	RESUL	TS	*******

Test results rows, themselves separated by commas, will be repeated until the end of file if no other reporting options are selected or until a tag <TEST DETAIL>, <INSTRUMENTS USED>, etc is encountered.

<TEST DETAIL>,Step #1 Guardian 6000 Plus Preset~Pass Hold (sec)=0.5~ Step Hold (sec)=0.2~ AC Voltage Freq. (Hz)=60~ Ground Bond Freq. (Hz)=60~ IEC-601=Off~ Ground Bond (V)=15.0~ Auto Range=Off~ Soft Gain Control=On~ Scanner #1 HV Channel 3 N/A~N/A~N/A~N/A~N/A~N/A~N/A

Multiple tilde (~) characters in the CSV file represent commas which are part of the data itself in the CaptivATE. database. These commas were temporarily replaced by tildes in order to preserve the data structure of the file. The application parsing program developed by an individual client will have to replace tildes with the commas after the parsing process is complete. A portion of the CSV file we've been using includes some tildes.

```
,Step #2 Guardian 6000 Plus Ground Bond~GB Option=None~ Current
(Amps)=25~ High Limit (m Ohms)=100.0~ Low Limit (m Ohms)=0~ Test Time
(sec)=3.0~ Twin Port=On~ Scanner #1 HV Channel 3
N/A~N/A~N/A~N/A~N/A~N/A~N/A~N/A
```

#### Reports screen

1. Click on Create CSV File.

Test Da	ting Test Programming	Instrument Setup	Reports	Historical Search	System Settings	Admin Settings	Batch Repor	
TOST DE	ate			DUT Model I	Number		_	
			-		*			
Test In:	strument Serial #		DUT Serial Number					
			•				•	
9							-	
				Search				
Step	Mode	0	utput	Measure	Offset Value	Calc/Real	Status	
	AC Source	01	NA	NA	NA		NA	
	Ground Bond	Car	otivATE		NA NA		NA	
3 1	Ground Bond PE Stud				NA	NA	Pass	
4,	AC HIPOT: AC Line to E	arth	CSV file h	as been successfully wri	tten NA	NA	NA	
51	Hipot Mains to Ground		<u> </u>		NA	NA	Pass	
6	Earth Leakage: Class I			ок	NA	NA	NA	
71	Earth leakage Normal P	olarity N			NA	NA	Pass	
8 1	Earth Leakage: Class I		NA	NA	NA	NA	NA	
91	Earth Leakage Reverse	Polarity	120. V	40.013 µA	NA	NA	Pass	

Figure 84 System Message: CSV File Successfully Written



# System Settings screen

2. Note the location of the CSV reports and use Windows Explorer to find the file, an example of which is shown in Figure 85.

-	Eile Edit	View In:	ert Format	Tools D	ata <u>W</u> indov	v <u>H</u> elp /	dobe PDF								Typ	e a question	for help 🛛 👻	- 8
)	🗃 🖬 🔒	130	112   6 6	<b>3</b> +   ≤7 +	🧶 Σ 🔻	21 1		Arial		<del>•</del> 10	-   B	I	U		<u>a</u>   \$	% #= [	🗉 + 🖄 + ,	Α -
Å	12 8 .						1.000											
	A1	+	🟂 DUT Mo	del #. Sent	tinel III Capt	ivate Demi	5											
T		<b>≁</b> B	∱ DUT Mo	idel #. Sent D	tinel III Capt E	ivate Demi F	G	H	1		J	T	K	L	M	N	0	
1	A1 A	▼ B	С	D	E	F	G	H setup Nam	 1(3)	Gr	J ound E	o 30.0	К  1 А	L 1.800 mO		NA	0 Pass	2(
	A1 A	▼ B	С	D	E	F	G		 1(3)	Gr	J ound E	o 30.0	К  1 А	L 1.800 mO		NA NA	O Pass	2(
	A1 A	▼ B	С	D	E	F	G		1 1(3)	Gr	J ound E	o 30.0	К 11 А	L 1.800 mO		NA NA	O Pass	2(

#### Figure 85 CSV Data in Excel File

3. Right-click on the Excel file and open it with Notepad.



# 7 Batch Tests and Batch Reports

### 7.1 Batch Testing

Batch testing is a means of collecting the results of an uninterrupted series of tests. A batch includes only the tests in that series that have passed.

When the software switch (Figure 86) is set to enable batch testing, you can run *only* batch testing.

Admin Settings screen

- 1. To enable batch testing, click the Enable Batch Testing check box.
- 2. Click **Update Settings**.

🖸 QuadTech C	aptivATE						
File Tools Abou	t						
Testing	Test Programming	Instrument Setup	Reports	Historical Search	System Settings	Admin Settings	Batch Reports
⊢ Device Settir	gs SENTINEL III W NI65		talled Setup	DUT Model     Always Rela     Disable Ver     Josable Ver     Gnable Bata     Auto Accep	oad Test ify Test ch Testing		

Figure 86 Admin Settings: Batch Testing Enabled

- 3. Click the *Testing* tab.
- 4. To start a batch on the *Testing* screen, enter a number or name in the Batch # text box. In the unlabeled text box pointed to in Figure 87, enter a name for the batch test.

Note: When you enter a batch number that exists already, the results of the test is appended to the existing batch file.

5. Click **Start Batch** and begin running tests. Each test that passes and that you accept is added to the batch. (Failed tests are added to the database but not to the batch report.) When the batch is complete, click **End Batch**.



📕 QuadTech CaptivA	TE						
File Tools About							
Testing Tes	t Programming	Instrument Setup	Reports	Historical Sea	rch System Settings	Admin Settings	Batch Reports
				7			
DUT Model #:	J						
Serial #:							
Test Name:				-	Start Batch	1	
Batch #:					Test	Acce	ept
Perform Offset					Sto	p / Reset	

Figure 87 Testing Screen with Batch Buttons

### 7.2 Batch Reports

Batch Reports screen

1. Click on the drop down arrow and click a batch report. The selected batch report is arrayed across the grid on the *Batch Reports* screen as shown in Figure 88:

Testing	Test Programming	Instrument Setup	Reports	Historical Search	System Settings	Admin Settings	Batch Repo
·····y					oyonani ooningo	. and a second	
		Batch 1			-		
		J <b>1</b>					
est Name			DUTN	Iodel			Test Res
Sample			Mode				Pass
Sample			Model				Pass
Sample			Mode	Т			Pass
Sample			Model	Т			Pass
Sample			Model	Т			Pass
Sample			Model	Т			Pass
Sample			Model	Т			Pass
Sample			Model	Т			Pass
Sample			Model	Т			Pass
Sample			Model	Т			Pass
ample			Model	Т			Pass

Figure 88 List of All Batch Reports

2. Click the **Display Batch Report** button at the bottom of the screen. CaptivATE<sup>©</sup> opens Microsoft Word and generates a batch report such as the one in Figure 89: (Only PASS results are included in a Batch Report.)



	ch Number: Bate	:h 1				ate: 11/15/2006	
· ·	antity: 11					me: 11:04:19 AM	
Cu	stomer Z					r: admin	
					Setup Na	ame: W01	
Sam	ple, Model T			2 5000	ple, Model T		
, Sam Step	Mode	Measure	Step	Step	Mode 1	Measure	Step
#	Mode	Ivieasure	Result	#	Wide	Wiedsure	Result
1	AC Hipot	+6.000000E-05	Pass	1	AC Hipot	+6.000000E-05	Pass
2	Insulation	+2.620000E+07	Pass	2	Insulation	+2.620000E+07	Pass
	Resistance				Resistance		
3	DCR	+5.530000E+00	Pass	3	DCR	+5.530000E+00	Pass
	ple, Model T			- <u> </u>	ple, Model T	1	
Step	Mode	Measure	Step	Step	Mode	Measure	Step
#			Result	#			Result
1	AC Hipot	+6.000000E-05	Pass	1	AC Hipot	+6.000000E-05	Pass
2	Insulation	+2.620000E+07	Pass	2	Insulation	+2.620000E+07	Pass
	Resistance				Resistance		
3	DCR	+5.530000E+00	Pass	3	DCR	+5.530000E+00	Pass

Figure 89 Sample of One Batch Report



# 8 Historical Search

#### Historical Search screen

An historical search is a search for the results of several tests, to be arrayed in a spreadsheet.

