FLUKE®
Biomedical

Ansur ProSim™ 6/8

Software Plug-In

Users Manual

FBC-0002
April 2011, Rev. 3, 5/12

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Introduction

About This Manual

This Users Manual contains information on how to install and use the Ansur ProSim™ 6/8 Plug-In (the Plug-In) with Ansur software. The manual includes all Plug-In features. Familiarity with the features of the Ansur software and Microsoft Windows will help in the design and use of tests for the ProSim™ 6/8 Vital Signs Simulator (the Simulator). The chapters in this manual are:

Chapter 1 “Introduction” provides information on Ansur software and the ProSim™ 6/8 Plug-In.

Chapter 2 “Getting Started” provides information on how to install and configure the ProSim™ 6/8 Plug-In.

Chapter 3 “ProSim™ 6/8 Tests” provides step-by-step descriptions on how to perform the basic tasks of the ProSim™ 6/8 Plug-In.

Chapter 4 “Reference” contains details about every ProSim™ 6/8 Plug-In feature and preferences.

Chapter 5 “ProSim™ 8 Mini Plug-In” provides information on the ProSim™ 8 Mini Plug-In.

Ansur Software

Ansur Test Automation software is the foundation for all Fluke Biomedical test systems. Ansur manages test procedures through manual/visual and automated test sequences.

The software used with Fluke Biomedical analyzers and simulators, makes a seamless integration for:

- Visual inspections
- Preventive maintenance
- Work procedures
- Performance tests
- Electrical safety tests

Ansur Plug-Ins

Ansur Test Executive software uses Plug-In modules that work with a wide array of Fluke Biomedical instruments. The Plug-In module is a software interface that supplies test elements to the Ansur Test Executive. This scheme allows the use of a similar user interface for all analyzers and simulators supported by Ansur.

When you purchase a new Fluke Biomedical analyzer or simulator, you can update your Ansur software with a download of the applicable Plug-In. Each Plug-In module lets you make and do the tests that are necessary for the instrument under test.

ProSim™ 6/8 Plug-In

The Plug-In supplies remote access to the ProSim™ 6/8 Vital Signs Simulator (the Simulator).

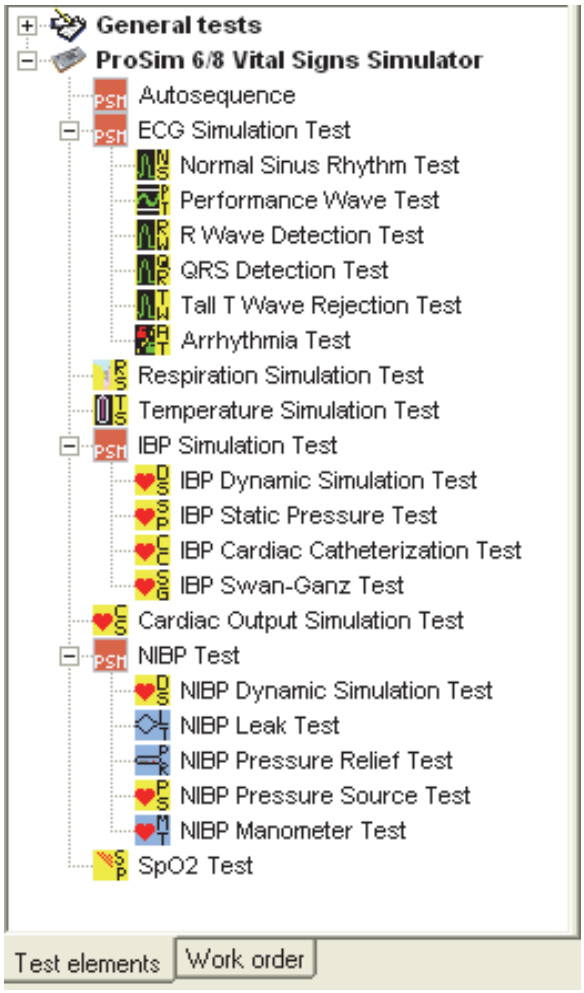
Note

The ProSim™ 6/8 Vital Signs Simulator Users Manual contains information on the features and how to use the Simulator.

You can make Ansur tests with Plug-In test elements that include the functions of the Simulator. You can customize tests to analyze specific requirements. There are unique test elements for each of the tests, and simulations typically done through the Simulator.

Test Elements

The Simulator tests shown in Figure 1-1 are installed in the Ansur test explorer when the Plug-In is installed.



gjp001.bmp

Figure 1-1. Simulator Tests in the Ansur Test Explorer

The are three types of Plug-In test elements: Autosequence, Test Groups, and child test elements.

Autosequence is a test container that holds Simulator test elements. To make an Autosequence, you drag a test element from the test explorer window and drop the test into the Autosequence window. When you do an Autosequence, each test in the Autosequence container is done sequentially one after the other.

Note

An Autosequence made with the ProSim 6/8 Plug-In cannot contain test elements from other Ansur Plug-Ins.

Test Groups are specialized Autosequences, one for each group test (e.g. ECG Simulation test).

Child test elements are the actual tests which do the simulations and measurements. Tests identified by a light blue icon shows the Plug-In will automatically get the test results from the Simulator. Tests identified by a yellow icon shows the test results shown on the Device Under Test (DUT) must be typed into the Plug-In through the keyboard.

This Plug-In also includes Steps which are used to do parallel simulations equivalent to the simulator. An Autosequence container or the Test group becomes a step when it is put in a second Autosequence container.

Additional References

Answers to questions not found in this manual about how to use the Simulator or PC can be found in:

- *Fluke Biomedical ProSim™ 6/8 Users Manual*
- *Fluke Biomedical Ansur Test Executive Users Manual*
- Microsoft Windows Help and Support Center

Software Updates

Updates for Ansur are published on the Fluke Biomedical website, *http://www.flukebiomedical.com*.

Terms and Abbreviations

Table 1-1 lists terms and abbreviations used in this manual.

Table 1-1. Terms and Abbreviations

Term	Description
Ansur	Ansur is a software suite using Plug-Ins to perform test and inspection procedures in conjunction with several Fluke Biomedical test instruments.
DUT	Device Under Test - the equipment subjected to a test using the Analyzer.
DUT Info	Information used to identify one particular DUT. DUT information usually consists of a serial number, manufacturer, device type and model. Ansur also adds a few extra data fields such as location and status.
ProSim™ 6/8	Vital Signs Simulator from Fluke Biomedical.
Field User	The person using Ansur to perform a test template on a DUT.
Plug-In	Add-on software program that extends Ansur so that it can interface with a specific Fluke Biomedical test instrument to configure it for a specific test and to automatically collect the measured data (if applicable).
Test Element	An Ansur construct that encapsulates test configuration and results A test template is built of several test elements.
Test Guide	A window displayed by Ansur or any of its Plug-Ins when a test element is being performed.
Test Record	An Ansur file containing the results of a performed test template The test record can be printed as a test report.
Test Template (*.MTT)	An Ansur file containing a set of test elements that define how a particular DUT is to be tested. A test template can also contain instructions on how to perform service, preventive maintenance, repair, and other tasks on a DUT.
Autosequence file (*.PAS)	Set of simulations with many steps in an autosequence container. This is similar to the autosequence present in the simulator.
Preset File (*.PRR)	Set of predefined presets loaded into the simulator.

Table 1-1. Terms and Abbreviations (cont.)

Term	Description
R-Curve File (*.PRV)	R-Curve files compatible to the simulator.
ProSim Test Results (*.CSV)	Test results which are stored in the simulator are copied to the PC.

Chapter 2
Getting Started

Introduction

This chapter contains information on how to install the ProSim™ 6/8 Plug-In and how to use it with the Ansur Test Automation software and the Simulator.

Note

A Simulator is not necessary to make test templates and experiment with the functionality available in Ansur and the Plug-In. To do a test, you must connect the Simulator to the computer.

System Requirements

The recommended minimum requirements for installation are:

- Pentium 4 2.0GHz FSB at 400 MHz or faster processor
- 1 GB of ram
- Microsoft Windows operating system (XP/Vista/Windows 7)
- Fluke Biomedical Ansur V2.9.6 or newer
- 50 MB of available hard drive for software
- Hard drive space (from 100 k to several megabytes) for result and template files
- DOT NET framework v2.0 or newer

How to Install the ProSim™ 6/8 Plug-In

The Plug-In must be installed on the computer before the features contained in this manual can be used. To learn how to get the Ansur software and the Plug-In, contact the local Fluke Biomedical representative or visit the Fluke Biomedical website (http://www.flukebiomedical.com).

Note

Ansur Test Executive version 2.9.6 or newer must be installed on your PC before you download and use the Plug-In.

Download the Plug-In from the Fluke Biomedical website and follow the steps below:

Note

When you download the Plug-In from the Fluke Biomedical website, it is possible to run the installation without first downloading.

Note

When you install Ansur or its components/Plug-Ins on computers with Microsoft Vista or Microsoft Windows 7, it is important to do the installation as the Administrator for that computer. If you do not, the registry will not update and Ansur will not work properly. To install on Windows Vista, you must first download the file to your local computer, find the installation file, right-click and select "Run as Administrator."

1. Open **Windows Explorer** and browse to the ProSim™ 6/8 Plug-In installation program file, usually named **Ansur ProSim 8 Plug-In Vn.n.n.exe**, where *n.n.n* is the Plug-In version number. See Figure 2-1.

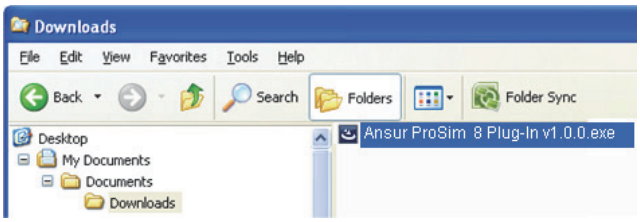


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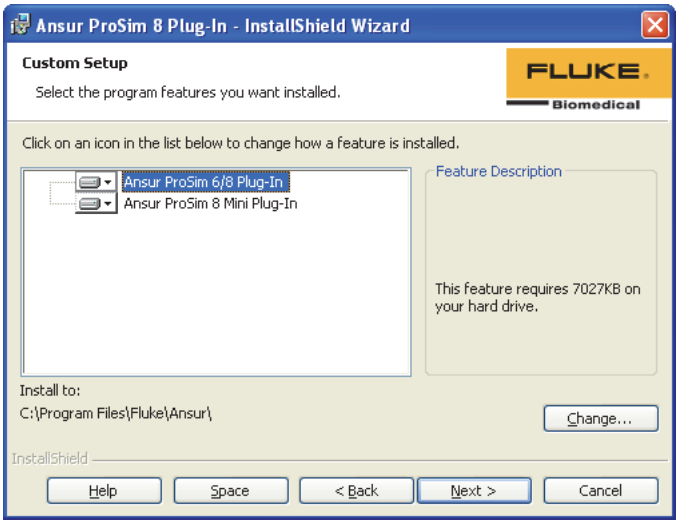
Figure 2-1. ProSim 6/8 Plug-In Installation File Location

2. Double-click the installation program. The installation extracts the Plug-In elements and then shows the **Welcome** dialog box in the display.
3. Click **Next** to show the license agreement.
4. Select the checkbox for "**I accept the terms in the license agreement**," and click **Next** to display the Setup Type.
5. To choose a setup type:
   - Click **Complete** to install both the ProSim 6/8 Plug-In and the ProSim 8 Mini Plug-In.
   - Click **Custom** to show the window in Figure 2-2 to install the ProSim 6/8 Plug-In or the ProSim 8 Mini Plug-In.
   - Click **Change** to install Ansur in a different folder.

Note

If Ansur is installed in a different destination folder from the default, be sure to use the same folder for the Plug-In.



gjp124.eps

Figure 2-2. Custom Setup Window

6. Click **Install** to start the installation. A progress bar shows the status of the Plug-In installation.

   When the installation concludes, a dialog box with a Finish button shows in the display.
7. Click **Finish**. The Plug-In will load when Ansur is started.

How to Enter the License Key

When you use the Plug-In for the first time, you are prompted to type in a software

license key. This key is supplied by Fluke Biomedical at the time of purchase.

Note

Use the demonstration mode to make test templates without a license key. Demonstration mode lets you to do many of the tasks found in this user manual. You can not save or print without a Plug-In license key.

1. To start Ansur:
   - Double-click the **Ansur** icon on the desktop.
   - From the **Start** menu, select **Start | Programs | Fluke | Ansur**.

Note

The license key dialog box in Figure 2-3 shows in the display at startup if a Plug-In license key has not been typed in.

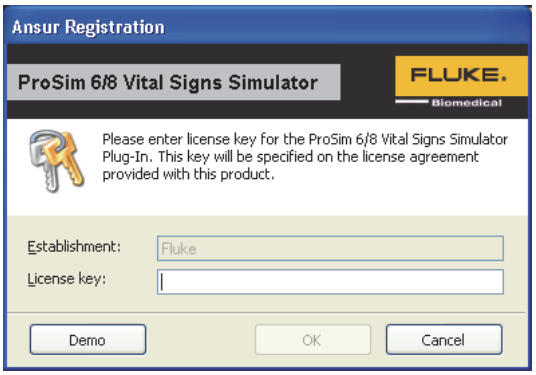


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Figure 2-3. Ansur Registration Screen - License Key

2. Type in the **Establishment** name and the Plug-In **License key.** If a license key is not available, click the **Demo** button to start Ansur in demonstration mode.

Note

Because the license key is derived from the establishment name, the license key and establishment name must agree with the license information provided by Fluke Biomedical. This information is case and space sensitive. If the establishment name was typed in before, this field will already be filled in

3. Click **OK** to start Ansur.

Click **Cancel** to stop the Plug-In load.

How to UnInstall the Plug-In

To uninstall the Plug-In:

1. Select **Start | Control Panel** and double-click **Add or Remove Programs**.
2. Find and select the entry named **Ansur ProSim 6/8 Plug-In**.

gjp005.bmp

Figure 2-4. Removing ProSim 6/8 Plug-In

3. With the entry highlighted, click the **Remove** button as shown in Figure 2-4.

4. When the verify removal dialog box shows in the display, click **Yes**. A dialog box with a progress bar shows while the Plug-In is removed from the computer.

   The program is removed when the Plug-In is not shown in the **Add or Remove Programs** window.

Chapter 3
ProSim™ 6/8 Tests

Title **Page**

Introduction

This chapter gives the operation of the Ansur ProSim™ 6/8 Plug-In program.

How to Perform Simulation Tests

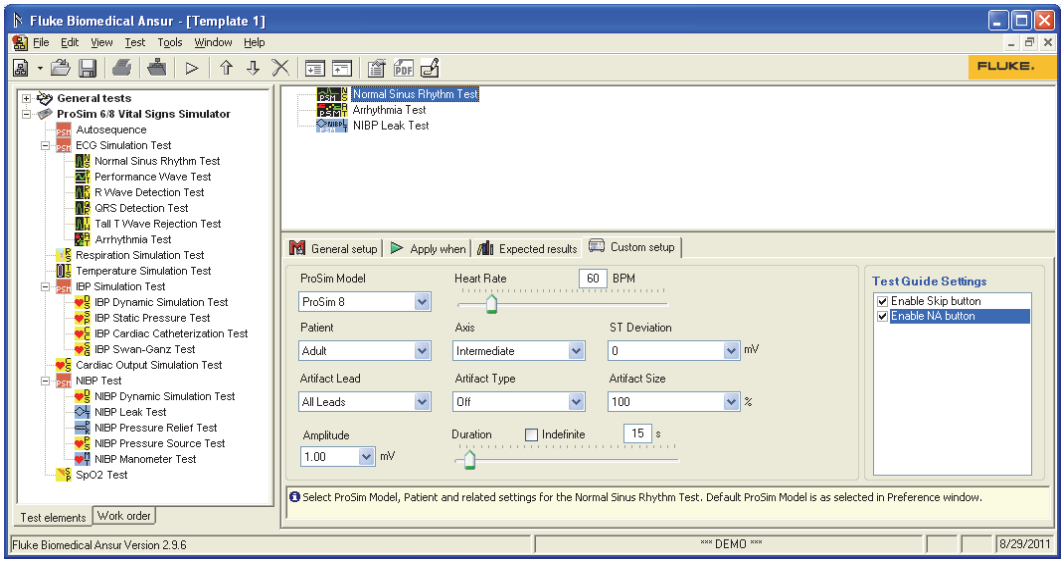
The Plug-In software has a number of ready-to-use test templates. When the Plug-In was installed, these templates were added to the Ansur Test Library folder.

How to Perform Tests without an Autosequence Container

As each test element in a test template is done, the instrument resets to its default or switches to the LOCAL mode. Test results are recorded individually. The switch to local is done after each test element when test elements are put in a template without an autosequence container.

To create a test template without an autosequence container:

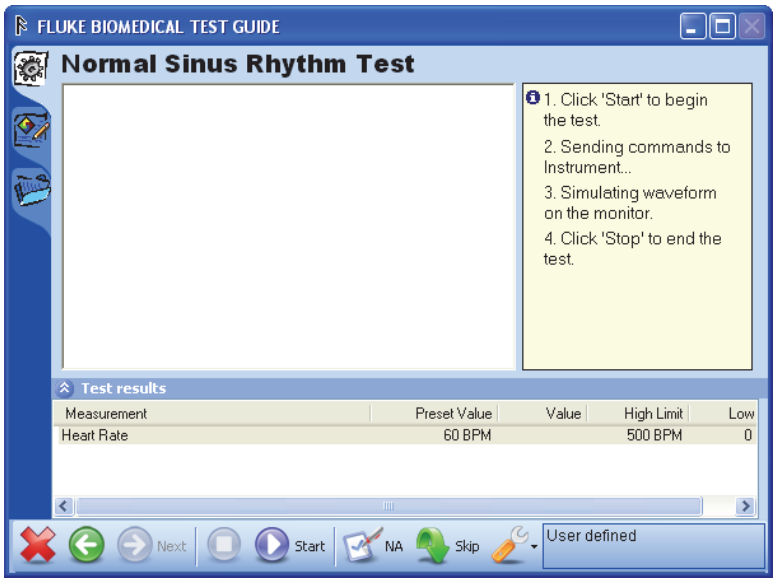
1. Open Ansur. Use the desktop icon or click Ansur from the start menu.
2. Drag and drop test elements from the Ansur Test Explorer to the test template. Figure 3-1 shows three test elements in the test template: Normal Sinus Rhythm Test, Arrhythmia Test, and NIBP Leak Test.



gjp080.bmp

Figure 3-1. Test Template without Autosequence Container

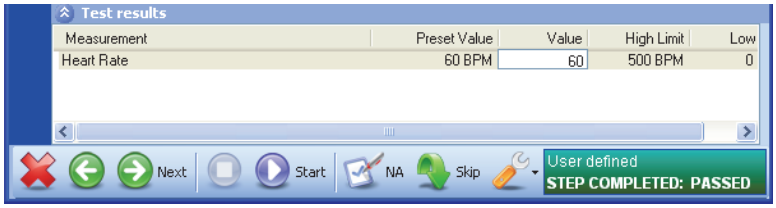
3. Click **Test | Start Test** on the menu bar to show the Test Guide window shown in Figure 3-2.



gjp081.bmp

Figure 3-2. Test Guide for Normal Sinus Rhythm Test

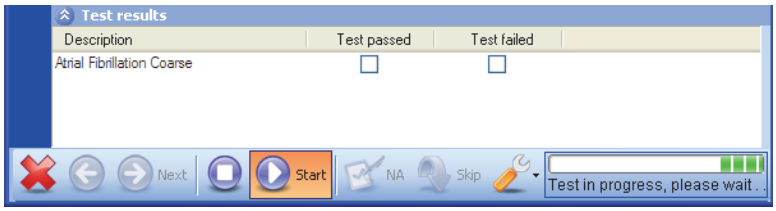
4. Click to start the normal sinus rhythm test. A progress bar shows in the lower-right corner of the Test Guide window.
5. At the end of the test duration, or if you click to stop the test, the cursor is placed in the value field of the test results pane. See Figure 3-3.



gjp082.bmp

Figure 3-3. Test Results Pane for Normal Sinus Rhythm Test

6. After you enter the test results value(s), click to move to the next test element in the test template. In this example, the Arrhythmia Test.
7. Click to start the arrhythmia test. A progress bar shows in the lower-right corner of the Test Guide window.
8. At the end of the test duration, or if you click to stop the test, the test results pane shown in Figure 3-4 shows in the display.

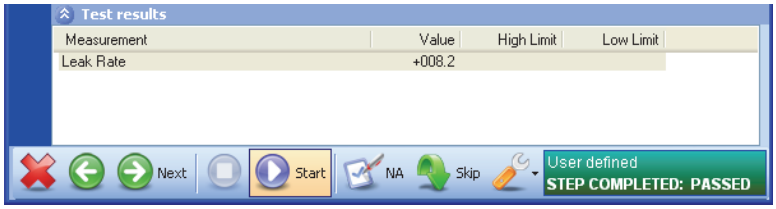


gjb083.bmp

Figure 3-4. Test Results Pane for Arrhythmia Test

9. Click the **Test passed** or **Test failed** checkbox to set the arrhythmia test results.
10. Click to move to the third test element in the test template example. In this example, the NIBP Leak Test.

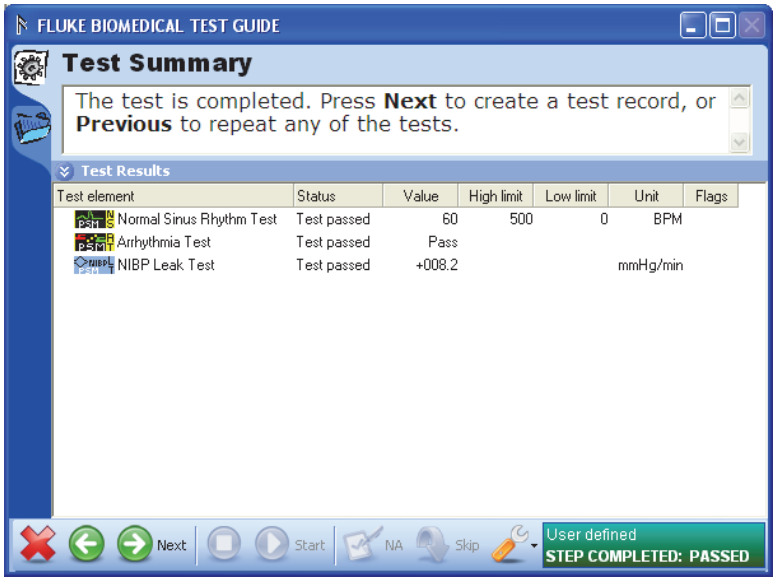
11. Click to start the NIBP test. A progress bar shows in the lower-right corner of the Test Guide window.
12. At the end of the test duration, or if you click to stop the test, the test results pane shown in Figure 3-5 shows in the display. The test results for the NIBP test comes from the Simulator and therefore does not require a manual input.



gjp084.bmp

Figure 3-5. Test Results Pane for NIBP Tests

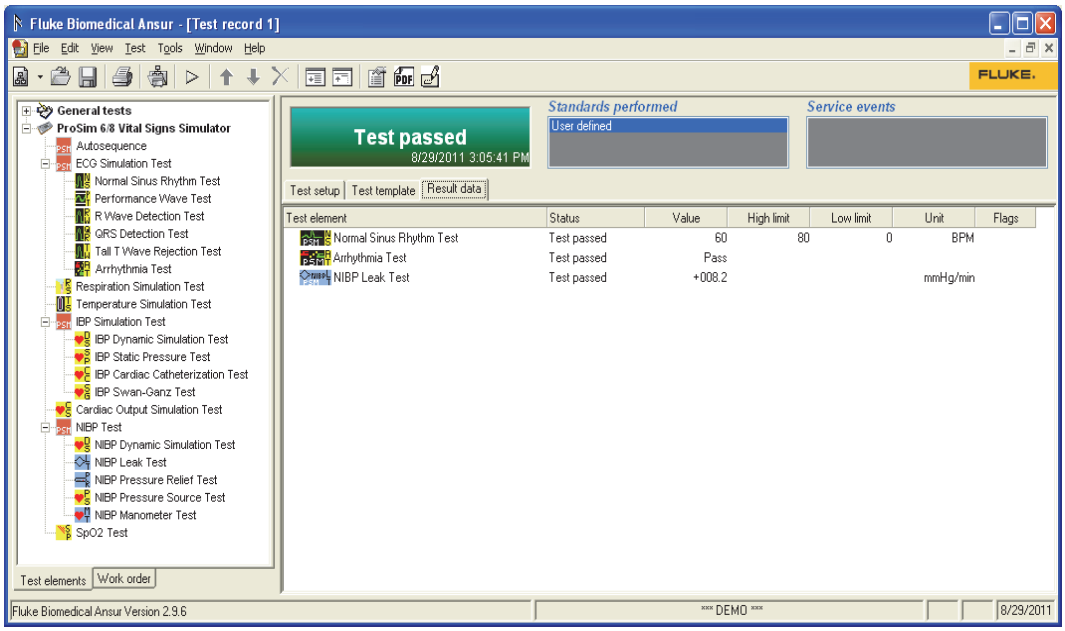
13. Click to show the test summary window shown in Figure 3-6.



gjp085.bmp

Figure 3-6. Test Summary Window

14. Click to show the test results file shown in Figure 3-7.



gjp086.bmp

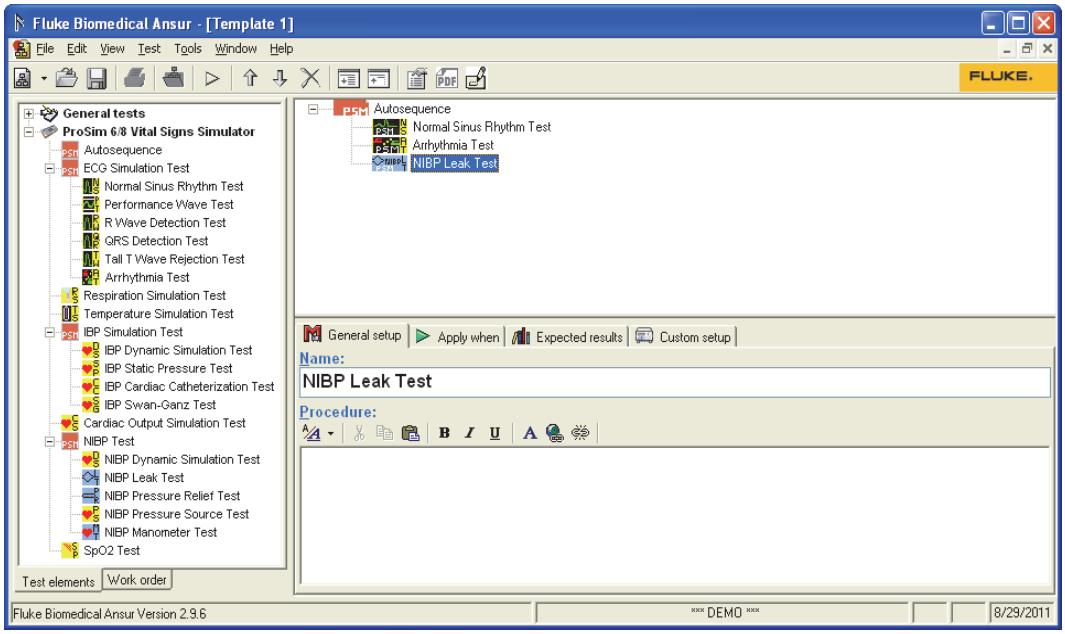
Figure 3-7. Test Results File

How to Perform Tests with an Autosequence Container

As each test element in a test template is done, test results are recorded individually. The instrument resets to its default or switches to the LOCAL mode after all the test elements are done. The switch to local is done after all test elements when test elements are put in a test template and within an autosequence container.

To create a template with an autosequence container:

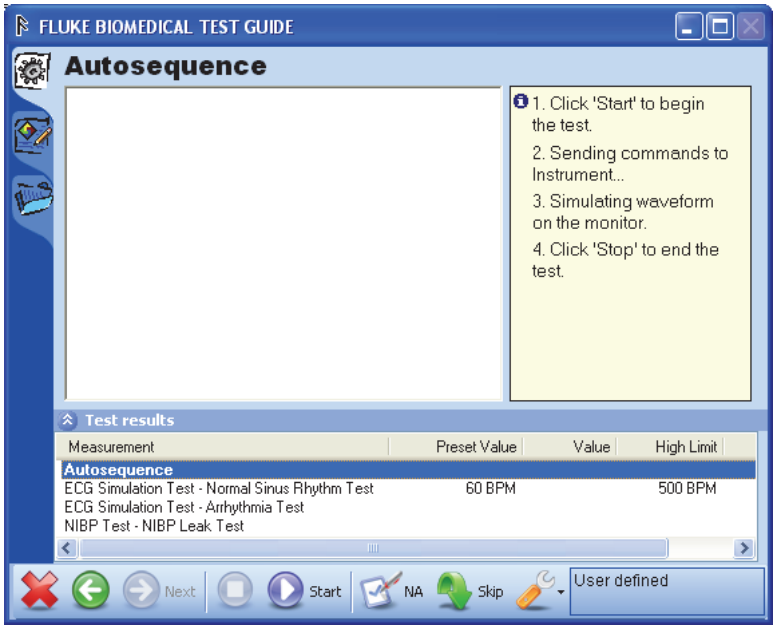
1. Open Ansur. Use the desktop icon or click Ansur from the start menu.
2. Drag and drop an Autosequence container from the Ansur Test Explorer to the test template. Figure 3-8 shows three test elements in an autosequence container in a test template: Normal Sinus Rhythm Test, Arrhythmia Test, and NIBP Leak Test.



gjp087.bmp

Figure 3-8. Test Template with Autosequence Container

3. Click **Test | Start Test** on the menu bar to show the Test Guide window shown in Figure 3-9.



gjp088.bmp

Figure 3-9. Autosequence Test Guide

4. Click ▶ to start the test. ECG Simulation Test – Normal Sinus Rhythm Test is the first test element. A pop-up window shows in the display that identifies the test and counts down the duration time. A progress bar shows in the lower-right corner of the test guide window. You can also click the **Stop** button in the pop-up window to stop the test. See Figure 3-10.

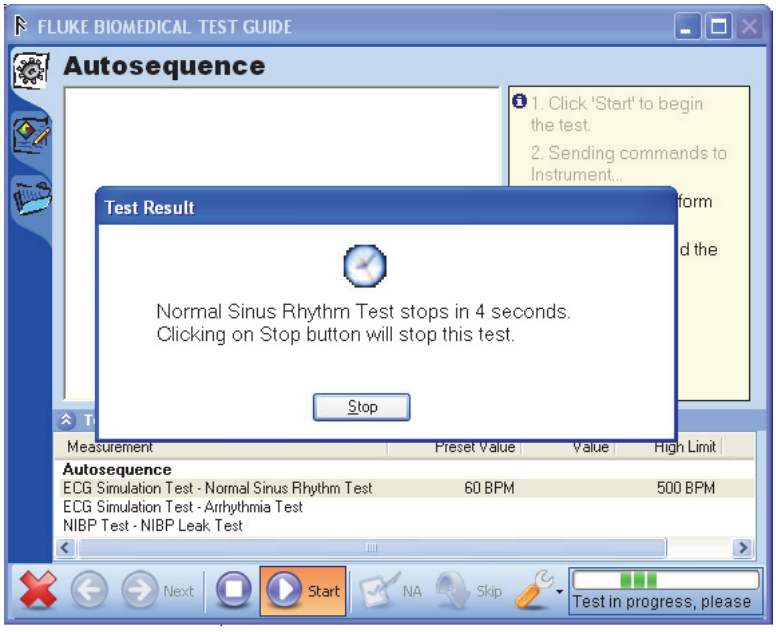


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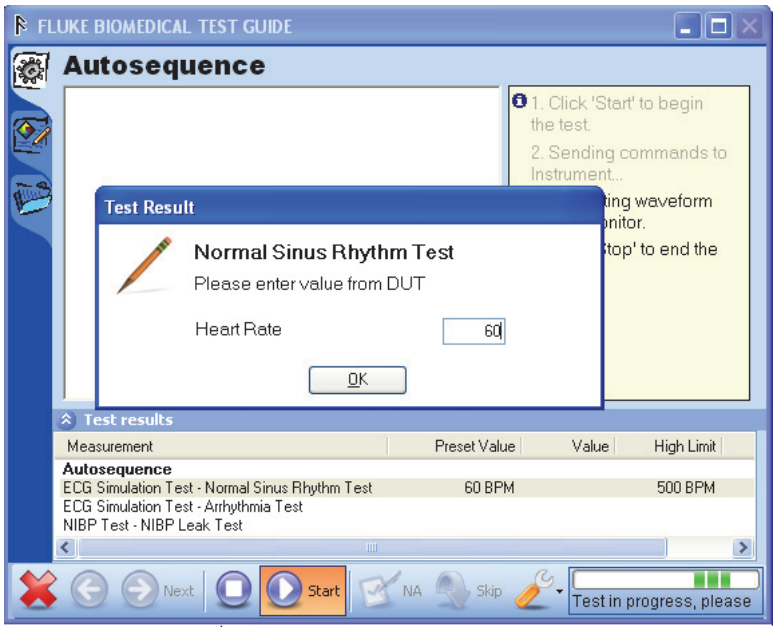
Figure 3-10. Normal Sinus Rhythm Test in an Autosequence

5. At the end of the test duration, or if you click the **Stop** button to stop the test, another pop-up window shows in the display where you enter the observed value from the DUT. See Figure 3-11.



gjp090.bmp

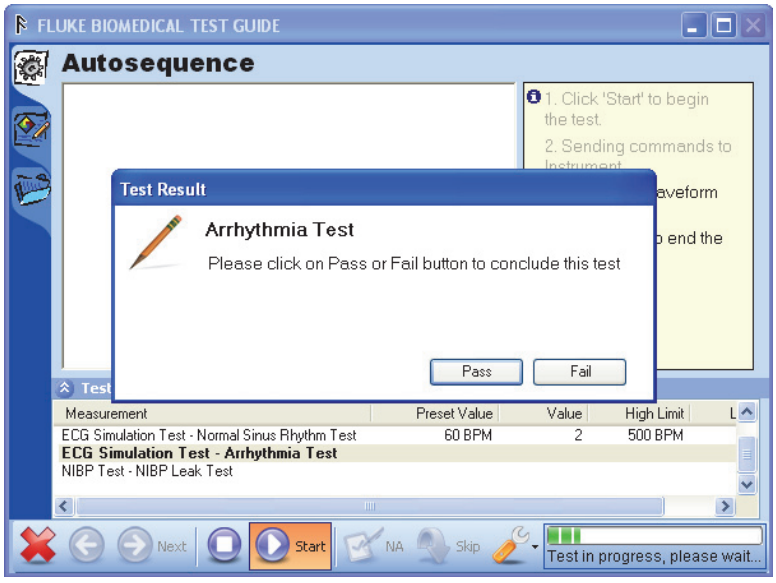
Figure 3-11. Test Results Entry for Normal Sinus Rhythm Test in an Autosequence

6. Click the **OK** button. Ansur records the value you typed in and moves to the next test element. ECG Simulation Test – Arrhythmia Test in this example.