An Historical Search differs from a Report Search as follows:

Report Search	A search for one MS Word document
Historical Search	A search for results of many tests, arrayed on a spreadsheet

There are four search "filters" you can use. The pull-down lists of the four filters each offer the same categories:

- No Filter Date Date Test Instrument Serial Number DUT Serial Number DUT Model Test Result (PASS or FAIL) Step Result (PASS or FAIL)
- 1. Click the drop down arrow from **Filter # 1** and choose **Date**; and from the start and end popups choose a range of dates.
- 2. Start the search.



📕 QuadTech Ca							
File Tools About							
Testing	Test Programming	Instrument Setup	Reports	Historical Search	System Settings	Admin Settings	Batch Reports
Filter #1							
Date	•	1 / 7 /2007	-	to 8 /14/2007	-	[	
Filter #2				,			
	•						
Filter #3							
	•						
Filter #4							
	•						
		с <i>к</i> -			(57		
		Creating E:	(cel opreadsneet h	Please wait. Row 31 o	(0)		
		Clear Filters		eate Spreadsheet	Cancel	1	

Figure 90 Historical Search in Progress

3. To terminate a search at any time, click the **Cancel** button.

The spreadsheet will have 35 columns ("A" through "AI") of data on the tests that have been selected, with each row containing the data for one step. An example is shown in Figure 91. In the **Mode** column (column J) the steps for the 6100 Plus are called by their aliases.

N	Eile Edit	View	Insert F	ormat <u>T</u> oo	ls <u>D</u> ata	Window H	telp				Type a question for help	8
	🗃 🖬 🔒	18		6 <b>8</b> - 1	ا- 1	Σ - 2↓	🛄 🕢 谋 Arial	• 9 • B	I 🗓 🖹	<b>E E</b>	函 \$% 達 ①・◇・	<u>A</u> -
	A1	-	f≨ DU	JT Model #				a.				
	A		В	C	D	E	F	G	н	- F	J	
1	DUT Mode	I# DU	JT Serial #	Test Date	Test Time	Operator	Test Instrument Model #	Test Instrument Serial #	Test Name	Step #	Mode	
2	Sentinel III	CaNo	Serial Nur	8/13/2007	13:42	admin	Matrix 8000	Demo	Sentinel III t	1	Ground Bond	NA
3	Sentinel III	CaNo	Serial Nur	8/13/2007	13:42	admin	Guardian 6100 Plus	Demo	Sentinel III t	2	Ground Bond PE Stud	30.01
1	Sentinel III	CaNo	Serial Nur	8/13/2007	13:42	admin	Matrix 8000	Demo	Sentinel III t	3	AC HIPOT: AC Line to Earth	NA
5	Sentinel III	CaNo	Serial Nur	8/13/2007	13:42	admin	Guardian 6100 Plus	Demo	Sentinel III t	4	Hipot Mains to Ground	1.502
6	Sentinel III	CaNo	Serial Nur	8/13/2007	13:42	admin	Matrix 8000	Demo	Sentinel III t	5	Earth Leakage: Class I	NA
7	Sentinel III	CaNo	Serial Nur	8/13/2007	13:42	admin	Guardian 6100 Plus	Demo	Sentinel III t	6	Earth leakage Normal Polarity	272.6
3	Sentinel III	CaNo	Serial Nur	8/13/2007	13:42	admin	Matrix 8000	Demo	Sentinel III t	7	Earth Leakage: Class I	NA
3	Sentinel III	CaNo	Serial Nur	8/13/2007	13:42	admin	Guardian 6100 Plus	Demo	Sentinel III t	8	Earth Leakage Reverse Polarit	272.6
0	Sentinel III	CaNo	Serial Nur	8/13/2007	13:48	admin	Matrix 8000	Demo	Sentinel III t	1	Ground Bond	NA
1	Sentinel III	CaNo	Serial Nur	8/13/2007	13:48	admin	Guardian 6100 Plus	Demo	Sentinel III t	2	Ground Bond PE Stud	30.01
2	Sentinel III	CaNo	Serial Nur	8/13/2007	13:48	admin	Matrix 8000	Demo	Sentinel III t	3	AC HIPOT: AC Line to Earth	NA
3	Sentinel III	CaNo	Serial Nur	8/13/2007	13:48	admin	Guardian 6100 Plus	Demo	Sentinel III t	4	Hipot Mains to Ground	1.502
4	Sentinel III	CaNo	Serial Nur	8/13/2007	13:48	admin	Matrix 8000	Demo	Sentinel III t	5	Earth Leakage: Class I	NA
15	Sentinel III	CaNo	Serial Nur	8/13/2007	13:48	admin	Guardian 6100 Plus	Demo	Sentinel III t	6	Earth leakage Normal Polarity	272.67

Figure 91 Historical Search Spreadsheet



# 9 NI USB 6525 Digital I/O

Note: This process requires a NI USB 6525 to be installed in the system and the National Instruments software be installed for the NI USB 6525. The settings.txt file in the CaptivATE directory must have NI USB 6525 Is Used = True for operation.

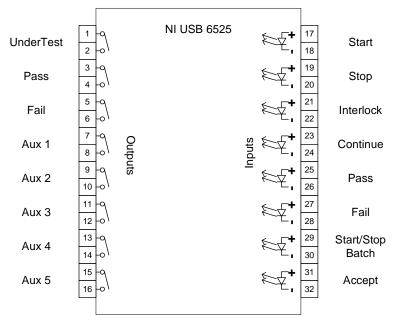


Figure 92 Diagram of Ni USB 6525

Inputs are limited to +/- 60VDC and draw 3mA. Interlock is level sensitive and based upon the settings in Tools Options General Tab. All other inputs are active on a transition from one level to another. Polling of inputs are based upon a polling setting in Tools Options General Tab. Inputs consist of the following: Start, Stop, Interlock, Continue, Pass, Fail, Start/Stop Batch, and Accept. These inputs correspond with all buttons used on the CaptivATE Testing Tab.

Outputs are limited to +/-60VDC and 500mA. Outputs are closed when True. Aux Outputs and Interlock are controlled via NI USB 6525 "Aux Channels" mode in Test Programming. The Undertest, Pass and Fail function exactly the same as the Danger, Pass and Fail indicator on the Testing Tab. For example, if the Danger indicator is flashing then the Undertest output on the Ni USB 6525 will be closed. There are eight outputs designated: Undertest, Pass, Fail, Aux 1, Aux 2, Aux 3, Aux 4, and Aux 5. Shown in Figure 95.



### 9.1 CaptivATE Tools Options General Tab NI USB 6525 Controls

Ca	aptivATE Options		
	Test	Reports	General
	<ul> <li>Display results in engineering no</li> <li>Manual port detection</li> <li>Replace step mode with the alia</li> <li>Enable instrument calibration dat</li> <li>Idle auto log off</li> <li>NI6525 controls</li> <li>NI6525 polling interval 500</li> <li>Interlock state</li> <li>Always active High </li> <li>In to</li> <li>Always active Low </li> <li>In to</li> </ul>	s te alert T milliseconds est active High	
	Accept	Reset	Exit
		olling interval 500	

Figure 93 Shows Tools Options General Tab Ni6525 controls

Polling interval can be set between 100 and 5000 msec. This is the interval at which the software interrogates the NI USB 6525 and responds to the inputs. The polling interval is approximate and cannot be verified or calibrated.

## 9.1.1 Always Active High Condition

When in the Testing Tab, if the interlock signal going to the NI USB 6525 is low, then testing is allowed. All fields are available to the operator. If the interlock input is high (voltage applied) the message will read, "Testing is not allowed! Interlock is ON!" A test cannot be started via Ctrl-T, button or NI USB 6525. If the interlock signal goes low during testing, the test is stopped and a message is issued.