Note

The instrument does not reset to LOCAL mode. The simulation continues until the results for all test elements are recorded.

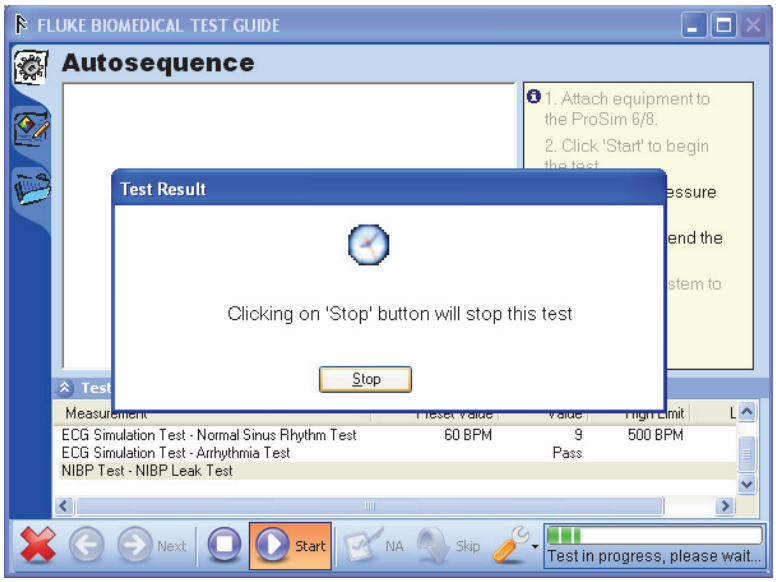
7. Another pop-up window shows with the test name and duration count down. When the test element stops, a pop-up test result window shows in the display. See Figure 3-12.



gjp091.bmp

Figure 3-12. Arrythmia Test Results Window in an Autosequence

8. Click the **Pass** or **Fail** button in the test result window. The results are recorded and Ansur moves to the next test element. The next test element in this example is the NIBP Leak Test. See Figure 3-13.



gjp092.bmp

Figure 3-13. NIBP Leak Test in an Autosequence

9. When the NIBP Leak Test is done, the results are automatically retrieved from the Simulator and show in the **Test results** pane of the test guide. See Figure 3-14.

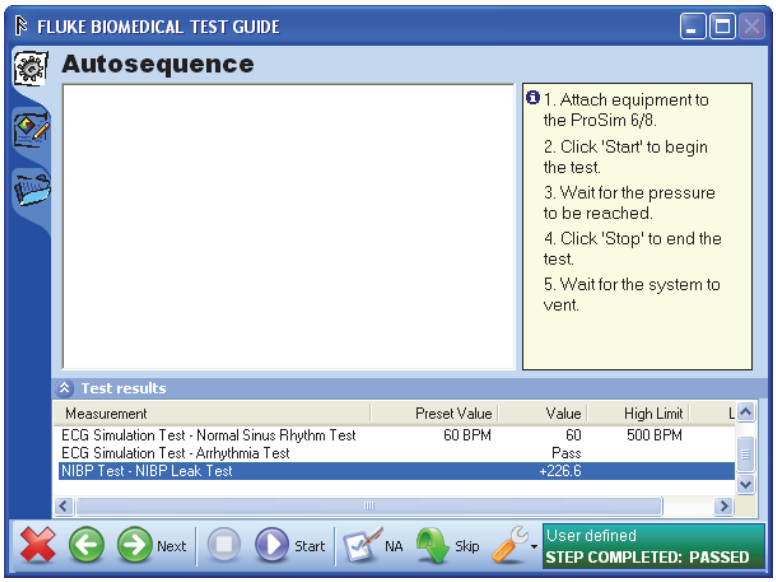


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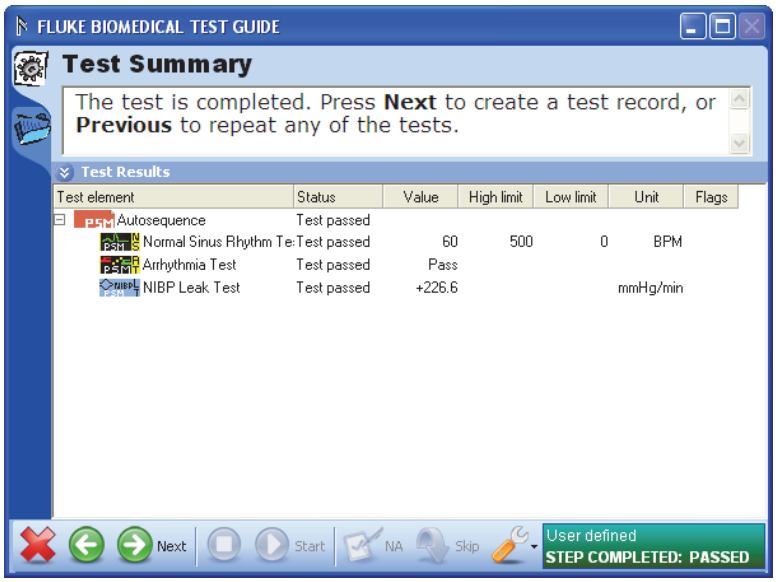
Figure 3-14. NIBP Leak Test Results

If there was another test element after the NIBP Leak test, Ansur would automatically do the next test after the NIBP Leak test results were retrieved from the Simulator. In this example, the NIBP Leak test is the last test element in the autosequence container.

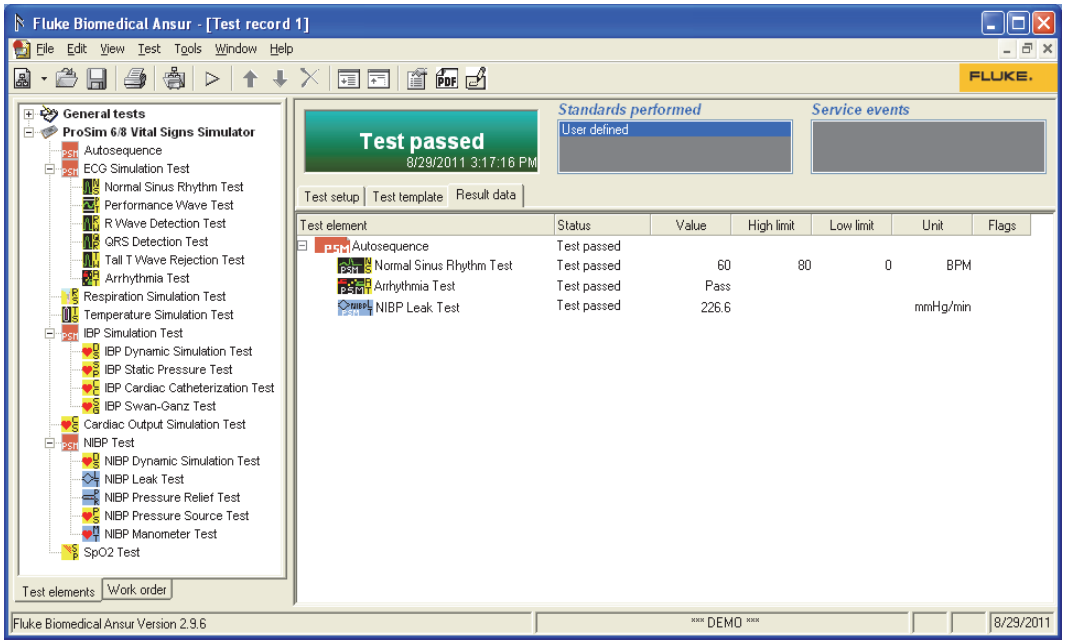
10. Click  to show the test summary window shown in Figure 3-15.



gjp094.bmp

Figure 3-15. Test Summary after Autosequence

11. Click to show the test results file shown in Figure 3-16.



gjp095.bmp

Figure 3-16. Test Results after Autosequence

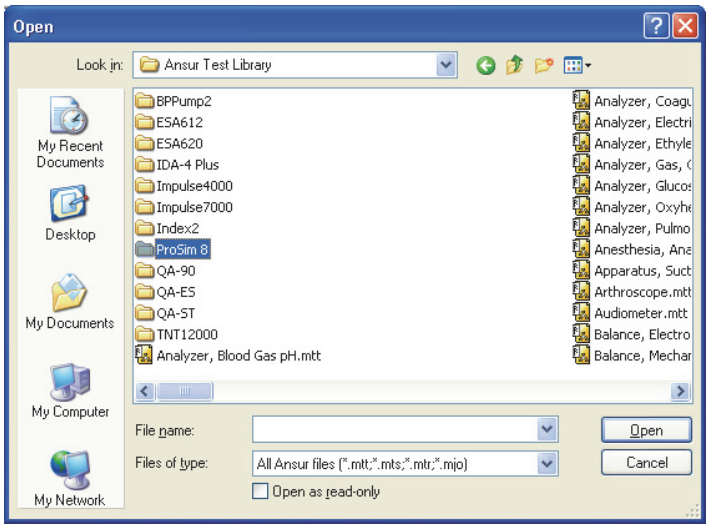
How to Perform Tests with Autosequence and Step Container

When an autosequence is placed within another autosequence container in a template, the new autosequence container becomes a step within the first autosequence. As a result, all test elements within the step are done simultaneously, or in parallel. This is similar to how the autosequence built into the Simulator works.

When the test results for each of the test elements in a step are obtained, Ansur moves to the next step in the autosequence. The following explanation will use the Monitoring Testing autosequence as an example of an autosequence with a step container.

To open the Monitoring Testing template from the Ansur test library:

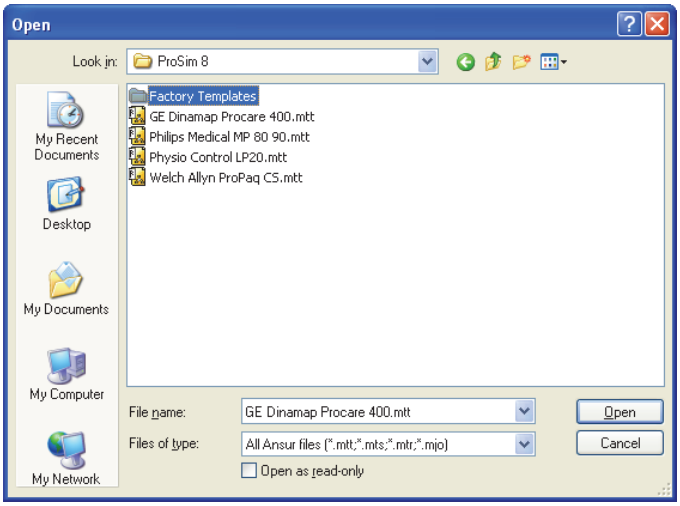
1. Click **File | Open** on the menu bar or click on the main toolbar.
2. Browse to the folder where Ansur was installed and double-click the Ansur Test Library folder. See Figure 3-17. The usual location is C:\Program Files\Fluke but can have a different name.



gjp007.bmp

Figure 3-17. Browsing the Ansur Test Library

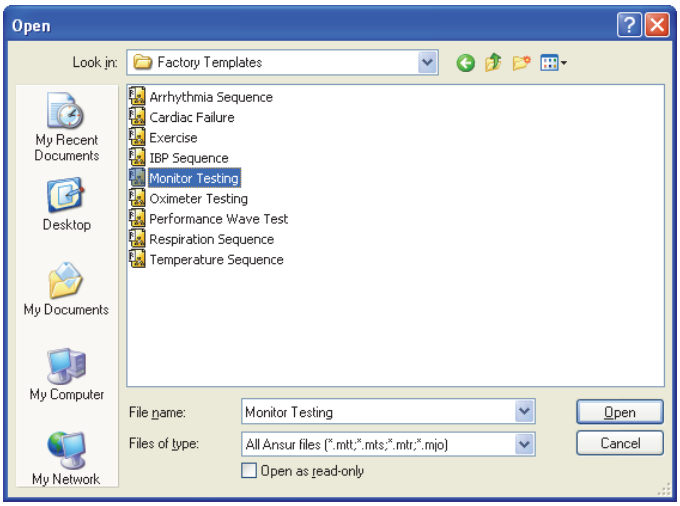
3. Double-click the ProSim 8 folder to open the dialog box shown in Figure 3-18. The dialog box shows the generic test templates and the default templates in the factory templates director.



gjp096.bmp

Figure 3-18. Generic and Factory Templates

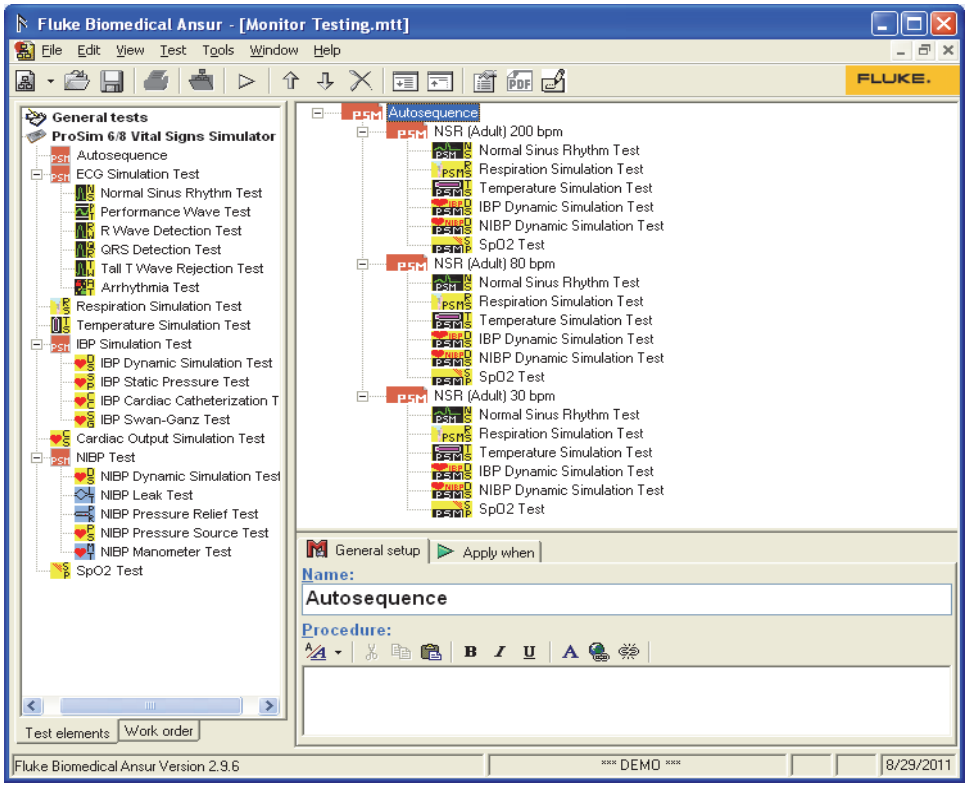
4. Double-click **Factory Templates** directory to open the dialog box shown in Figure 3-19.



gjp121.bmp

Figure 3-19. ProSim 8 Plug-In Templates

5. Highlight Monitor Testing.mtt and click the **Open** button to open the template shown in Figure 3-20.

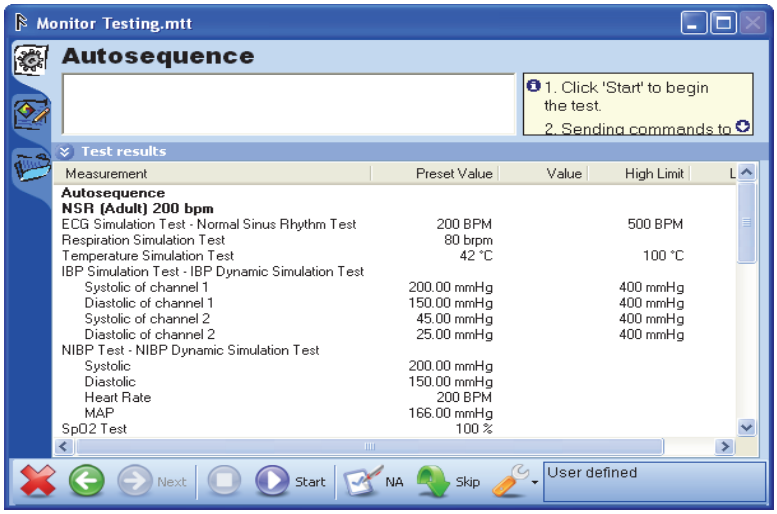


gjp097.bmp

Figure 3-20. Monitor Testing Template

As Figure 3-20 shows, there is one Auto Sequence container that contains three more Auto Sequence containers, or steps. Each step has a test for ECG signal (Normal Sinus Rhythm), respiration, temperature, IBP, NIBP, and Oximeter SpO2 optical emitter and detector testing. The three steps have been labeled NSR (Adult) 200 bpm, NSR (Adult) 80 bpm, and NSR (Adult) 30 bpm.

1. To do the Auto Sequence and the steps within:
2. Click **Start | Test** from the main menu or click on the main toolbar to open the test guide shown in Figure 3-21.

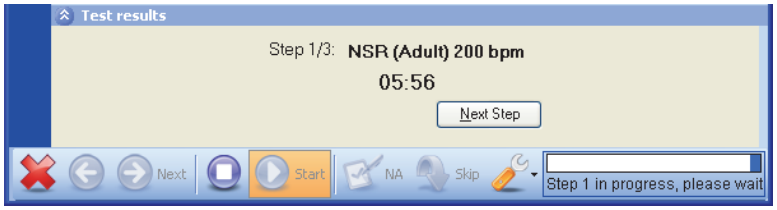


gjp098.bmp

Figure 3-21. Autosequence Test Step Test Guide

3. Click to start the auto sequence.

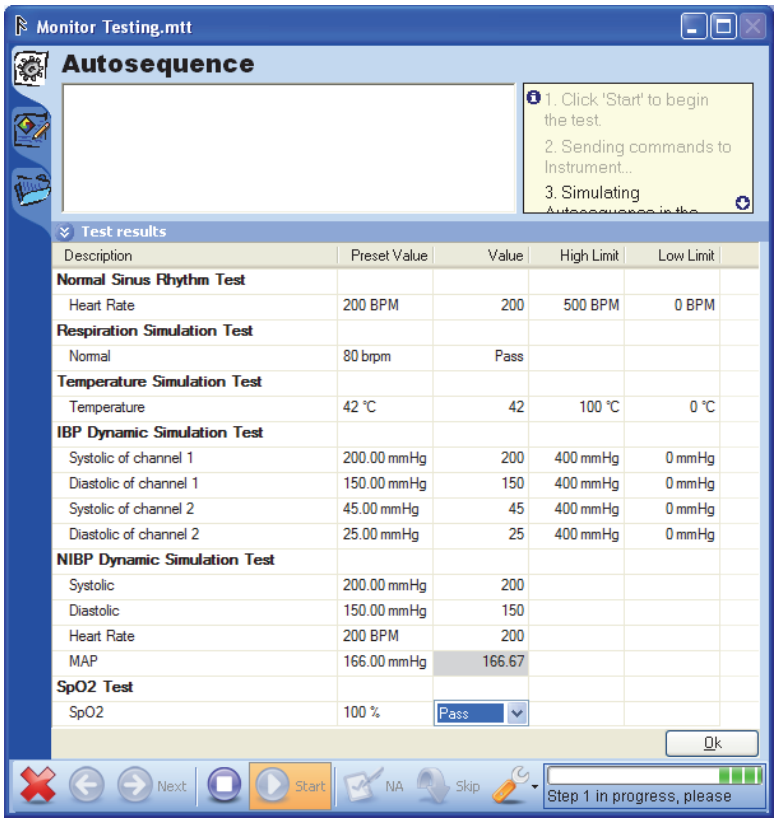
   The test results pane in Figure 3-22 shows in the bottom of the test guide window.



gjp099.bmp

Figure 3-22. Step Test Results Pane

4. The test results pane shows the step number and name. A count down of the time remaining in the step duration is also shown. If you want to move to the next step before the duration time is completed, click the **Next Step** button. When you click on the Next Step button or the duration time completes, Ansur shows the test results values for the step just completed. See Figure 3-23.

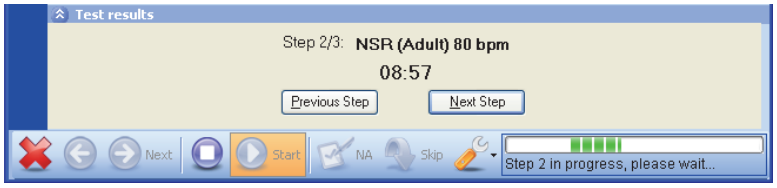


gjp100.bmp

Figure 3-23. Step Test Results Screen

5. Enter the values observed on the DUT into the appropriate value field in the test results pane.
6. Click **OK** to start the next step.

   For steps that are between other steps, the test results screen in Figure 3-24 shows in the display.

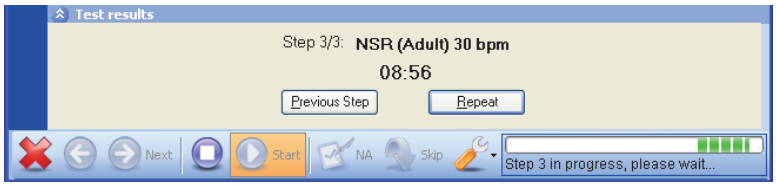


Gjp101.bmp

Figure 3-24. Step Test Results for In Between Steps

This screen has **Previous Step** and **Next Step** buttons. Both buttons will move to the test results screen of the present step for entry of results values. The previous step button will go back and do the previous step when you click **OK** in the results screen. Ansur does the next step if you clicked the next step button.

For the last step in an auto sequence, the test results screen in Figure 3-25 shows in the display.

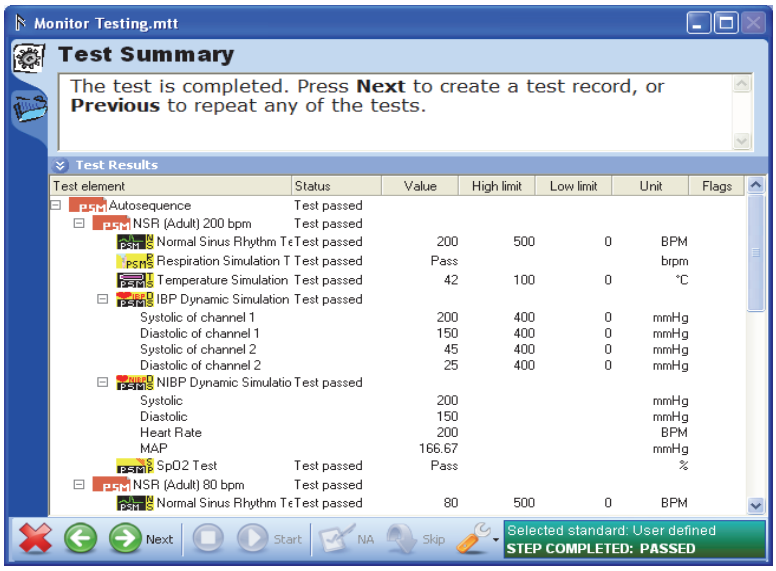


gjp102.bmp

Figure 3-25. Step Test Results for Last Step

The **Repeat** button will stop the present step and show the results screen to allow you to enter test results. Then when you click OK in the test results pane, Ansur will do the first step in the auto sequence.

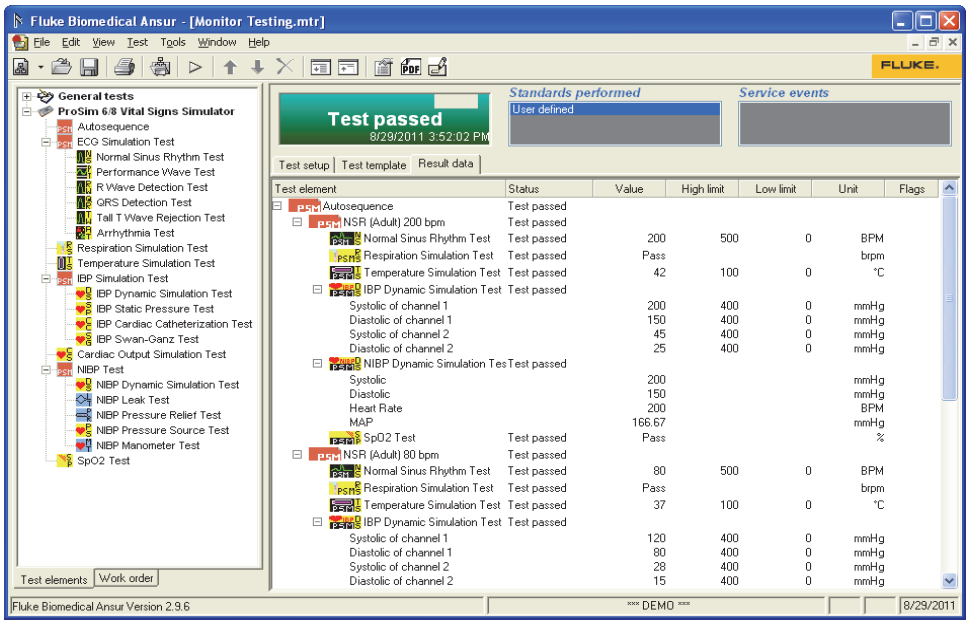
7. Click to stop the autosequence and enter the test results of the last step.
8. Click to show the test summary window shown in Figure 3-26.



gjp103.bmp

Figure 3-26. Test Summary of Stepped Autosequence

9. Click to show the test results file shown in Figure 3-27.



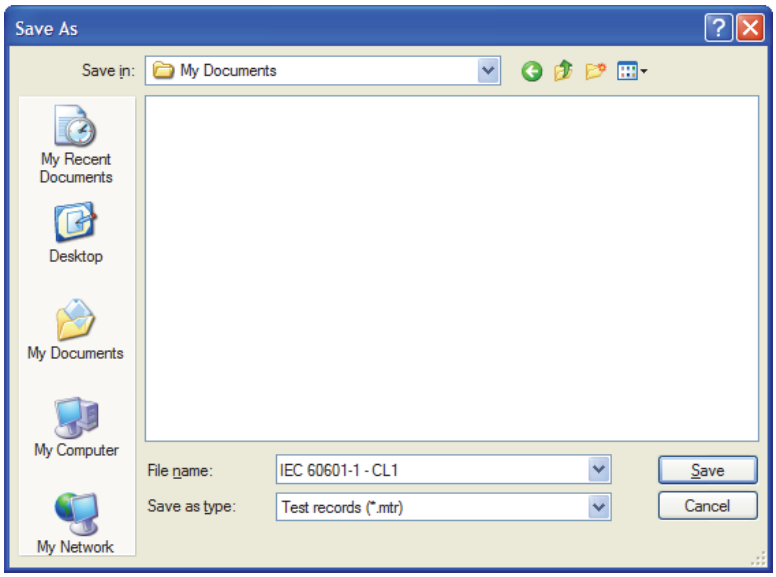
gjp104.bmp

Figure 3-27. Test Results File for Stepped Autosequence

How to Save a Test Record or Template

You can keep each test record and Plug-In test template as a file on the PC. To save a test record or template:

1. Click **File | Save** on the main menu or click in the toolbar. The **Save As** dialog box shown in Figure 3-28 shows in the display.



gbv024.bmp

Figure 3-28. Save As Dialog Box

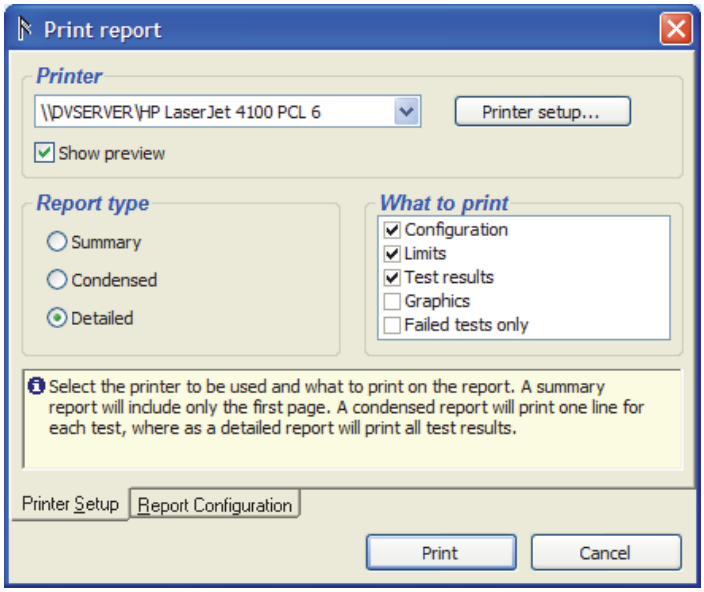
2. Browse to the correct location and type in a name in the **File name** field and click **Save**. The file is saved and the Ansur title bar is updated with the new name.

How to Print a Test Report

Test reports can be printed in three different formats from the test record:

- **Summary** – A report with DUT data and the overall status of the safety test. This one-page report is good for a simple Pass or Fail report.
- **Condensed** – A report with the summary report data as well as each test element on a one line that shows if the test passed or failed.
- **Detailed** – A report with the summary and condensed data along with all configuration test result data as well as applied part setup data.

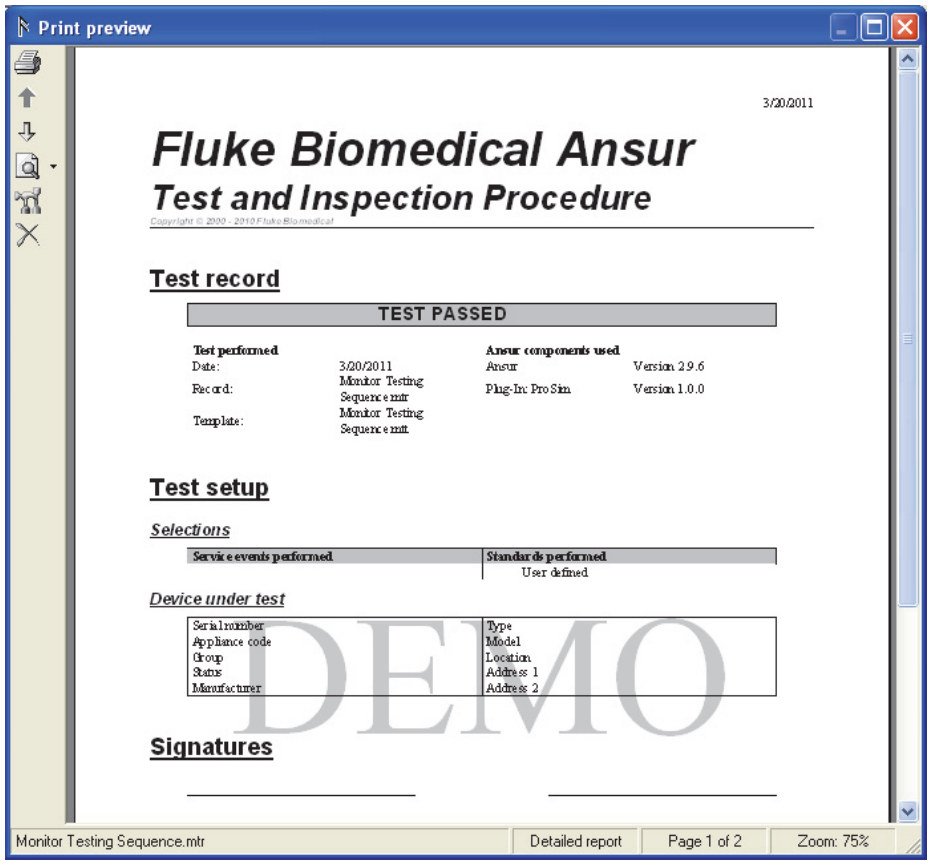
1. With the Test Report open, click **File | Print** or click on the toolbar to open the Print Report window shown in Figure 3-29.



gbv26.bmp

Figure 3-29. Print Report Window

2. Select a report type option (summary, condensed, or detailed).
3. Click **Print** to show the print preview window in Figure 3-30.



gjp068.bmp

Figure 3-30. Print Preview of Test Report

3. Click in the upper left-hand corner of the preview window to print the report.

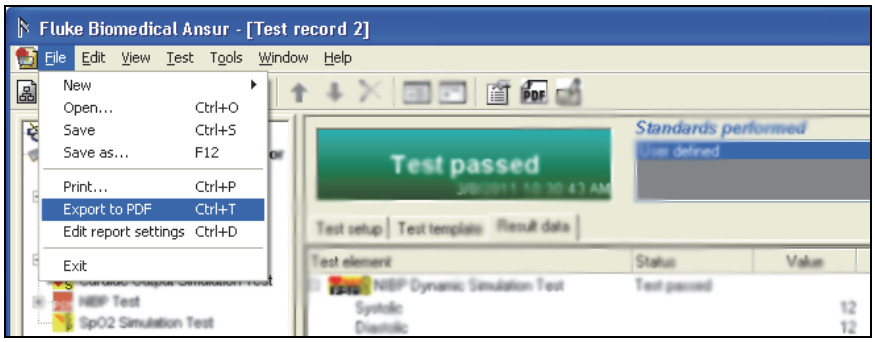
Note

To skip the preview before printing, uncheck the Show Preview checkbox in the print report window shown in Figure 3-29.

How to Export a Report to PDF

To keep a test report in Adobe (pdf) format:

1. Click **File | Export to PDF** on the main menu (See Figure 3-31) or click (PDF) on the main toolbar.



gjp022.bmp

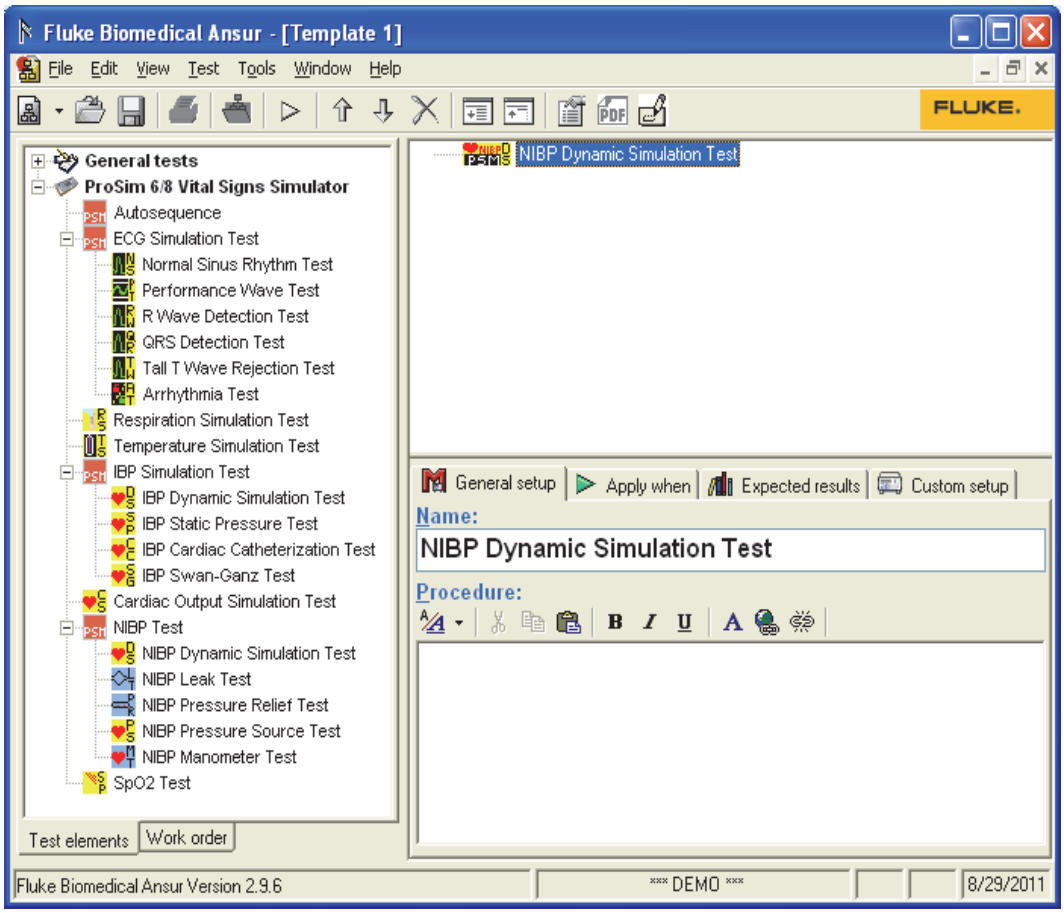
Figure 3-31. Save Test Record to PDF File

How to Create a Test Template

A test template is an Ansur file that holds a set of test elements that make a test for an applicable DUT. The test template can be used on other DUTs of the same type. A test template can also contain instructions on how to do preventive maintenance, make repairs, and other tasks on a DUT.