🧧 QuadTech	CaptivATE					
File Tools Ab	put					
Testing	Test Programming Instrum	ent Setup Report:	B Historical Sea	rch System Settings	Admin Settings	Batch Reports
DUT Mod	lel #: ni6525		Ŧ			
Serial #:						
Test Nam	Ni6525 Test		Y		Stop NI	6525
					Acce	pt
				Stop	/ Reset	
Testing is	not allowed! Interlock is	ON!				
Step	Mode	Output	Measure	Offset Value	Calc/Real	Status
1 Aux	Channels					
2 Virtu	al Pause					
3 Aux	Channels					
4 Virtu	al Pause					
5 Euni	ctional Check					



Figure 94 Depicts a test that cannot be started.

### 9.1.2 Always Active Low Condition

When in the Testing Tab, if the interlock signal going to the NI USB 6525 is high, then testing is allowed. All fields are available to the operator. If the interlock input is high (voltage applied), the message will read, "Testing is not allowed! Interlock is ON!" A test cannot be started via Ctrl-T, button or NI USB 6525. If the interlock signal goes high during testing, the test is stopped and a message is issued.

## 9.1.3 In Test Active High

The interlock signal from NI USB 6525 is ignored in the Testing Tab. Once a test is started, the interlock signal is polled. If the interlock input goes high, the test is stopped, and a message is issued "Test Aborted due to Instrument Stop or Interlock Activation." Note: Interlock can still be turned off in the testing sequence using NI USB 6525 "Aux Channels" mode.

### 9.1.4 In Test Active Low

The interlock signal from NI USB 6525 is ignored in Testing Tab. Once the test is started, the interlock signal is polled. If the interlock input goes low, the test is stopped, and a message is issued "Test Aborted due to Instrument Stop or Interlock Activation." Note: Interlock can still be turned off in the testing sequence using NI USB 6525 "Aux Channels" mode.

### 9.2 Programming Outputs and Interlock during a test sequence

Testing	Test Programming	Instrument Setup	Reports	Historical Search	System Settings	Admin Settings	Batch Repo
elect a Test	_						
		-					
0-03-07 bb sy	stem" setup:						
- Guardian 6100							
AC Source 616 NI USB 6525	04						
Aux Channe	ls						
No Instrument I	Modes						
est Sequence							
est Sequence	:						
est Sequence	1	_					
est Sequence	5						
est Sequence	:						
est Sequence	:						
est Sequence	:						
est Sequence	c						
est Sequence	c						
est Sequence	:						
est Sequence						Cancel	

Figure 95 Shows the Test Programming tab where Aux Channels can be selected.

When creating a test sequence in the Test Programming Tab under the NI USB 6525 Aux Channels can be selected. (See Figure 98) When channels are selected, the screen in Figure 99 is shown.



Testing	Test Programming	Instrument Setup	Reports	Historical Search	System Settings	Admin Settings	Batch Reports	
Select a Test: "10-03-07 bb sys # Guardian 6100 F # AC Source 6160 # NUSB 6525 L Aux Channel: # No Instrument M	Plus )4 s	Au:	rect Interlock			Aux 5		
Test Sequence:	Fest Sequence:							
1 Aux Channels N	II USB 6525							

Figure 96 Shows Auxillary Channel selections

Checking Aux 1 through 5 will enable or disable the outputs of the NI USB 6525 when that step is reached in the sequence. In figure 99, Aux 1, 3 and 5 outputs will be closed in the first step of the sequence. At the end of the test sequence all AUX outputs will be opened.

### 9.3 Testing Tab and NI USB 6525

The NI USB 6525 will not work unless it is recognized by the software. The message box on the Testing Tab will indicate if the NI USB 6525 is plugged in and active. See figure 100.

🚨 QuadTech Captiv/	ATE						
File Tools About							
Testing Tes	t Programming	Instrument Setup	Reports	Historical Sea	rch System Settings	Admin Settings	Batch Reports
DUT Model #:			•	]			
Serial #:							
Test Name:				]		Stop N	6525
					Test	Acce	
Perform Offset					Stop	o / Reset	
NI6525 device is	plugged in	and active					

Figure 97 Shows a device that is plugged in and active.

The Stop NI USB 6525 button causes CaptivATE to ignore all inputs from the NI USB 6525 and not set any outputs. When the button is pressed, a message box will appear as shown in figure 101. This feature is particularly useful if the software is being controlled via a PLC. Testing can then be safely stopped without any possibility of a testing being started via an input from the PLC.



CuadTech CaptivATE					
File Tools About Testing Test Programming Instrumer	t Setup Reports	Historical Search	System Settings	Admin Settings	Batch Reports
DUT Model #:	-	]			
Serial #:					
Test Name:		·		Stop NI	6525
			Test	Acce	
Perform Offset			Stop	/ Reset	
NI6525 device is plugged in and act	CaptivATE				
	This action will cause Captiv and prevent it from commun	ATE to ignore NI652 hicating with externa	25 steps al devices.		
	Click OK button to proceed,	otherwise click Cano	cel.		
	ОК	Cancel			

Figure 98 Shows the "stop" Ni6525 button and action message.

Once Okay is clicked, the Stop NI USB 6525 button will change to Start NI USB 6525. Clicking on the Start NI USB 6525 will enable all NI USB 6525 inputs and outputs.

🗖 QuadTech CaptivATE							
File Tools About							
Testing Test	t Programming Instrument Setup	Reports	Historical Sear	ch System Settings	Admin Settings	Batch Reports	
DUT Model #:		-	]				
Serial #:			]				
Test Name:		-	]		Start NI	6525	
				Test	Acce	ept	
Perform Offset				Stop	o / Reset		
NI6525 device is	stopped						

Figure 99 Shows the Start NI USB 6525 button.

When the Danger indicator is flashing, (see figure 103) the NI USB 6525 undertest output will be closed. During all steps, with the exception of the No Instrument modes, (Virtual Pause, Timed Pause, etc.) where the undertest output will be opened.



QuadTech CaptivATE							
File Tools About							
Testing Te	est Programming	Instrument Setup	Reports	Historical Searc	h System Settings	Admin Settings	Batch Repo
DUT Model #: ni 6525							
Serial #:							
Test Name:	5430-120∨ bb	) modified with ni	6525	Y		Stop Ni6	525
					Test	Acce	
Perform Offset					Stop	o / Reset	
Testing in progress. Instrument name: Guardian 6100 Plus							
Step	Mode	0	utput	Measure	Offset Value	Calc/Real	Status
1 Virtual Pau	use		NA	NA	NA	. N4	NA
2 Aux Chanr	nels		NA	NA	NA	. NA	NA
3 Ground Bo	ond to motor ho	ousing					

Figure 100 Shows the Danger signal.

If the result of the test is Pass, the Pass output will be closed on the NI USB 6525 until the next test or the stop/reset button is pressed. If the result of the test is Fail, the Fail output will be closed on the NI USB 6525 until the next test or the stop/reset button is pressed.