To create a new test template:

1. Open an empty test template. Click **File | New | Template** or click on the main toolbar.
2. In the test explorer window, click on the plus button (⊞) to the left of the ProSim 6/8 Vital Signs Simulator entry to expand the entries for this Simulator.
3. Click and drag a test element from the Test Explorer (left pane) to the Test Template window (right pane). The example shown in Figure 3-32, shows the NIBP Dynamic Simulation Test element in the test template.



gjp023.bmp

Figure 3-32. Test Template with NIBP Dynamic Test Added

Repeat step 3 for each test element required in the template.

Below the template window, a number of test element setup tabs are shown. Table 3-1 is a list of these tabs and their function.

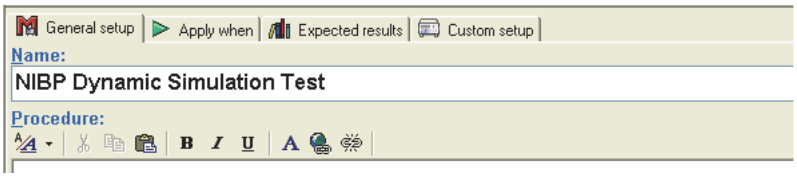
Table 3-1. Test Element Setup Tabs

Tab Name	Function
General setup	Contains the test element name and the procedure description to show to the user.
Apply when	Used to set when the test is done, set the standards with limit assignments, and if the test results must show up in the report.
Expected results	A table of all test results for the test element where absolute, dynamic, and relative limits are set for the test.
Custom setup	Used to set different parameters for the test element. Not all test elements will have parameters that can be set in this window.

How to Name a Template

When you make a new test template, you must give it a name. To name the test template:

1. Click the **General setup** tab in the test template window.
2. Type a name in the Name field of the general setup window as shown in Figure 3-33.



gjp022.bmp

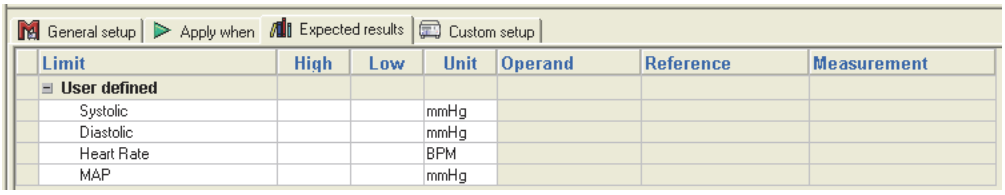
Figure 3-33. Custom Setup Test Element Name

3. Add text to the Procedure field to instruct the user on the test. See the *Ansur Test Executive Users Manual* to learn more about what can be put into the procedure field.

The **Apply when** tab is used to set which standard or established process the test element uses to compare test results against. For the ProSim 6/8 test elements, only the user defined standard is available.

How to Set Expected Results

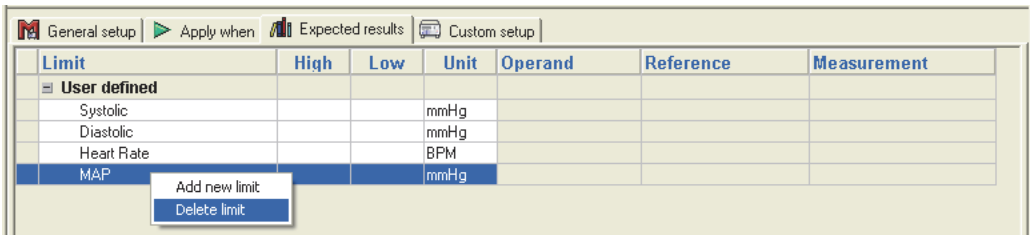
Each test element has one or more values that tell how a DUT performed during the test. The Expected results tab shows the results a test element can use to evaluate a DUT. If you click the **Expected results** tab just after you add a test element to the template, all the results values will show in the window. Figure 3-34 shows the results for the NIBP Dynamic Simulation Test element and the four parameters that could be used to measure DUT performance.



gjp925.bmp

Figure 3-34. Expected Results Window

Some test parameters may not be applicable to some DUTs. To remove a value as a test result, right-click on the grey box to the left of the limit name. The pop-up menu shown in Figure 3-35 will show in the display. Click on **Delete limit** to remove that value from the expected results.



gjp026.bmp

Figure 3-35. Delete Result Value

To set the expected results:

1. Click in the **High** column of a limit row.
2. Type in the high value for that test parameter.
3. Tab to the **Low** column.
4. Type in the low value for that test parameter.

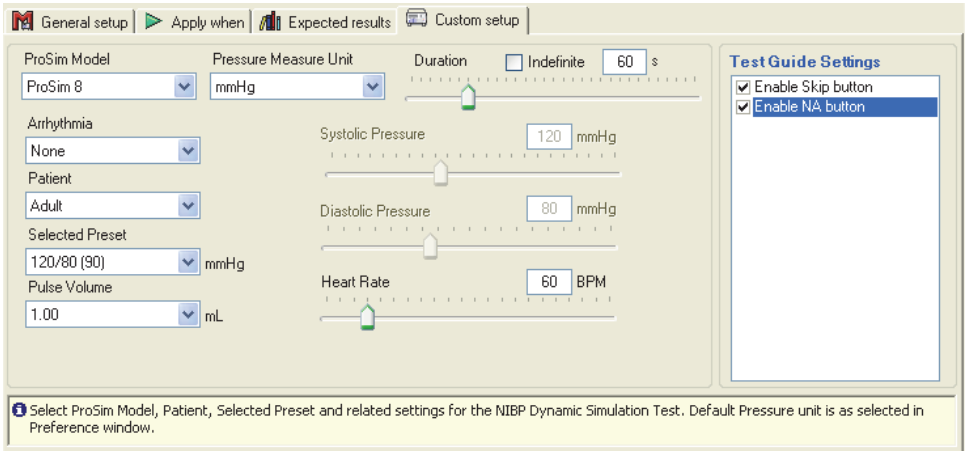
Repeat these four steps for each parameter used to evaluate the performance of the DUT.

How to Set Test Equipment Parameters

The **Custom setup** tab is used to set variables in the test equipment used on a DUT. In this case, a ProSim 6 or 8 Vital Signs Simulator. Figure 3-36 shows the custom setup window for the NIBP function of the Simulator.

Note

Click and hold on a slider control and drag it to change the parameter value. You can push ← and → keyboard keys to change the value in single steps for a finer adjustment.



gjp067.bmp

Figure 3-36. Custom Setup Window for NIBP Dynamic Simulation Test

This window shows all the parameters that can be changed for the NIBP function. Refer to the *ProSim™ 6/8 Users Manual* to learn more about these parameters and their limits. In addition, you can set the duration of the test from one second to indefinite. You can also enable or disable the Skip and NA buttons in the test guide window.

Refer to Chapter 4 (Reference) to learn more about the custom parameters you can set for each function of the Simulator though Ansur.

How to Create an Autosequence with Steps

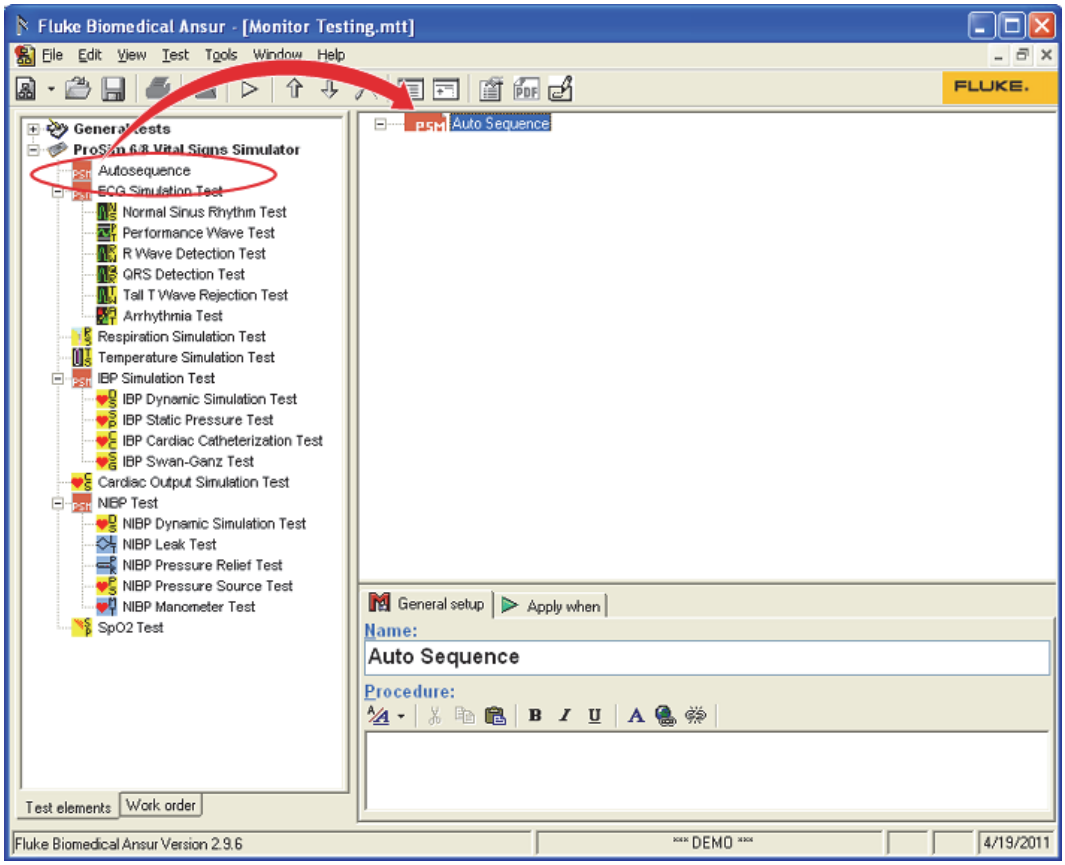
To create an autosequence that has steps, you create a template that has an Auto Sequence container in it and then put another Auto Sequence container inside the first Auto Sequence container. The second Auto Sequence container then becomes a Step container. You then place test elements inside the step container.

The result of this is that when this step container is executed, all the test elements within the step are started at the same time. This is similar to how the Autosequence feature built-in to the ProSim 8 performs.

When multiple steps are put into one Auto Sequence container, each step is automatically started when the test results are entered for the present step. The automatic execution of the steps continue until all steps have been done or the user aborts the autosequence.

To create a template with an autosequence with steps:

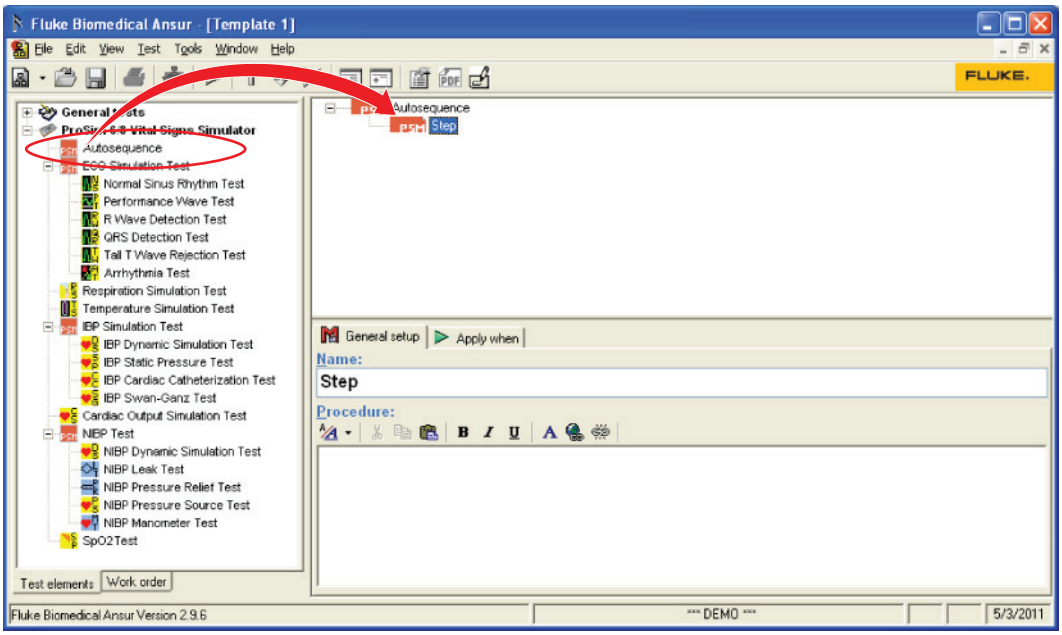
1. Open an empty test template. Click **File | New | Template** or click on the main toolbar.
2. In the test explorer window, click on the plus button (⊞) to the left of the ProSim 6/8 Vital Signs Simulator entry to expand the entries for this Simulator.
3. Drag an Auto Sequence container from the Test Explorer window to the Template window, as shown in Figure 3-37.



gjp105.bmp

Figure 3-37. Drag Auto Sequence Container to Template

4. Drag another Autosequence container from the Test Explorer window to the template window but place it on top of the first Auto Sequence icon. It will put the container under the Auto Sequence icon and label the new container Step. See Figure 3-38.



gjp106.eps

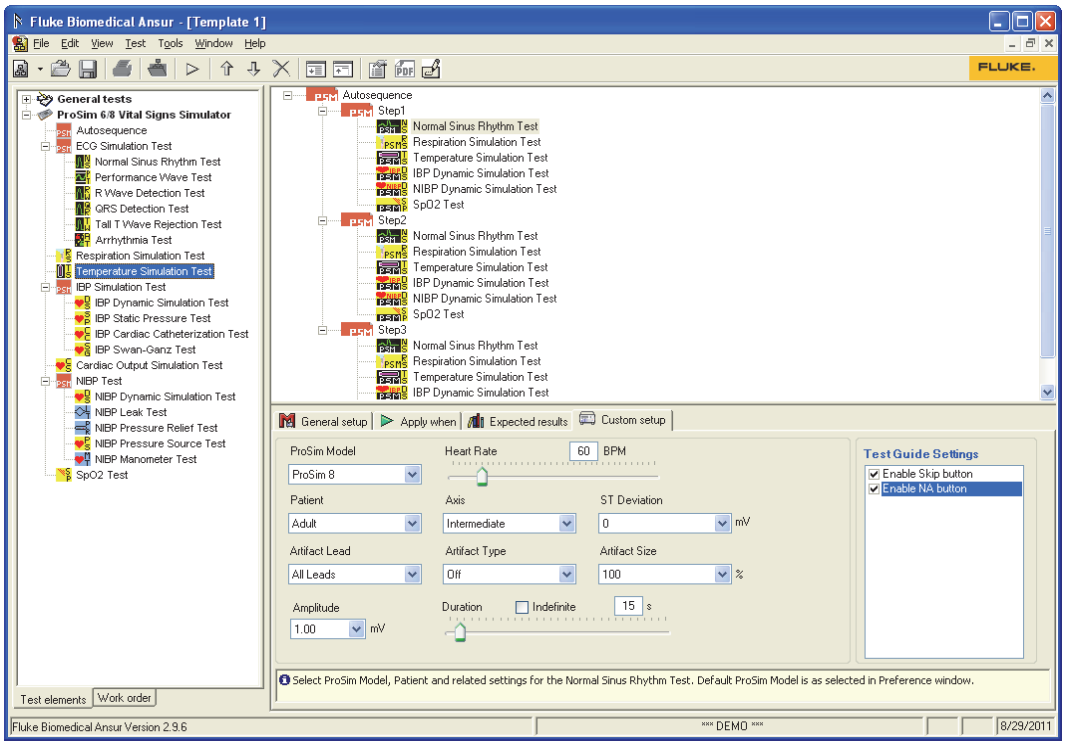
Figure 3-38. Drag Auto Sequence Container to Template to Create Step Container

5. Drag any test elements from the Test Explorer window and place it on top of the Step icon. The test element will be shown under the step icon.
6. Set the parameters of the test element through the **Custom Setup** and **Expected test results** tabs. See the How to Set Test Equipment Parameters and How to Set Expected Results sections to learn more on how to set up test elements.
7. Repeat step 6 for each test element you want in the step.

Note

To add another step, drag an Auto Sequence container from the Test Explorer and place over the first Auto Sequence icon in the template window.

8. Figure 3-39 shows a template with an autosequence that has three steps. Each step has six different test elements to set the parameters in the Simulator.



gjp107.bmp

Figure 3-39. Complete Autosequence with Three Steps

9. Click to save the template.

Chapter 4
Reference

Introduction

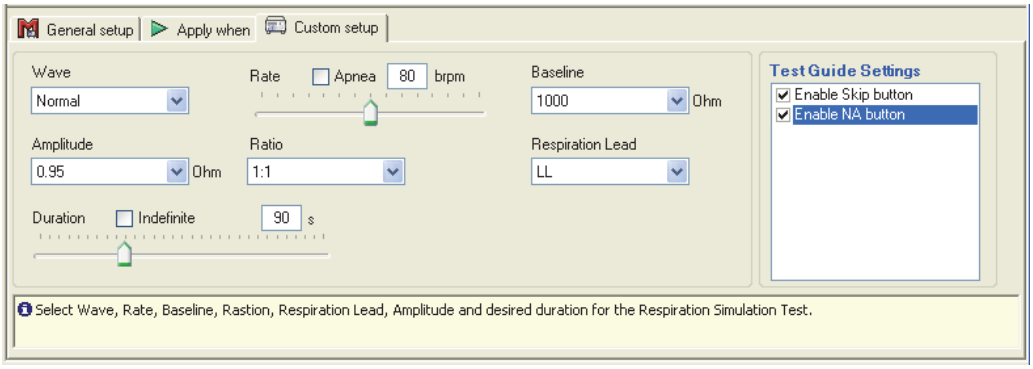
Each test element in this Plug-In have parameters that can be set and loaded into the Simulator when Ansur does the test. These test parameters are set through the custom setup window of a test template.

ProSim™ 6/8 Test Elements

This chapter provides data on the custom setup parameters for each test element of this Simulator. To see each of the following custom setup windows, drag and drop the test element from the test explorer window to the test template window. Next, click on the **Custom setup** tab.

Respiration Simulation Test

This is a visual test. The Simulator does not make a measurement. Figure 4-1 shows the custom setup window for the respiration simulation test element.



gj027.bmp

Figure 4-1. Respiration Simulation Custom Setup

Table 4-1 is a list of the parameters and their description for the respiration simulation test element.

Note

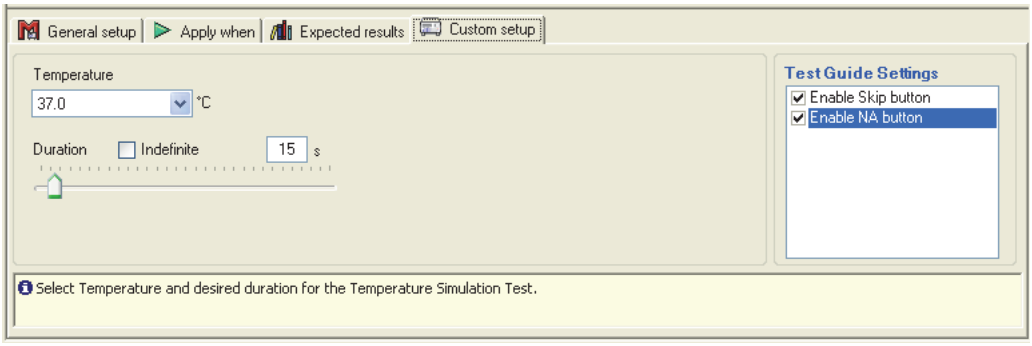
To change slider values, click and hold on the slider control and drag it to change the parameter value. Use ← and → keyboard keys to adjust the value in single steps.

Table 4-1. Respiration Simulation Test Custom Parameters

Parameter	Description
Wave	Sets the wave to use for the test.
Rate	Sets the respiration rate to use for the test.
Amplitude	Sets the amplitude to use for the test.
Baseline	Sets the baseline to use for the test.
Ratio	Sets the ratio for normal waves in the test. Ventilated ratio is always 1:1.
Respiration Lead	Sets lead the respiration will be simulated on.
Duration	Sets how long the simulation should last (1 to 300 seconds). Check the indefinite checkbox for longer durations. The user must click Stop in the test guide toolbar to stop the test.

Temperature Simulation Test

This is a visual test. The Simulator does not make a measurement. Figure 4-2 shows the custom setup window for the temperature simulation test.



gjp028.bmp

Figure 4-2. Temperature Simulation Test Custom Setup

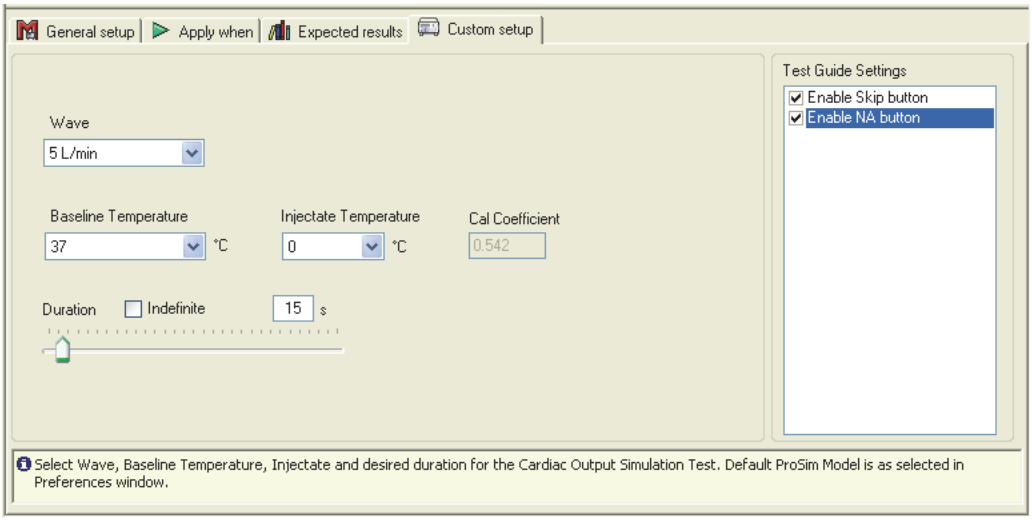
Table 4-2 is a list of the parameters and their description for the respiration simulation test element.

Table 4-2. Temperature Simulation Test Custom Parameters

Parameter	Description
Temperature	Sets the temperature to use for the test.
Duration	Sets how long the simulation should last (1 to 300 seconds). Check the indefinite checkbox for longer durations. The user must click Stop in the test guide toolbar to stop the test.

Cardiac Output Simulation Test

This is a visual test. The Simulator does not make a measurement. Figure 4-3 shows the custom setup window for the cardiac output simulation test.



gjp029.bmp

Figure 4-3. Cardiac Output Simulation Test Custom Setup

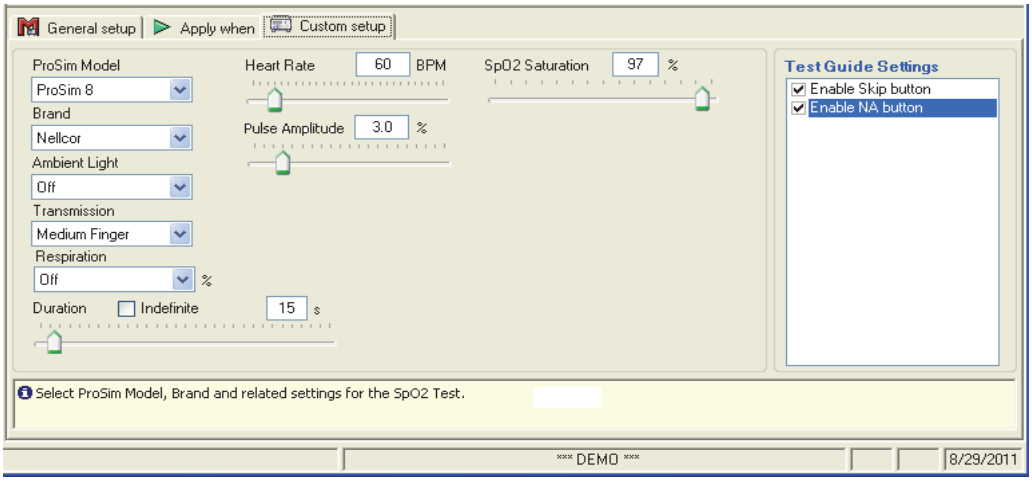
Table 4-3 is a list of the parameters and their description for the cardiac output simulation test element.

Table 4-3. Cardiac Output Simulation Test Custom Parameters

Parameter	Description
Wave	Sets the wave to use for the test.
Baseline Temperature	Sets the baseline temperature to use for the test.
Injectate Temperature	Sets the injectate temperature to use for the test.
Cal Coefficient	Calibration coefficient for the injectate temparture.
Duration	Sets how long the simulation should last (1 to 300 seconds). Check the indefinite checkbox for longer durations. The user must click Stop in the test guide toolbar to stop the test.

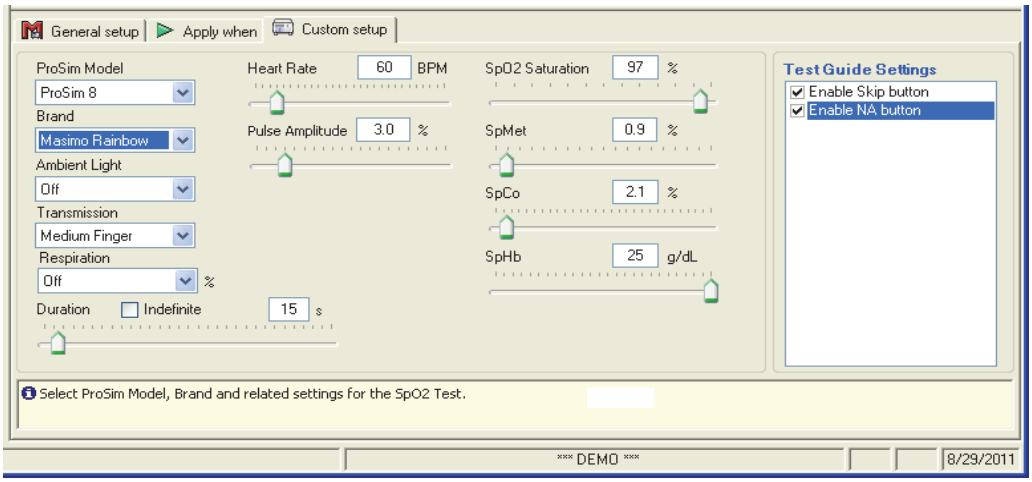
Oximeter SpO2 Optical Emitter and Detector Test

This is a visual test. The device does not make a measurement. Figures 4-4 and 4-5 shows the custom setup windows for the test. All Oximeter SpO2 optical Emitter and Detector tests for all pulse oximeter manufacturers except Masimo Rainbow use the standard SpO2 custom setup.



gjp030.bmp

Figure 4-4. Standard Oximeter SpO2 Optical Emitter and Detector Custom Setup



gjp031.bmp

Figure 4-5. Masimo Rainbow Oximeter SpO2 Optical Emitter and Detector Custom Setup

Table 4-4 is a list of the parameters and their description for the Oximeter SpO2 Optical Emitter and Detector test element.

Table 4-4. Oximeter SpO2 Optical Emitter and Detector Test Custom Parameters

Parameter	Description
SpO2 Saturation	Sets the degree of oxygen saturation.
Brand	Sets the brand of the pulse oximeter connected to the simulator.
Transmission	Sets the transmission value for the test.
Respiration	Sets the SpO2 respiration for the test.
Ambient Light	Sets the ambient light for the test.
Pulse Amplitude	Sets the pulse amplitude value for the test.
SpMet	Sets the SpMet value for the test. [1]
SpCo	Sets the SpCo value for the test. [1]
SpHb	Sets the SpHb value for the test. [1]
Heart Rate	Sets the heart rate for the test.
Duration	Sets how long the simulation should last (1 to 300 seconds). Check the indefinite checkbox for longer durations. The user must click Stop in the test guide toolbar to stop the test.

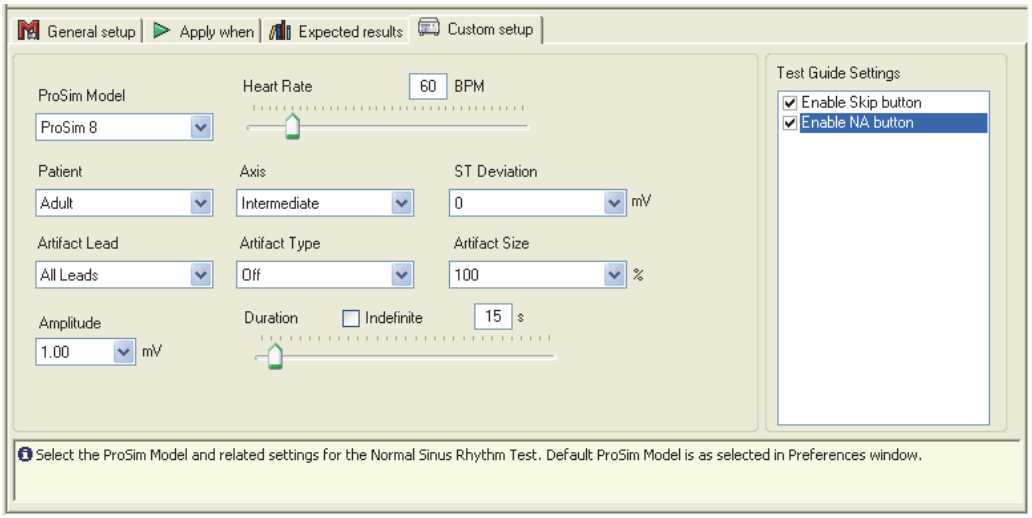
[1] Used for Masimo Rainbow SpO2 only.

Note

SpO2 saturation, SpMet, SpCo, and SpHb are interrelated. When you change one value, the other values are automatically changed.

Normal Sinus Rhythm Test

This is a visual test. The Simulator does not make a measurement. Figure 4-6 shows the custom setup window for the normal sinus rhythm simulation test.



gjp032.bmp

Figure 4-6. Normal Sinus Rhythm Simulation Test Custom Setup

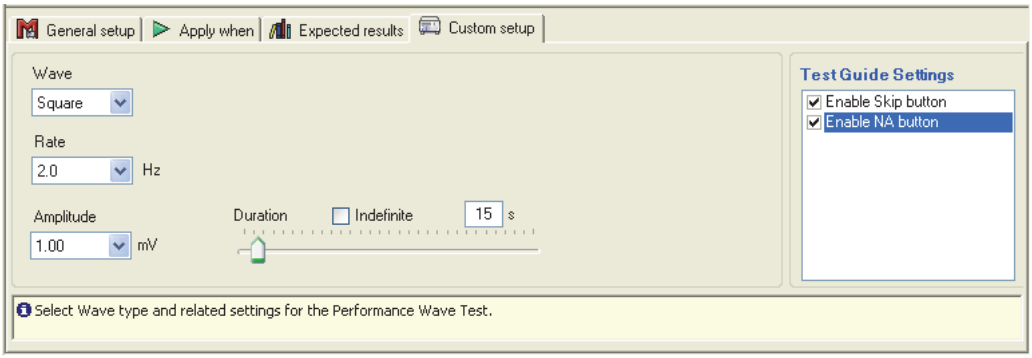
Table 4-5 is a list of the parameters and their description for the Normal Sinus Rhythm test element.

Table 4-5. Normal Sinus Rhythm Test Simulations Test Custom Parameters

Parameter	Description
Heart Rate	Sets the heart rate to use for the test.
Patient	Sets an Adult or Pediatric type of patient for the test.
Axis	Provides a choice of 3 types of Axis and set ECG axis for Normal Sinus Rhythm.
ST Deviation	Sets the ST deviation for Normal Sinus Rhythm, adult only.
Amplitude	Sets the voltage amplitude of the normal sinus wave for the test.
Artifact Type	Sets the artifact type for the test.
Artifact Size	Sets the artifact size for the test.
Artifact Lead	Sets the lead artifact is on for the test.
Duration	Sets how long the simulation should last (1 to 300 seconds). Check the indefinite checkbox for longer durations. The user must click Stop in the test guide toolbar to stop the test.
ProSim Model	Sets the model of the Simulator to create test template and perform tests. All features of ProSim 6/8 is available for the ProSim 8 model and limited features are available for ProSim 6 model. For more information see Appendix. The default is as selected in the preferences.

Performance Wave Test

This is a visual test. The Simulator does not make a measurement. Figure 4-7 shows the custom setup window for the performance wave test.



gjp033.bmp

Figure 4-7. Performance Wave Test Custom Setup

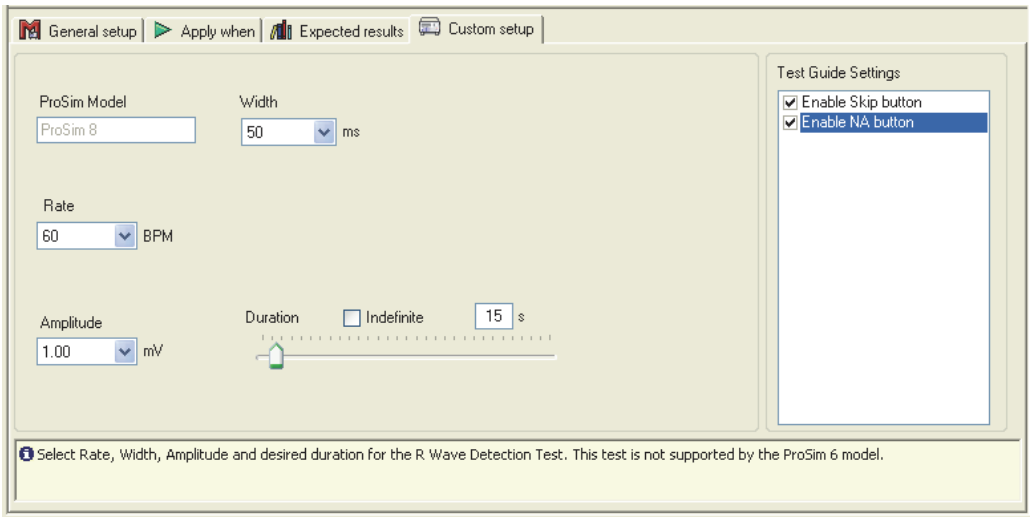
Table 4-6 is a list of the parameters and their description for the performance wave test element.