# **10 Reference Section**

# 10.1 System Menu Bar: File

📕 QuadTech Cap	tivATE		)uadT	ech Caj	otivATE
File Tools About		File	Tools	About	
Quit Test Ctrl+T Accept Ctrl+A Stop Ctrl+S Batch Ctrl+B	Test Programming	В	uit atch Cl ecta		Test Programming
Test Name:		All	Captiv	ATE In:	struments

Figure 101 System Menu Bar ... File

 Table 8 System Menu Bar . . . File

Quit	Close the CaptivATE program.
Test	Run the selected test.
Accept	Save and/or print the test result.
Stop	Stop the test.
Batch	Start the batch test

### 10.2 System Menu Bar: Tools/Options





# 10.3 Tools/Options/Test

6	CaptivATE Options		
	Test	Reports	General
	<ul> <li>Display associated DUTs only</li> <li>Display associated programs of</li> <li>Display failure comment windo</li> </ul>	, only	
	<ul> <li>Enable computer buzzer on fa</li> <li>Enable DUT serial number</li> <li>Enable operator run offset</li> </ul>	illure	
	Retain Memory Locations		
	Accept	Reset	Exit

Table 9 Tools/Options/Test Screen

Test Check Box	Check-marked	Uncheck-marked				
Display associated DUTs only	<b>Default</b> On the <i>Testing</i> screen in the DUT Model # field, display in the pull-down list only the DUT Model #'s that are associated with one or more Test Names. Test name cannot be entered manually.					
Display associated programs only		<b>Default</b> On the <i>Testing</i> screen in the Test Name field, display in the pull-down list only the programs (the Test Names) that are associated with one or more DUT Model #s.				
Display failure comment window	Text box pops up when a test fails, requiring the operator to enter up to 50 characters. A "Failure Comment" section is created in the Standard Report of this test.					
Enable computer buzzer on step failure	On a step (mode's) failure, enables the buzzer in the PC to buzz. (To silence the buzzer, press the <b>Stop/Reset</b> button on the <i>Testing</i> screen.)					
Enable DUT serial number	Before a test can be run, a DUT serial number m either manually or automatically.	ust be entered,				
Enable operator run offset	Allows an operator to run an offset while in the Testing screen.					
Retain Memory Locations {XE "Retain Memory Locations"}	<b>Default</b> When a CaptivATE test program is runn instrument, the test instrument stores the relevan program in locations in its own memory. The contimemory locations can be saved by checking the Locations box. By doing this, you can avoid the ti a long test. CaptivATE will immediately display the indicating that the test is running.	t parts of the tents of these Retain Memory me taken to reload				
	The MemoryLocation.txt file contains a record of all programs that have been run since the Retain Memory Locations box was checked. To empty the MemoryLocation.txt file, clear the check box and turn off CaptivATE.					
Verify on Start Up	At the start of the test, the test will be verified to o in the instrument's memory matches the test prog					



# 10.3.1 Tools/Options/Test . . . Enable DUT serial number

This check box determines whether any serial number must be entered during a test for a DUT, and whether the serial number is to be entered manually or automatically.

6	CaptivATE Options			
	Test	Reports	General	
	<ul> <li>Display associated DUTs only</li> <li>Display associated programs or</li> <li>Display failure comment window</li> <li>Enable computer buzzer on fail</li> <li>Enable DUT serial number</li> <li>Enable operator run offset</li> </ul>	C Auto	ber Entry	
	Clear All Memory Locations			
	Accept	Reset	Exit	

#### Figure 103 Tools/Options/Test ... Enable DUT serial number

#### Table 10 Tools/Options/Test ... Enable DUT serial number

Initial Serial Number Entry	Selected
Manual	<b>Default</b> Before a test can be run, a DUT serial number must be entered manually.
Auto	Opens more checkboxes with which to define the automatic incrementing of the DUT serial numbers. See Table 11.





Test       Reports       General         Display associated DUTs only       Display associated programs only       Initial Serial Number Entry         Display associated programs only       Manual       Increment on Pass         Display failure comment window       Auto       Increment on Fail         Display failure comment window       Operator Accessible       Serial Number Accessible         Enable computer buzzer on failure       Initial Number       Initial Number Alert         Enable operator run offset       Initial Number       Initial Number         Retain Memory Locations       Select incrementing group of the Serial number using Shift key with the Left and Right keys or by sweeping the mouse over target portion of the number.	CaptivATE Options					
<ul> <li>Display associated programs only</li> <li>Display failure comment window</li> <li>Enable computer buzzer on failure</li> <li>Enable DUT serial number</li> <li>Enable operator run offset</li> <li>Retain Memory Locations</li> <li>C Manual</li> <li>Manual</li> <li>Manual</li> <li>Manual</li> <li>Increment on Pass</li> <li>Increment on Fail</li> <li>Operator Accessible</li> <li>Serial Number Alert</li> <li>Initial Number</li> <li>abcd2008030004efg</li> <li>Select incrementing group of the Serial number using Shift key with the Left and Right keys or by sweeping the mouse</li> </ul>		Test	Reports	General		
Retain Memory Locations         Select incrementing group of the Serial number using Shift key with the Left and Right keys or by sweeping the mouse		<ul> <li>Display associated programs only</li> <li>Display failure comment window</li> <li>Enable computer buzzer on failure</li> <li>Enable DUT serial number</li> </ul>	C Manual Auto Initial Number	<ul> <li>Increment on Pass</li> <li>Increment on Fail</li> <li>Operator Accessible</li> <li>Serial Number Alert</li> </ul>		
Accept Reset Exit		Clear All Memory Locations	enting group of the Serial Shift key with the Left and by sweeping the mouse ortion of the number.			

Figure 104 Tools/Options/Test....Enable DUT serial number...Auto

Increment on Pass	Increment the serial number when the previous test passes.
Increment on Fail	Increment the serial number when the previous test fails.
Operator Accessible	Allow the operator to click the <b>Edit</b> button on the Testing screen in order to edit the serial number or the part of the serial number to be incremented.
Serial Number Alert	A pop-up that asks the operator to verify the initial serial number.
Initial Number	A frame containing the text box that displays the initial serial number.
Accept	Tells the system to accept changes you have made to these software switches.
Reset	As long as you have not clicked Accept, recovers the switch settings as they were before you changed them, and keeps the Tools/Options/Test open.
Exit	Closes the Tools/Options/Test without saving changes.

Table 11	Tools/Options/Test	Enable DUT seria	al numberAuto



Check Box	Check-marked
Retain Memory Locations {XE "Retain Memory Locations"}	When a CaptivATE test program is running on a test instrument, the test instrument stores the relevant parts of the program in locations in its own memory. The contents of these memory locations can be saved by checking the Retain Memory Locations box. By doing this, you can avoid the time taken to reload a long test. CaptivATE will immediately display the Danger icon, indicating that the test is running.
	The MemoryLocation.txt file contains a record of all programs that have been run since the Retain Memory Locations box was checked. An example is in <b>Error!</b> <b>Reference source not found.</b>
	To empty the MemoryLocation.txt file, clear the check box and turn off CaptivATE.

### Table 12 Tools/Options/Test . . . Retain Memory Locations



# 10.4 Tools/Options/Reports

6	CaptivATE Options		
	Test	Reports	General
	☑ Print results in engineering notation		
	Print step with no returned values		
	🔲 Include test program		
	Include instrument setup		
	Enable custom report		
	Accept	Reset	Exit

Figure 105 Tools/Options/Reports Screen

<b>-</b>			
Checkbox	Function		
Print results in engineering notation	<b>Default</b> Prints and reports a value such as 8.0 microAmps as "8.0 $\mu$ A" instead of in scientific notation as "+8.000000E-06"		
Print step with no returned values	<b>Default</b> Prints and reports a null step, one that carries out part of a test program, such as Preset, without returning value. (See <b>Figure 80</b> for a report with null lines. See <b>Figure 81</b> for a report without null lines.)		
Include test program	Include details of each step (mode) in the test in the "Test Detail" part of a Standard Report.		
Include instrument setup	To include details of each step (mode) in the test, the report provides an "Instruments Used" section		
Enable custom report	This function available only through arrangement with QuadTech.		
Accept	Tells the system to accept changes you have made to these software switches.		
Reset	As long as you have not clicked <b>Accept</b> , recovers the switch settings as they were before you changed them, and keeps the window open.		
Exit	Closes the window without saving changes.		