Table 4-6. Performance Wave Test Custom Parameters

Parameter	Description
Wave	Sets the type of Waveform to use for the test.
Rate	Sets the rate for different type of Wave for the test.
Amplitude	Sets the voltage amplitude of the performance wave for the test.
Duration	Sets how long the simulation should last (1 to 300 seconds). Check the indefinite checkbox for longer durations. The user must click Stop in the test guide toolbar to stop the test.

R-Wave and QRS Detection Test (ProSim 8 only)

This is a visual test. The Simulator does not make a measurement. Figure 4-8 shows the custom setup window for the R-wave and QRS detection test.



gjp034.bmp

Figure 4-8. R-Wave and QRS Detection Test Custom Setup

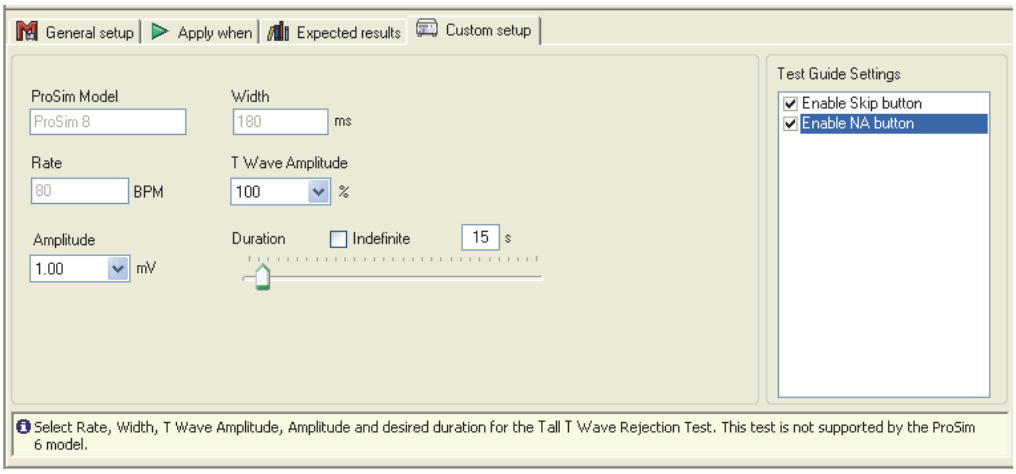
Table 4-7 is a list of the parameters and their description for the R-wave and QRS detection test element.

Table 4-7. R-Wave and QRS Detection Test Custom Parameters

Parameter	Description
Width	Sets the width of each waveform for the test.
Rate	Sets the heart rate for the test.
Amplitude	Sets the voltage amplitude of the waveform for the test.
Duration	Sets how long the simulation should last (1 to 300 seconds). Check the indefinite checkbox for longer durations. The user must click Stop in the test guide toolbar to stop the test.
ProSim Model	Sets the model of the Simulator to create test template and perform tests. All features of ProSim 6/8 is available for the ProSim 8 model and limited features are available for ProSim 6 model. For more information see Appendix. The default is as selected in the preferences.

Tall T Wave Rejection Test (ProSim 8 only)

This is a visual test. The Simulator does not make a measurement. Figure 4-9 shows the custom setup window for the tall T wave rejection test.



gjp035.bmp

Figure 4-9. Tall T Wave Rejection Test Custom Setup

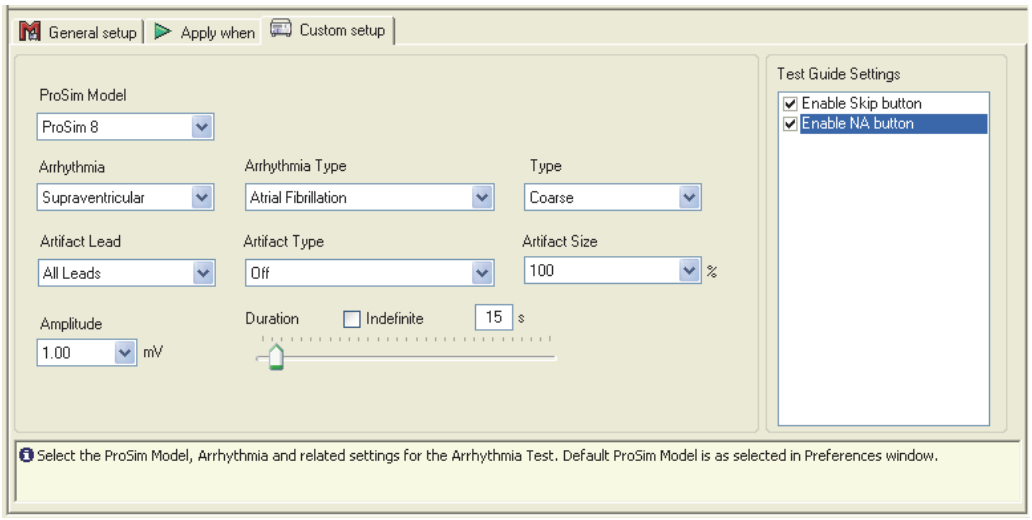
Table 4-8 is a list of the parameters and their description for the tall T wave rejection test element.

Table 4-8. Tall T Wave Rejection Test Custom Parameters

Parameter	Description
Width	Sets the width of each waveform for the test.
Rate	Sets the heart rate for the test.
Amplitude	Sets the voltage amplitude of the waveform for the test.
T Wave Amplitude	Set the T wave amplitude for the test.
Duration	Sets how long the simulation should last (1 to 300 seconds). Check the indefinite checkbox for longer durations. The user must click Stop in the test guide toolbar to stop the test.
ProSim Model	Sets the model of the Simulator to create test template and perform tests. All features of ProSim 6/8 is available for the ProSim 8 model and limited features are available for ProSim 6 model. For more information see Appendix. The default is as selected in the preferences.

Arrhythmia Test

This is a visual test. The Simulator does not make a measurement. Figure 4-10 shows the custom setup window for the arrhythmia test.



gjp036.bmp

Figure 4-10. Arrhythmia Test Custom Setup

Table 4-9 is a list of the parameters and their description for the arrhythmia test element.

Table 4-9. Arrhythmia Test Custom Parameters

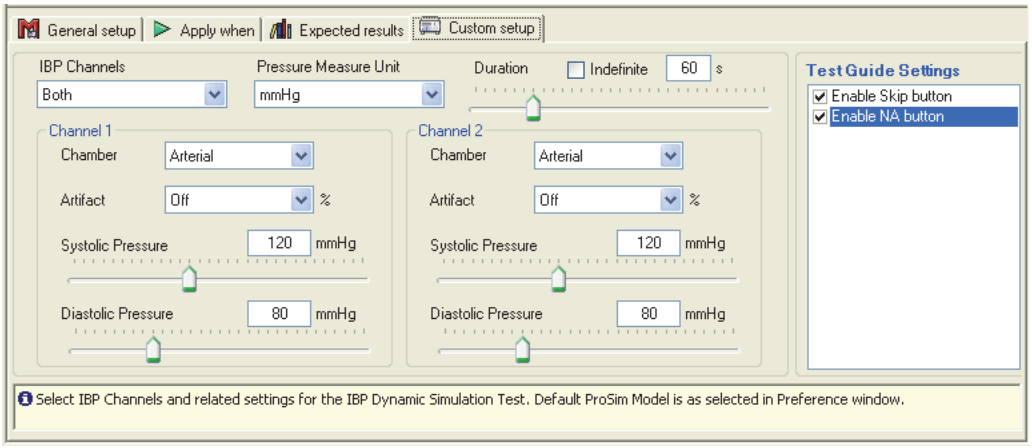
Parameter	Description
Arrhythmia	Sets the category of arrhythmia waveform to use for the test.
Arrhythmia Type	Sets the type of arrhythmia to simulate.
Amplitude	Sets the voltage amplitude to use for the test.
Artifact Type	Sets the type of the Artifact to simulate for the test.
Artifact Size	Sets the size of the Artifact to simulate for the test.
Artifact Lead	Sets the Lead the Artifact is to appear on for the test.
Type	Sets the type parameter for supraventricular arrhythmia simulations.
Ploy V Tach	Sets the type of poly vtach waveforms when this type of arrhythmia is selected
Mono v Tach	Sets the BPM when Mono VTach Rate is set for the test.
Atrial Width, Amplitude, Polarity	Sets the atrial parameters for some TV Paced arrhythmia simulations.
Ventricular Width, Amplitude, Polarity	Sets the ventricular parameters for some TV Paced arrhythmia simulations.
Duration	Sets how long the simulation should last (1 to 300 seconds). Check the indefinite checkbox for longer durations. The user must click Stop in the test guide toolbar to stop the test.
ProSim Model	Sets the model of the Simulator to create test template and perform tests. All features of ProSim 6/8 is available for the ProSim 8 model and limited features are available for ProSim 6 model. For more information see Appendix. The default is as selected in the preferences.

Note

The ProSim 6 will not support the ACLS arrhythmia.

IBP Dynamic Simulation Test

This is a visual test. The Simulator does not make a measurement. Figure 4-11 shows the custom setup window for the IBP dynamic simulation test.



gjp037.bmp

Figure 4-11. IBP Dynamic Simulation Test Custom Setup

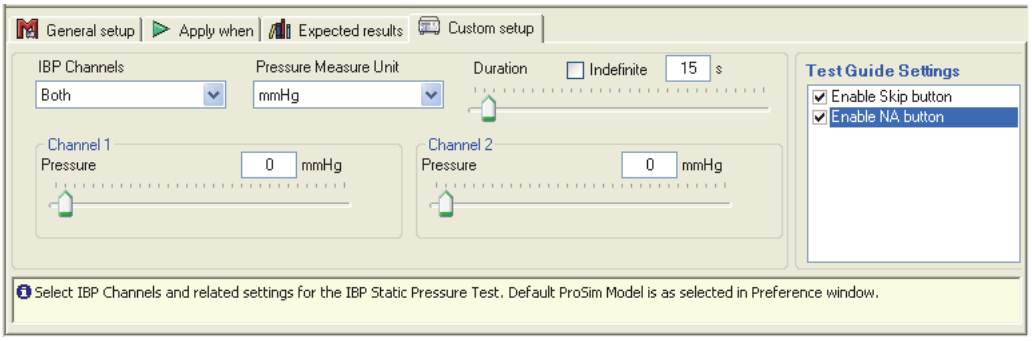
Table 4-10 is a list of the parameters and their description for the IBP dynamic simulation test element.

Table 4-10. IBP Dynamic Simulation Test Custom Parameters

Parameter	Description
IBP Channels	Sets the IBP Channels to use for the test.
Chamber	Sets the Chamber to use for the test.
Systolic Pressure	Sets the systolic output of the ProSim 6/8 simulation for the test.
Diastolic Pressure	Sets the diastolic output of the ProSim 6/8 simulation for the test.
Artifact	Sets the Artifact to use for the test.
Duration	Sets how long the simulation should last (1 to 300 seconds). Check the indefinite checkbox for longer durations. The user must click Stop in the test guide toolbar to stop the test.
Pressure Measure Unit	Sets the pressure units to mmHg or kPa for the test. The default is what is set in preferences.

IBP Static Pressure Test

This is a visual test. The Simulator does not make a measurement. Figure 4-12 shows the custom setup window for the IBP static pressure test.



gjp038.bmp

Figure 4-12. IBP Static Pressure Test Custom Setup

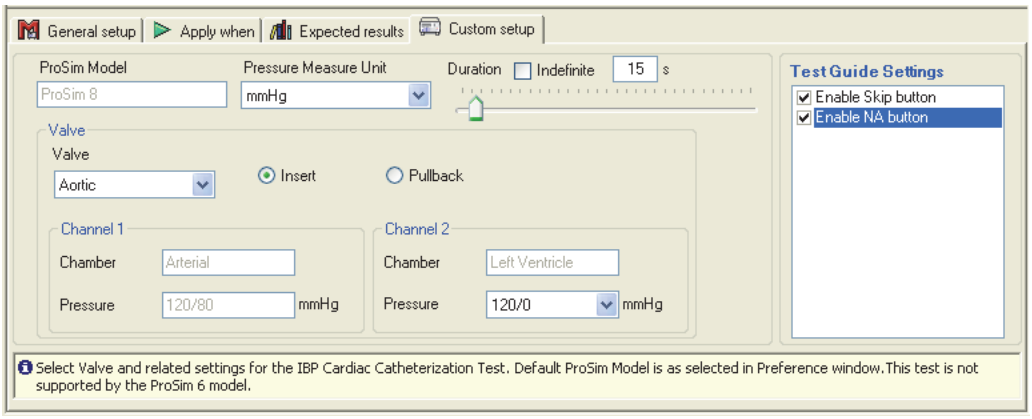
Table 4-11 is a list of the parameters and their description for the IBP static pressure test element.

Table 4-11. IBP Static Pressure Test Custom Parameters

Parameter	Description
IBP Channels	Sets the IBP Channels to use for the test.
Pressure	Sets the static blood pressure output which enables the simulator to measure static pressure in mmHg.
Duration	Sets how long the simulation should last (1 to 300 seconds). Check the indefinite checkbox for longer durations. The user must click Stop in the test guide toolbar to stop the test.
Pressure Measure Unit	Sets the pressure units to mmHg or kPa for the test. The default is what is set in preferences.

IBP Cardiac Catheterization Test (ProSim 8 only)

This is a visual test. The Simulator does not make a measurement. Figure 4-13 shows the custom setup window for the IBP cardiac catheterization test.



gjp039.bmp

Figure 4-13. IBP Cardiac Catheterization Test Custom Setup

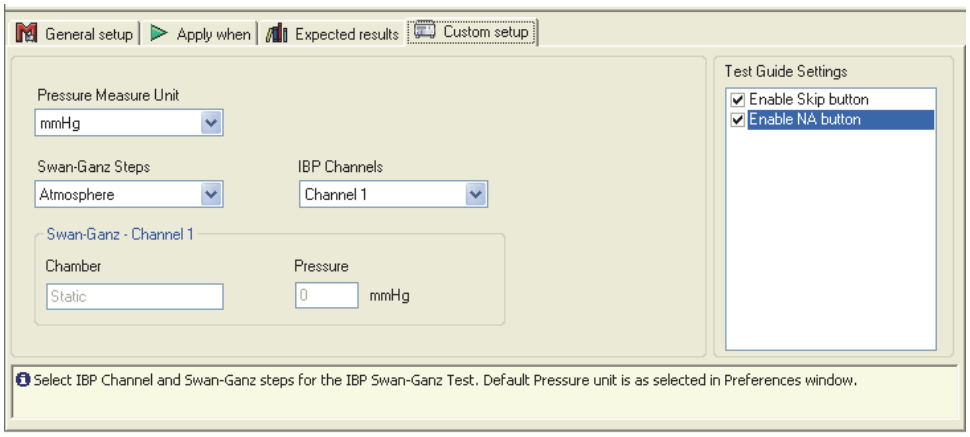
Table 4-12 is a list of the parameters and their description for the IBP cardiac catheterization test element.

Table 4-12. IBP Cardiac Catheterization Test Custom Parameters

Parameter	Description
Valve	Sets aortic, pulmonary, or mitral options and sets Insert or pullback.
Chamber	Sets the chamber to use for the selected valve. The user cannot change the chamber.
Pressure	Sets the pressure to use for the selected valve. The user can change the pressure selection on channel 2 only.
Duration	Sets how long the simulation should last (1 to 300 seconds). Check the indefinite checkbox for longer durations. The user must click Stop in the test guide toolbar to stop the test.
Pressure Measure Unit	Sets the pressure units to mmHg or kPa for the test. The default is what is set in preferences.
Duration	Sets how long the simulation should last (1 to 300 seconds). Check the indefinite checkbox for longer durations. The user must click Stop in the test guide toolbar to stop the test.

IBP Swan – Ganz Test

This is a visual test. The Simulator does not make a measurement. Figure 4-14 shows the custom setup window for the IBP Swan-Ganz test.



gjp040.bmp

Figure 4-14. IBP Swan-Ganz Test Custom Setup

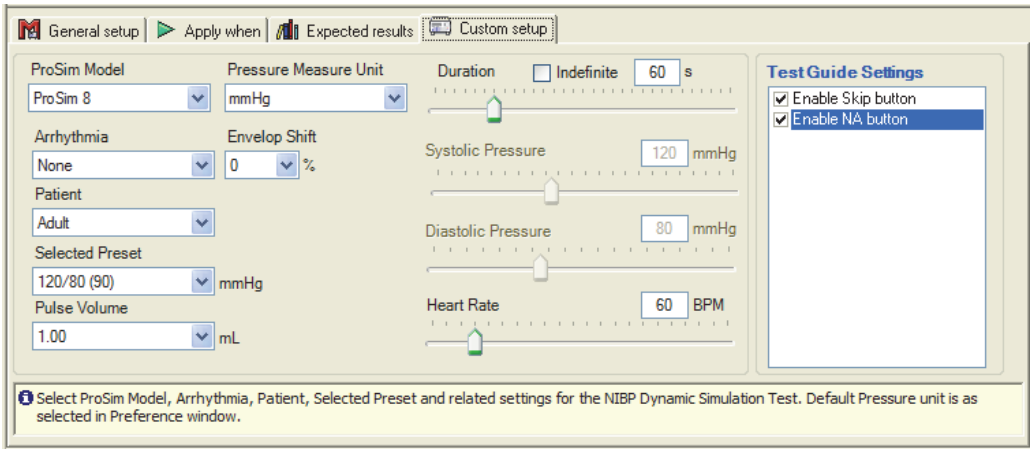
Table 4-13 is a list of the parameters and their description for the IBP Swan-Ganz test element.