#### Table 13 Tools/Options/Reports Software Switches



# 10.5 Tools/Options/General

6	CaptivATE Options					
	Test	Reports	General			
	🔽 Display results in engineering notatio	'n				
	Manual port detection					
	🔽 Replace step mode with the alias					
	Enable instrument calibration date alert					
	🔲 Idle auto log off					
	Accept	Reset	Exit			

Figure 106 Tools/Options/General Screen

Switch	Function
Display results in engineering notation	<b>Default.</b> Display in a report all results as shown in the Output and the Measure columns in Figure 81 (this switch check-marked).
Manual port detection	With manual port detection checked, the Com Port pull- down on the <i>Instrument Setup</i> screen displays all com port numbers, as shown in Figure 107.
Replace step mode with the alias	<b>Default.</b> Allows the alias(es) you have entered on the <i>Test Programming</i> screen to be displayed and included in subsequent test reports.
Accept	Tells the system to accept changes made to these software switches.
Reset	As long as you have not clicked <b>Accept</b> , recovers the switch settings as they were before you changed them, and keeps the <i>Tools Options</i> open.
Exit	Closes the Tools Options without saving changes.



-----

Baud Rate	9600 Com Port Serial Number	1 1 2	▼ ▲ie
Guardian 6100 Plus	123	3	9 🔽
		4	
6000-07 (internal) 📃	1235	6 7	<u> </u>
None		8	~
None			
None			
None			

Figure 107 Pull-down List of Com Ports with Manual port detection checked

10.5.1 Tools/Options/General. . . Enable instrument calibration date alert

8	CaptivATE Options		
	Test	Reports	General
	<ul> <li>Display results in engineering not</li> <li>Manual port detection</li> <li>Replace step mode with the alias</li> <li>Enable instrument calibration date</li> <li>Idle auto log off</li> </ul>	s Sender E-mail customerservic Recipient E-ma	ance
Accept Reset Exit			

Figure 108 Tools/Options/General . . . Enable instrument calibration date alert

Enable instrument calibration date alert	In the Recipient E-mail(s) text box, enter one or more email address to which to send the two alerts
Sender E-Mail	E-mail address from which to send the alerts.
Recipient E-Mail	E-mail address(es) to which to send the alerts.
Alert 1	Days before calibration is due that you want to receive the first alert.
Alert 2	Days before calibration is due that you want to receive the second alert.
Test E-mail	Tells the system to send an email immediately.

Table 15 Tools/Options/General .	Enable instrument calibration	n date alert Software Switches
Tuble Ie Tools, options, General	- Endore more americ campi acion	aute uter t bort are bontenes

#### 10.5.2 Tools/Options/General. . .Idle auto log off. . .After nn minutes

Idle log off will log the existing user off CaptivATE. It does not close the CaptivATE program. A new user or the previous user may log back in and CaptivATE will continue from the exact point log off occurred. Idle log off only occurs in the Test Tab and will not occur during a test.

6	CaptivATE Options					
	Test	Reports	General			
	<ul> <li>Display results in engineering notation</li> <li>Manual port detection</li> <li>Replace step mode with the alias</li> <li>Enable instrument calibration date alert</li> <li>Idle auto log off after 15 1 minutes</li> </ul>	Instrument Calibration Sender E-mail customerservice@u Recipient E-mail(s) plevy@quadtech.c Days in Advance Alert 1: 4 Test E-mail	quadtech.com			
	Accept Reset Exit					

Figure 109 Tools/Options/General ... Idle auto log off ... After nn minutes

Table 16 Tools/Options/General ... Idle auto log off ... After nn minutes Software Switches

Idle auto log off	Enable the automatic log off.
After nn minutes	The idle time allowed for a CaptivATE system before a pop-up appears that warns the user 30 seconds before log off.



# **10.6 Admin Settings**

This screen is divided into three frames:

Device Settings, Database Location, and Users.

		QuadTech Ca	ptivATE							
	File	Tools About								
	Í	Testing	Test Programming	Instrument Setup	Reports	Historical Search	System Settings	Admin Settings	Batch Reports	
er.	****	-Device Setting								
٠.		Device Jetting	**************	Inst	alled Setup					
			Please Select		•	DUT Model				
						🔲 Always Rela				
						🔽 Disable Ver				
						🥅 Enable Bate	ch Testing			
						🔲 Auto Accep	ot			
e.		– Database Loca	ation							
	****	Weast	ome\plevy\CAPTIVA	TE 3.3						
		,								
	Change Database Location									
		Users								
1	****	Users	Authori	zation Level Pa	assword	Password effective	e date Password	valid days Lock pa	ssword	
		ntesla	Engine	eer 💌 3	phase	6 /17/2008	• 10			
				Savel	Jser	Delete	User			
	l									
					Update	Settings				

Figure 110 Admin Settings Screen

# 10.6.1 Admin Settings. . . Device Settings

📕 QuadTech Ca	iptivATE						
File Tools About							
Testing	Test Programming	Instrument Setup	Reports	Historical Search	System Settings	Admin Settings	Batch Reports
Device Setting	js Please Select	Ins	talled Setup	Del T Model     Always Reic     Disable Veri     Enable Bato     Auto Accep	bad Test ify Test ch Testing		

Figure 111 Admin Settings . . . Device Settings



Installed Setup	The name of the active Instrument Setup. Only the test instruments included in the setup entered here will appear in the list box on the <i>Test Programming</i> screen.			
Setting	Check-marked	Uncheck-marked		
DUT Model # to previous	<b>Default.</b> Whatever DUT Model # was entered on the <i>Testing</i> screen in the previous test will be displayed automatically in that text box to begin the next test.	Operator must manually do one of the following Enter the DUT Model # via the keyboard		
		Click it from the pull-down menu Scan it with a bar-code scanner		
Always Reload Test	For each iteration, the test will load into the installed instrument(s). The yellow "Loading Test, please wait" flag will be displayed in the upper right corner of the <i>Testing</i> screen.	<b>Default.</b> The test is loaded only on the first iteration.		
Disable Verify Test	<b>Default</b> . The loaded test will not be verified. Not verified means that the settings on the instrument will not be compared with the settings of the particular test program that is loaded. NOTE: CaptivATE will still check that there are no errors after each step is loaded.	The loaded test will be verified, which means that the settings on the instrument are compared with the settings of the particular test that is loaded. The orange "Verifying Test" flag is displayed.		
Enable Batch Testing	Adds two fields to the <i>Testing</i> screen: Start Batch and Batch#. For detail, see <b>Batch Tests and Batch Reports</b> .	<b>Default.</b> No batch testing can be done.		
Auto Accept	Without the operator having to click the <b>Accept</b> button, the results of the test are saved to the database and printed as defined in Section 6.	<b>Default.</b> To accept the results of a test, you must manually click the <b>Accept</b> button.		

#### Table 17 Admin Settings . . . Device Settings



# 10.6.2 Admin Settings. . . Database Location

Database Location		
\\east\home\plevy\CAPTIVATE 3.3		_
	Change Database Location	

Figure 112 Admin Settings . . . Database Location

Setting	
Database Location	The folder that contains the CaptivATE database. For customers who have more than one user, this folder should be on a shared drive.

#### 10.6.3 Admin Settings...Users

Available only to those who have Administrative-level authority.

	2-1	Password effective date	Password valid days	Lock password
Engineer 💌	3phase	6 /17/2008 💌	10 🕂	
Save	User	Delete User		
	Update Sett	tings		
	Save	Save User	Save User Delete User Update Settings	

Figure 113 Admin Settings ... Users

 Table 18 Admin Settings . . . Users

Setting	
Users	Pull-down menu displays all defined users as well as "New User." Selection of New User opens a pop-up text box into which the Administrator enters the new user's name.
Authorization Level	Pull-down menu displays the three levels: Administrator, Engineer, and Operator.
Password	User Password Entered by the Administrator.
Password effective date	Start date for password aging. Default is the current date. Only available in Medical version of CaptivATE
Password valid date	Number of days during which this password is valid from effective date. After which user will be locked out. Minimum 10, maximum 370. Only available in Medical version of CaptivATE
Lock password	Unlocks a user that has been locked out due to more than 3 login attempts or can be used to prevent this user from logging in. Only available in Medical version of CaptivATE
Save User	Required in order to save a user's settings.
Delete User	Deletes the selected user. This user's name cannot be used again. CAUTION: For this reason, do not delete the admin user name until you have defined another user with administrative level authority.



Update Settings	Not necessary to save a user setting.	
Counigo		



# 10.7 System Settings

The System Settings screen has two frames: "DUT Model Number Test Associations" and "Reports, CSV and XML File Options."

🗾 QuadTech C							
File Tools About							
Testing	Test Programming	Instrument Setup	Reports	Historical Search	System Settings	Admin Settings	Batch Reports
DUT Model Number Test Associations Unassociated Models Associate -> (·Unassociate -> (·Unas							
Regula	r Reports	Printing Options	CSV	' Files	XML Files	Custon	n Reports
- Printing 0;	otions On Pass C Stand	ard Report 🛛 C Sum	mary Report		Select Pr	inter	
Print	On Fail 💿 Stand	ard Report	mary Report		Select Pr	inter	
			Updat	e Settings			

Figure 114 System Settings



# 10.7.1 System Settings ... DUT Model Number Test Associations

📕 QuadTech CaptivATE							
File Tools About							
Testing	Test Programming	Instrument Setup	Reports	Historical Search	System Settings	Admin Settings	Batch Reports
DUT Model Numb	er Test Associations-	Test Name		-	]		
			Associa <- Unasso Save Asso	ociate	Associated Models		

Figure 115 System Settings ... DUT Model Number Test Associations

Table 19 System Settings . . . DUT Model Number Test Associations

Labels	Box or Button Function			
Test Name	All the tests that you have created are listed in the pull-down menu in the Test Name list box.			
Unassociated Models	If you have not yet entered any DUT Model numbers, this is the place for it. When a test is selected from the list of Test Names, a list of all DUT Model Numbers is automatically displayed in the list box below the Unassociated Models text box. This list of DUT Model Numbers is composed of the model numbers (or names) that you have entered in the Unassociated Models text box prior to associating them one-by-one.			
Associate→	Moves a selected model from the Unassociated Models text box to the Associated Models list box.			
←Unassociate	Selecting a model in the Associated Model list box and clicking <b>Unassociate</b> will move the model back to the list of Unassociated Models.			
Save Associations	In order to save any association or unassociation, you must click Save Associations. Clicking the <b>Save Associations</b> button clears all fields. To save an association, it is <b>not</b> necessary to click <b>Update</b> <b>Settings</b> .			

### 10.8 System Settings. . . Reports, CSV and XML file Options

This frame also includes Printing Options and Regular Reports.

### 10.8.1 System Settings . . . Regular Reports

Regular Reports	Printing Options	CSV Files	XML Files	Custom Reports
Save Reports				
🔽 Save On Pass 🕜 St	andard Report 🛛 💿 Summary Rep	ort		
	tivATE\CaptivATE 3.3\Reports\Pa	\$\$	Select Location	ı
🔽 Save On Fail 💿 St	andard Report 🛛 🔿 Summary Rep	ort		
	tivATE\CaptivATE 3.3\Reports\Fai	il	Select Location	1
		Update Settings	-1	

Figure 116 System Settings ... Regular Reports

Save Reports	Function
Save On Pass	A test that has passed and been accepted is saved to the specified location.
Standard Report	Includes at minimum a header (which contains the same information as an entire Summary Report) and the Test Results step-by-step.
	Check-marks on two software switches shown in Figure 79 ("Include test program" and "Include instrument setup") will include in the report a detailed description of each step in the test program as well as the instruments used.
Summary Report	Includes the following data: DUT Model Number, Serial Number, Test Name, Date & Time, Operator, and Test Result.
Select Location	Using Windows Explorer, select the directory in which to save test results.
Save On Fail	A test that has passed and been accepted is saved to the specified location.
Update Settings	Must be clicked to have the system recognize the changes,



### **10.8.2** System Settings . . . Printing Options

Regular Reports	Printing Options	CSV Files	XML Files	Custom Reports
rinting Options				
✔ Print On Pass ④ Stand		eport		
\\west\KONICA MINOLTA C3	53 Series PCL		Select Printer	
🗖 Print On Fail 📧 Stand	dard Report 🔿 Summary Re	eport		
			Select Printer	

Figure 117 System Settings . . . Printing Options

Table 21 System Settings	Printing Options
--------------------------	------------------

Printing Options	Function
Print On Pass	When a test passes and is accepted, it will be printed.
Standard Report	
Summary Report	Includes the following: DUT Model Number, Serial Number, Test Name, Date & Time, Operator, Test Result.
Select Printer	Using the Windows Explorer, you can select a printer.
Print On Fail	When a test fails and is accepted, it will be printed.
Select Printer	Using the Windows Explorer, you can select a printer.
Update Settings	Click this button to save specifications.



# 10.8.3 System Settings. . . CSV Files

Regular Reports	Printing Options	CSV Files	XML Files	Custom Reports
Save CSV file				
Save On Pass				
			Select Location	I
🔲 Save On Fail				
			Select Location	1

Figure 118 System Settings ... CSV Files

#### Table 22 System Settings . . . CSV Files

Save CSV File	Box Function
Save On Pass	A test that passes and for which the <b>Accept</b> button is clicked, is saved to the specified location.
Select Location	Using Windows Explorer, select the directory in which to save Pass results.
Save On Fail	A test that fails and for which the <b>Accept</b> button is clicked, is saved to the specified location.
Select Location	Using Windows Explorer, select the directory in which to save Fail results.



### 10.8.4 System Settings. . .XML Files

📕 QuadTech Ca	ptivATE						
File Tools About							
Testing	Test Programming	Instrument Setup	Reports	Historical Searc	h System Settings	Admin Settings	Batch Reports
DUT Model Numb     Unassociated		Test Name	Associat <- Unasso Save Assoc	ociate	Associated Models		
Regular	Reports	Printing Options	CSV	Files	XML Files	Custor	Reports
Save XML					Select Lo		
			Update	s Settings			

Figure 119 System Settings ... XML Files

#### Table 23 System Settings . . . XML Files

Save XML File	Box Function
Save On Pass	A test that passes and for which the <b>Accept</b> button is clicked, is saved to the specified location.
Select Location	Using Windows Explorer, select the directory in which to save PASS results.
Save On Fail	A test that fails and for which the <b>Accept</b> button is clicked, is saved to the specified location.
Select Location	Using Windows Explorer, select the directory in which to save FAIL results.

### 10.8.5 Custom Reports

Must be factory-set.



# 10.9 Instrument Setup

🧾 QuadTech Cap	otivATE					
File Tools About						
Testing	Test Programming Instrument S	etup Reports	Historical Search	System Settings /	Admin Settings	Batch Reports
Select a Setup Guardian 6000 Guardian 6100 Guardian 6200 Guardian 6100 Guardian 1010 Guardian 1030 Guardian 1030 Guardian 1030 Guardian 1030 Guardian 1030 Guardian 1050 Guardian 1050 Guardian 1050 Guardian 105 Gua	1	Baud Rate Guardian 6100 Plus 6000-07 (internal) None N	9600 💌 Serial Number	Com Port 1 Cal Due [ 6 /26/2 6 /26/2 Delet	009	

#### Figure 120 Instrument Setup

#### **Table 24 Instrument Setup**

Select a Setup	Unless you are editing a setup, you don't have to enter a name
Baud Rate	Selected by the CaptivATE software.
Com Port	For a setup that has one test instrument, this is always Com Port 1. For a setup that has more than one test instrument, see section 3.12.
Serial Number	Required.
Cal Due Date	Default is one year from the current date. To change this date, see section 3.11.
Save	Tells the system that you want to save the Instrument Setup.
Delete	Tells the system that you want to delete the line that is currently highlighted in the setup list box.



# 10.10 Test Programming

📕 QuadTech CaptivATE						
File Tools About						
Testing Test Instrum Programming	ent Setup	Reports	Historical Search	System Settings	Admin Settings	Batch Reports
Programming       Instanting         Select a Test:       6100_Plus_STOP_step         All CaptivATE Instruments       #         # Guardian 1050       #         # Hybrid 2000       #         # AC Source 61603       #         # AC Source 61603       #         # AC Source 61605       #         # Matrix 8000[General]       #         # 1730T       #         # No Instrument Modes       *         Test Sequence:       *         1       LC Fretch Guardian 6100 Plus         2       LC Fretch Guardian 6100 Plus         3       Aux Channels NI USB 6525         4       Stop Guardian 6100 Plus         5       Vitual Pause No Instrument         6       Aux Channels NI USB 6525         # Act Channels NI USB 6525       *         # Stop Guardian 6100 Plus       *         5       Vitual Pause No Instrument         6       Aux Channels NI USB 6525         # Act Channels NI USB 6525       *         # Aux Channels NI USB 6525       *	Instru- Aux 1 Detection	ument: NI USB 652	5 Mode: Aux Channels 2 Aux 3 F F	Aux 4	Aux 5	
Requires Offset			Sav	e	Cancel	

#### Figure 121 Test Programming

#### **Table 25 Test Programming**

Select a Test	Select an existing test program to edit, delete, or rename.
Test Sequence	The chronological order of the test steps.
Requires Offset	Tells the system to require the operator to perform an offset. This is similar to Enable Operator to Run Offsets.
Remove	Tells the system that you want to delete the line that is currently highlighted in the Test Sequence box.
Save	Tells the system to open the pop-up on which you enter the test program's name.
Cancel	Clears the Select a Test and the Test Sequence text boxes/



### 10.10.1 Testing

🧧 QuadTech Ca	ptivATE						
File Tools About							
Testing	Test Programming	Instrument Setup	Reports	Historical Search	System Settings	Admin Settings	Batch Reports
DUT Model	#:		•	]			
Serial #: Ed	lit			]			
Test Name:			<b>v</b>	]	Start Batch	1	
Batch #:					Test	Acce	pt
Perform Offse	t				Stop	/ Reset	

#### Figure 122 Testing

#### Table 26 Testing

DUT Model #	User-defined			
Serial #	Can be manually or automatically entered, or not entered.			
Edit	If Operator is given access and automatic increment is selected, this button is displayed.			
Test Name	Name of test program to be run.			
Perform Offset	Offset can be run during a test, or before or after.			
Batch #	User-defined.			
Start Batch	To begin a batch.			
Test	To begin a test.			
Accept	Accepts a test result.			
Stop/Reset	One click=Stop. Stops test, issues message on <i>Testing</i> screen, turns off the Fail buzzer, or enables manual acceptance of failed test.			
	Two clicks=Reset. Resets test list boxes unless "DUT Model # to Previous" is check-marked on the <i>Admin Settings</i> screen.			



# 10.11 Reports

🧧 QuadTech Ca	ptivATE						
File Tools About							
Testing	Test Programming	Instrument Setup	Reports	Historical Search	System Settings	Admin Settings	Batch Reports
Test Date				DUT Model Nu	umber		
ALL			-	6000 focu	us test DUT		•
Test Instrument 9	Gerial #			DUT Serial Nu	mber		
ALL			•	ALL			•
			Sea	arch			
Create	Summary Report	Create St	andard Report	Create CS	SV file	Create XML	file

#### **Table 27 Report Screen**

Report Search Filters	Function
Test Date	Pull-down menu displays all individual dates on which tests have been run and accepted.
Test Instrument Serial #	Pull-down menu displays all Test Instrument Serial #'s with which tests have been run and accepted.
DUT Model Number	Pull-down menu displays all DUT Model Numbers on which tests have been run and accepted.
DUT Serial Number	Pull-down menu displays all DUT Serial Numbers on which tests have been run and accepted.
Search	Shows the results of a search filtered by Test Date. Displayed in columns are Test Name, Model, DUT Serial, and Date Time. If clicked without a filter being used, Search displays a list of all accepted tests in order of Date Time.
Create Summary Report	Includes the following: DUT Model Number, Serial Number, Test Name, Date & Time, Operator, and Test Result. (See Page 2.)
Create Standard Report	See Page 2 for an example of a Standard Report.
Create CSV file	Create a comma-separated value file. For an example of mapping a CSV file.
Create XML file	Create an XML file.



### 10.11.1 Reports...Search

Testing	Test Programming	nstrument Setup	Reports	Historical Search	System Settings	Admin Settings	Batch Repo
Test Date				DUT Model N	lumber		
2007-09-	10		•	6000 foc	us test DUT		•
Test Instrumer	of Serial #			DUT Serial N			
					amber		-27.0
ALL			_	ALL			_
				. 1			
			S	earch			
Please	select the test result						
	Test Name		Model	DUT Serial	Da	te Time	
	G6000 focus test	600	0 focus test DUT	No Serial Number		07 11:01:04 AM	
	G6000 focus test		0 focus test DUT	No Serial Number		07 11:05:06 AM	
	G6000 focus test		0 focus test DUT	No Serial Number		07 11:12:32 AM	
	G6000 focus test	600	0 focus test DUT	No Serial Number	9/10/20	07 11:14:30 AM	
	G6000 focus test	600	0 focus test DUT	No Serial Number	9/10/20	07 11:19:30 AM	
		0.K.		Can			
		U.K.		Lan	icei		

### 10.11.2 Reports. . .Search. . .OK

📕 QuadTech CaptivATE							
File Tools About							
Testing Test Pro	ogramming Instrume	nt Setup R	eports	Historical Search	System Settings	Admin Settings	Batch Reports
Test Date				DUT Model	Number		
2007-09-10	2007-09-10			6000 fo	ocus test DUT		•
Test Instrument Serial #				DUT Serial	Number		
ALL			•	ALL			•
		····		arch			
		<u></u>	38	arch			
Step M	ode	Output	:	Measure	Offset Value	Calc/Real	Status
1 AC Hipot		AC 0.5	00 kV	0.000 mA	0.022 mA	NA	Pass
2 DC Hipot		DC 0.4	98 kV	0.000 mA	0.020 mA	NA	Pass
3 AC Hipot		AC 0.5	00 kV	0.000 mA	0.022 mA	NA	Pass
4 DC Hipot		DC 0.5		0.000 mA	0.020 mA		Pass
5 AC Hipot		AC 0.5	00 kV	0.000 mA	0.022 mA	NA	Pass
Create Summary	Report	Create Standard F	Report	Create	CSV file	Create XML fi	ile



### 10.11.3 Create XML File

Testing 1	est Programming Instrument 9	Setup Reports	Historical Search	n System Settings	Admin Set	tings	Batch Report
Test Date			DUT Model	Number			
2008-11-18		•					•
Test Instrument Ser	al #	_	DUT Serial	Number			
		*					-
			iearch				_
			Measure	Offset Value	Calc/F	Real	Status_
Step	Mode	Output					
i <mark>tep</mark> 1 Virtual Pa		Output NA	NA	NA		NA	NA -
1 Virtual Pa				NA		NA	NA - Pass
	use ond t CaptivATE ield d			NA		NA	Pass
1 Virtual Pa 2 Ground E	use ond t CaptivATE ield d		NA			NA NA NA	Pass
1 Virtual Pa 2 Ground E 3 Safety sh	use ond t CaptivATE ield d ns to i XML file has t	NA	NA			NA NA NA	Pass NA Pass
1 Virtual Pa 2 Ground E 3 Safety sh 4 Hipot mai	use ond <mark>t CaptivATE</mark> ield d ns to e	NA	NA			NA NA NA NA	Pass NA Pass NA
1 Virtual Pa 2 Ground E 3 Safety sh 4 Hipot mai 5 AC Source	use ond t CaptivATE ield d ns to e	NA	NA			NA NA NA NA NA	Pass NA Pass NA
1 Virtual Pa 2 Ground E 3 Safety sh 4 Hipot mai 5 AC Sourc 6 LC Infinite 7 Functiona	use ond t CaptivATE ield d ns to e	NA	NA			NA NA NA NA NA NA	Pass NA Pass NA NA
1 Virtual Pa 2 Ground E 3 Safety sh 4 Hipot mai 5 AC Source 6 LC Infinite 7 Functiona 8 Current n	use ond t CaptivATE ield d ns to e al Che	NA been successfully written to	NA o C:\Documents and S OK	ettings\bbrown.THEQUAE		NA NA NA NA NA NA	Pass NA Pass NA NA Pass Pass
1 Virtual Pa 2 Ground E 3 Safety sh 4 Hipot mai 5 AC Sourc 6 LC Infinite 7 Functiona 8 Current n 9 Earth leal	use ond t CaptivATE ield d ns to e al Che neasurement	NA been successfully written to	NA о C:\Documents and S ок 0.67 А	ettings\bbrown.THEQUAE		NA NA NA NA NA NA 0.0 µA	Pass NA Pass NA NA Pass Pass
1 Virtual Pa 2 Ground E 3 Safety sh 4 Hipot mai 5 AC Sourc 6 LC Infinite 7 Functiona 8 Current n 9 Earth leal	use ond t CaptivATE ield d ns to e al Che cassurement cage normal and power ormer current	NA been successfully written to NA 16.643 VA	NA о C:\Documents and Si ок 0.67 A 55.7 µA	ettings\bbrown.THEQUAE NA 55.7 µA		NA NA NA NA NA NA 0.0 µA	Pass NA Pass NA NA Pass Pass Pass
1 Virtual Pa 2 Ground E 3 Safety sh 4 Hipot mai 5 AC Sourc 6 LC Infinite 7 Functiona 8 Current n 9 Earth leal 10 iso transf	use ond t CaptivATE ield d ns to e al Che cassurement cage normal and power ormer current	NA Deen successfully written to NA 16.643 VA NA	ο C:\Documents and Si οκ 0.67 A 55.7 μA 0.67 A	ettings\bbrown.THEQUAE NA 55.7 µA NA		NA NA NA NA NA NA 0.0 µA	Pass NA Pass NA Pass Pass Pass Pass Pass Pass Pass
Virtual Pa     Ground E     Safety sh     A Hipot mai     A C Sourc     LC Infinite     Functiona     Current n     Earth leal     iso transf     Functiona	use ond t CaptivATE ield d ns to e al Che heasurement kage normal and power ormer current al Check	NA been successfully written to NA 16.643 VA NA NA	ο C:\Documents and So οκ 0.67 A 55.7 μA 0.67 A NA	ettings\bbrown.THEQUAD NA 55.7 µA NA NA		NA NA NA NA NA NA NA NA NA	Pass NA Pass NA Pass Pass Pass Pass Pass NA
1 Virtual Pa 2 Ground E 3 Safety sh 4 Hipot mai 5 AC Source 6 LC Infinite 7 Functiona 8 Current n 9 Earth leal 10 iso transf 11 Functiona 12 Stop	use ond t CaptivATE ield d is to ield captor XML file has to al Che kage normal and power ormer current al Check	NA been successfully written to NA 16.643 VA NA NA NA NA	ο C:\Documents and So οκ 0.67 A 55.7 μA 0.67 A NA NA	ettings\bbrown.THEQUAD NA 55.7 µA NA NA NA		NA NA NA NA NA NA O.0 µA NA NA NA	Pass NA Pass NA Pass Pass Pass Pass Pass NA



# 10.12 Batch Reports

📕 QuadTech Ca	ptivATE						
File Tools About							
Testing	Test Programming	Instrument Setup	Reports	Historical Searc	n System Settings	Admin Settings	Batch Reports
		123			•		
	Test Na	me			DUT Model		Test Result
bb hipot							4 Pass
bb hipot						61604	1 Pass
bb hipot						61604	l Pass
				Display Batch Report	1		
				stopicy bator hopolit			



### **10.13 Historical Search**

📕 QuadTech Ca	ptivATE						
File Tools About							
Testing	Test Programming	Instrument Setup	Reports	Historical Search	System Settings	Admin Settings	Batch Reports
Filter #1 Filter #2	•						
Filter #3	=						
Filter #4 No Filter Date Test Instrument S Test Instrument M DUT Serial DUT Model Test Result Step Result	erial odel						
		Clear Filters	Create Sp	readsheet	Cancel		



## 11 Troubleshooting Error and Status Messages

Error and status messages appear in two forms: On the *Testing* screen during and after tests (an example in Figure 123), or as pop-ups on all other screens. An example is in Figure 124, which tells you during a session on the *Instrument Setup* screen that you are trying to assign the same com port number to two different instruments.

	🚨 QuadTech Ca	ptivATE
	File About	
	Testing	Test Programming
	DUT Model	#: test
	Serial #:	abc
	Test Name:	Verification
<	Verify test was not s	uccessful

Figure 123 Error Message During a Test



Figure 124 Pop-Up Error Message



The error and status messages in Table 28 are presented alphabetically.

 Table 28 Error and Status Messages

Message	Remedy
A database already exists in this location.	You tried to <i>create</i> a CaptivATE database in a folder that already has a copy. You probably want to use an <i>existing</i> database.
Attach known good DUT to get Cs.	When OSC is part of the test, a GET Cs command is executed at the start.
Cannot enable custom reporting since the "InstalledAt" parameter value is not set to the company name in the Settings.txt file.	The InstalledAt parameter must be factory set. Contact QuadTech if you think you should have a Custom report.
Could not open the database dialogue	Database location was changed incorrectly in. Refer to section 3.7.
Excel template 'New Document.xlt' could not be found in the application path	This file must be in the same directory as the Captivate.exe file.
Database error occurred while saving test results.	Verify that the database is accessible and is not write-protected.
Equal sign and semicolon are not allowed in the <mode <br="" alias="">Functional Check/Numeric Functional Check/Virtual Pause&gt; text box.</mode>	Delete the "=" and ";" characters from the text and click <b>OK</b> .
Failed to communicate with <instrument name="">.</instrument>	Verify that the instrument is connected via RS232 or USB, and has power and is turned on.
	Verify that the Installed Setup list box displays the correct setup name. See Figure 56 on Page 2.
<instrument> is not an installed instrument.</instrument>	The instrument(s) in the Installed Setup list box does not match the instruments set up for the test. See Figure 56.
<instrument> has passed its calibration date of <due date.=""></due></instrument>	Calibrate the instrument ASAP; when it has been calibrated, reset the Cal Due Date on the <i>Instrument Setup</i> screen
Number of commands for this step exceeds the allowed limit	CaptivATE could not read the entered text in a Virtual Pause, Functional Check, or a Numeric Functional Check. Remove any equal signs (=) and semi colons (;).
OFFSET is required. Please connect all offset fixtures.	The Requires Offset check box (shown in Figure 69 et al) was check-marked. Test cannot proceed until this procedure is performed.
OFFSET process complete, Attach known good DUT to get Cs. Press OK to continue.	When OSC is part of the test, a GET Cs command is executed after the offset.



Please stop the current test before closing the application.	Press the <b>Stop/Reset</b> button, and then close the program (Alt+F, +Q).
Remove known good DUT. Please connect the product. Press OK to continue.	GET Cs command has been executed. Connect the DUT.
The database that you have selected is not the correct version. Please use another database.	The database is either incompatible (CaptivATE 1.0 or 2.0) or is corrupt.
There was an error saving test results.	Change the location of saved test results and retry. Refer to Figure 74.
Type Mismatch	Either the word string should be a number or the number should be a word string.
There was an error with the database path.	Change the location of the database and retry. Refer to section 3.7.
Verify test was not successful.	During a test for which the software switch "Disable verify test" is OFF (see <b>Error!</b> <b>Reference source not found.</b> , Page <b>Error!</b> <b>Bookmark not defined.</b> ), the system detected a difference between the settings on the test instrument and the settings on the test program stored in the CaptivATE database. When you run the test a second time, the settings on the test instrument will be overwritten by the test program in the CaptivATE database.
Word template 'RptBatch.dot' could not be found in the application path	This file must be in the same directory as the Captivate.exe file.
You must choose an Installed Instrument Setup before testing	Select an Installed Setup on the Admin Settings screen as shown in Figure 56.

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