Table 4-13. IBP Swan-Ganz Test Custom Parameters

Parameter	Description
Swan-Ganz Steps	Sets the Swan-Ganz steps to use for the test.
IBP Channels	Sets the IBP channels to use for the test.
Chamber	Sets the chamber to use for the Swan – Ganz steps.
Pressure	Sets the pressure to be used for the Swan – Ganz steps.
Swan –Ganz –Channel #	On selection of channel, channel number will display in the Swan – Ganz channel frame.
Duration	Sets how long the simulation should last (1 to 300 seconds). Check the indefinite checkbox for longer durations. The user must click Stop in the test guide toolbar to stop the test.
Pressure Measure Unit	Sets the pressure units to mmHg or kPa for the test. The default is what is set in preferences.

NIBP Dynamic Simulation Test

This is a visual test. The Simulator does not make a measurement. Figure 4-15 shows the custom setup window for the NIBP dynamic simulation test.



gjp041.bmp

Figure 4-15. NIBP Dynamic Simulation Test Custom Setup

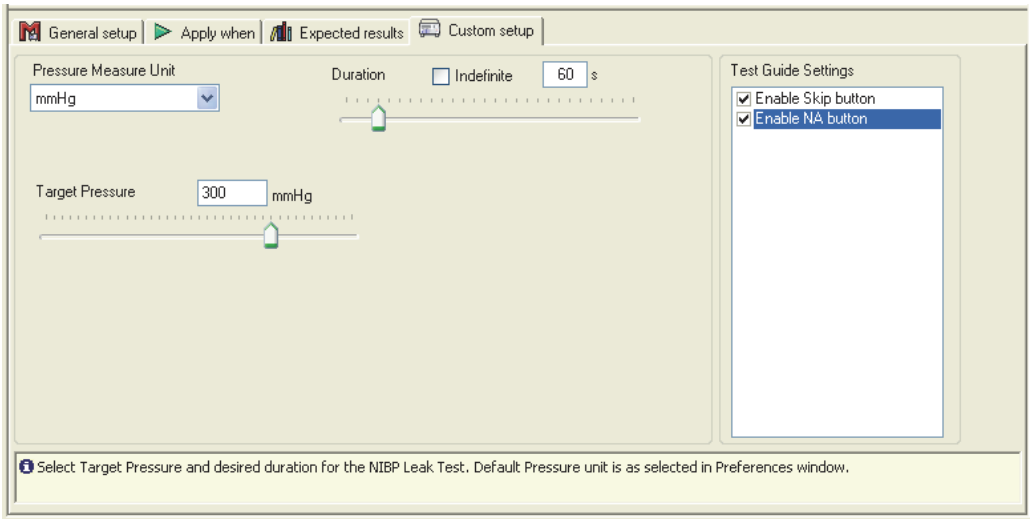
Table 4-13 is a list of the parameters and their description for the NIBP dynamic simulation test element.

Table 4-14. NIBP Dynamic Simulation Test Custom Parameters

Parameter	Description
Patient	Sets the type of the patient (adult or neonatal) for the test.
Arrhythmia	Sets heart arrhythmias.
Selected Preset	Systolic and Diastolic pressure is depending on the Selected preset. In “Custom” selection, user can change the Systolic and Diastolic pressure values.
Pulse Volume	Sets the pulse volume to use for the test.
Systolic Pressure	Sets the simulated systolic pressure for the test.
Diastolic Pressure	Sets the simulated diastolic pressure for the test.
Heart Rate	Sets the heart rate for the test.
Duration	Sets how long the simulation should last (1 to 300 seconds). Check the indefinite checkbox for longer durations. The user must click Stop in the test guide toolbar to stop the test.
Pressure Measure Unit	Sets the pressure units to mmHg or kPa for the test. The default is what is set in preferences.
Envelope Shift	Sets the envelop shift from -10 % +10 %. Default is zero.

NIBP Leak Test

Figure 4-16 shows the custom setup window for the NIBP leak test.



gjp042.bmp

Figure 4-16. NIBP Leak Test Custom Setup

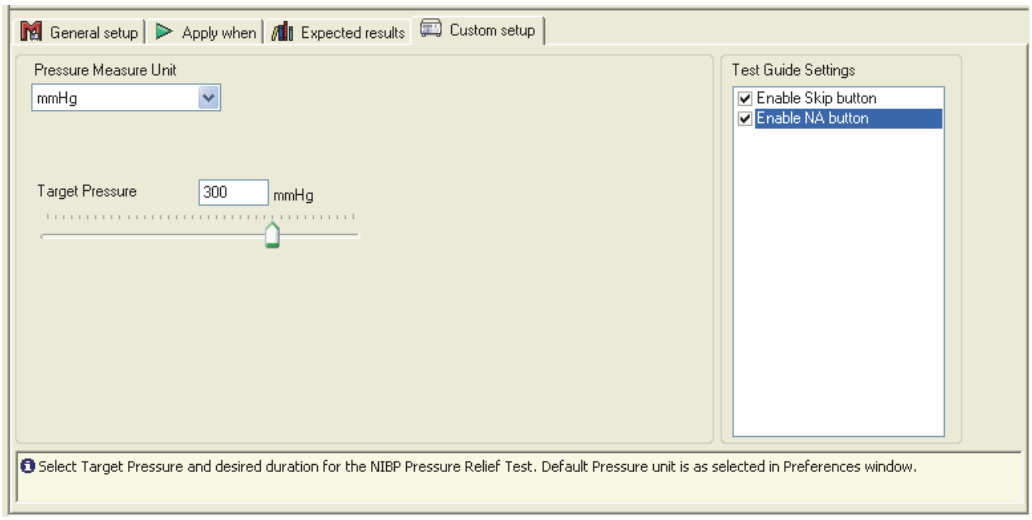
Table 4-15 is a list of the parameters and their description for the NIBP Leak test element.

Table 4-15. NIBP Leak Test Custom Parameters

Parameter	Description
Target Pressure	Sets target pressure for the test.
Pressure Measure Unit	Sets the blood pressure units to mmHg or kPa.
Duration	Sets how long the simulation should last (30 to 300 seconds). Check the indefinite checkbox for longer durations. The user must click Stop in the test guide toolbar to stop the test.

NIBP Pressure Relief Test

Figure 4-17 shows the custom setup window for the NIBP pressure relief test.



gjp043.bmp

Figure 4-17. NIBP Pressure Relief Test Custom Setup

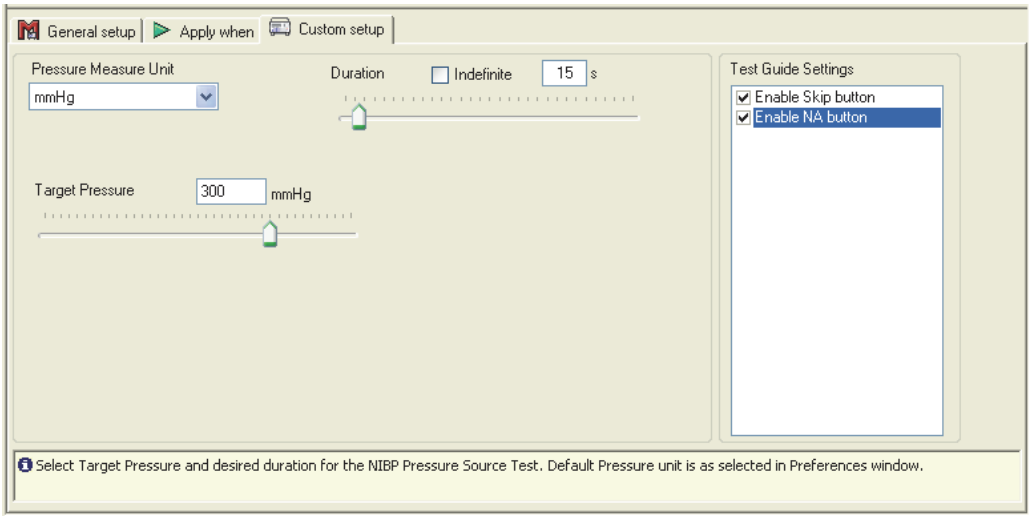
Table 4-16 is a list of the parameters and their description for the NIBP pressure relief test element.

Table 4-16. NIBP Pressure Relief Test Custom Parameters

Parameter	Description
Target Pressure	Sets target pressure for the test.
Pressure Measure Unit	Sets the blood pressure units to mmHg or kPa.

NIBP Pressure Source Test

Figure 4-18 shows the custom setup window for the NIBP pressure source test.



gjp044.bmp

Figure 4-18. NIBP Pressure Source Test Custom Setup

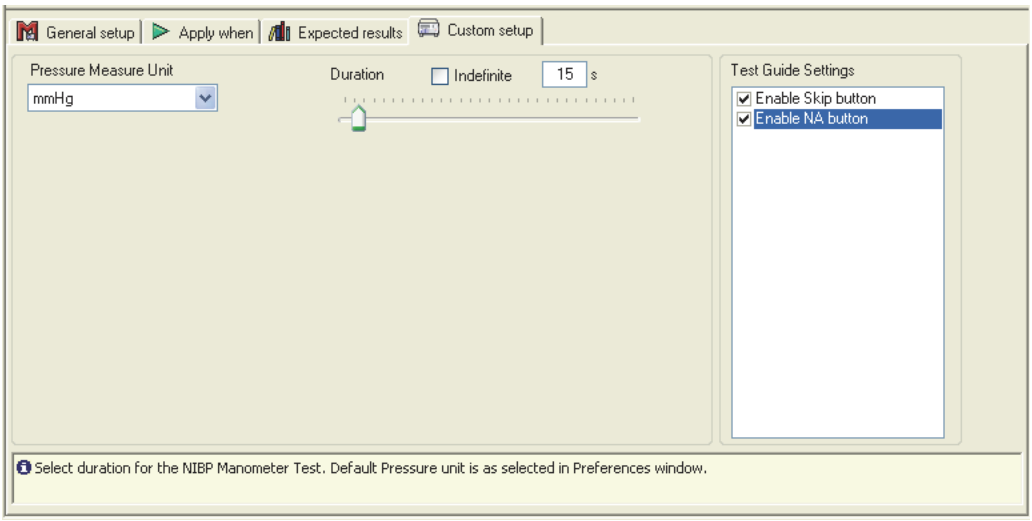
Table 4-17 is a list of the parameters and their description for the NIBP pressure source test element.

Table 4-17. NIBP Pressure Source Test Custom Parameters

Parameter	Description
Target Pressure	Sets target pressure for the test.
Pressure Measure Unit	Sets the blood pressure units to mmHg or kPa.
Duration	Sets how long the simulation should last (1 to 300 seconds). Check the indefinite checkbox for longer durations. The user must click Stop in the test guide toolbar to stop the test.

NIBP Manometer Test

Figure 4-19 shows the custom setup window for the NIBP manometer test.



gjp045.bmp

Figure 4-19. NIBP Manometer Test Custom Setup

Table 4-18 is a list of the parameters and their description for the NIBP manometer test element.

Table 4-18. NIBP Manometer Test Custom Parameters

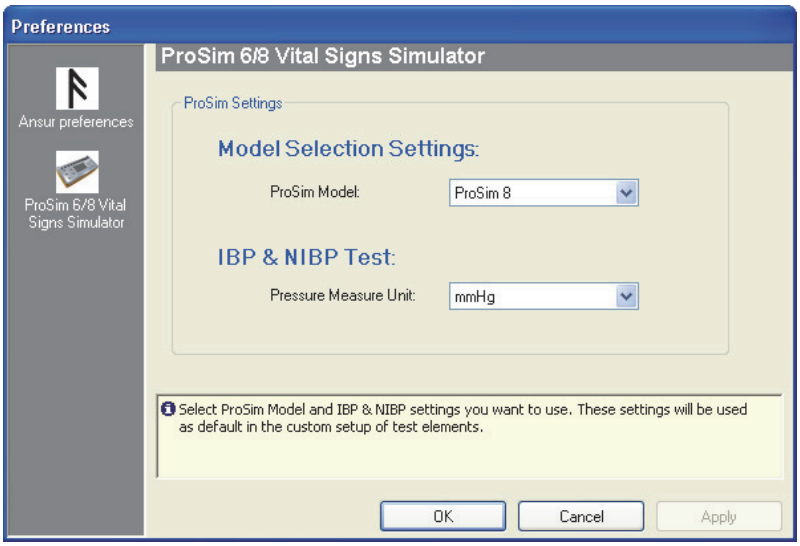
Parameter	Description
Duration	Sets how long the simulation should last (1 to 300 seconds). Check the indefinite checkbox for longer durations. The user must click Stop in the test guide toolbar to stop the test.
Pressure Measure Unit	Sets the pressure units to mmHg or kPa for the test. The default is what is set in preferences.

How to Change the Plug-In Preferences

The Plug-In preferences contain default settings for the Plug-In. You can set a ProSim model preference and measurement units for the blood pressure functions and tests. When the Plug-In is installed, the model preference is set to ProSim 8 and the pressure units is set to mmHg.

To change one of the Plug-In preferences:

1. Click **Tools | Options** on the Ansur main menu to open the preferences window.
2. Click the ProSim 6/8 Vital Signs Simulator icon in the left pane of the window to show the window in Figure 4-20.



gjp063.bmp

Figure 4-20. ProSim Preferences Window

To change the model preference, click the down arrow at the right end of the ProSim Model combo box. Next, click the ProSim model.

To change the pressure units, click the down arrow at the right end of the Pressure Measure Unit combo box. Next click one of the measurement units in the drop-down list.

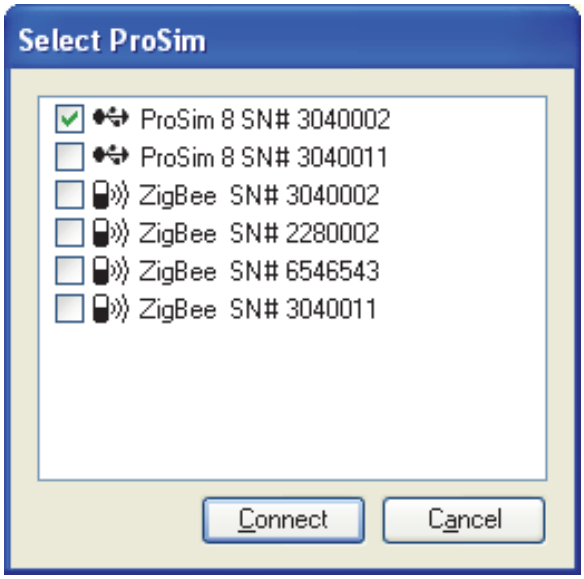
After you set the preferences, click **OK**.

Note

Ansur must be restarted for the changes to take effect.

How to Manage Multiple Simulator Connections

When more than one Simulator is connected to Ansur, the **Select ProSim** dialog in Figure 4-21 will show in the display when you start a test from the test guide window.



gjp110.bmp

Figure 4-21. Select ProSim Dialog

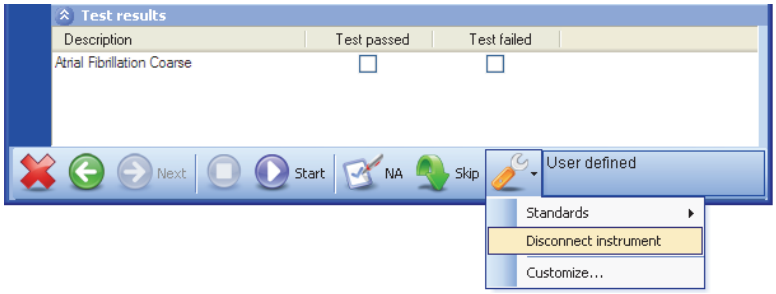
The serial numbers of Simulators connected to the PC by cable will show ⇻ next to the name and serial number. All Simulators with a wireless connection show))).

1. Verify the serial number of the Simulator you want to use for the test and check the checkbox for that serial number in the dialog box.
2. Click the **Connect** button to start the test.

All test elements within a template or autosequence will be sent to the same Simulator automatically.

To disconnect a Simulator in a single Ansur session:

1. Click on the test guide toolbar as shown in Figure 4-22.



gjp111.bmp

Figure 4-22. Simulator Disconnect

2. Click **Disconnect instrument** in the dropdown list.

The next time you click , the **Select ProSim** dialog in Figure 4-21 will show in the display.

Chapter 5
ProSim 8 Mini Plug-In

Introduction

The ProSim™ 8 Mini Plug-In (the Mini Plug-In) is an Ansur Test Executive extension used to create and manage files for the ProSim™ 8 Vital Signs Simulator. This Plug-In can also be used to update Simulator firmware. This Mini Plug-In can:

ProSim 6 and 8

- Update Simulator firmware.

ProSim 8 only

- Get, print, and delete test result files from the Simulator.
- Send\Get autosequence files to\from the Simulator.
- Play, create, modify, and delete Simulator autosequence files.
- Create, modify, and restore preset files.
- Send preset files to the Simulator.
- Create and modify R-curve files and send them to the Simulator.

This Mini Plug-In is a feature of the Ansur Test Executive software version 2.9.6 or higher. It is not necessary to install the Ansur Pro-Sim 6/8 Plug-In to use most of the features of this Mini Plug-In. However, to play, create, and modify simulator files from Ansur, you must install the Ansur ProSim 6/8 Plug-In.

How to Connect a PC to the ProSim 8

Note

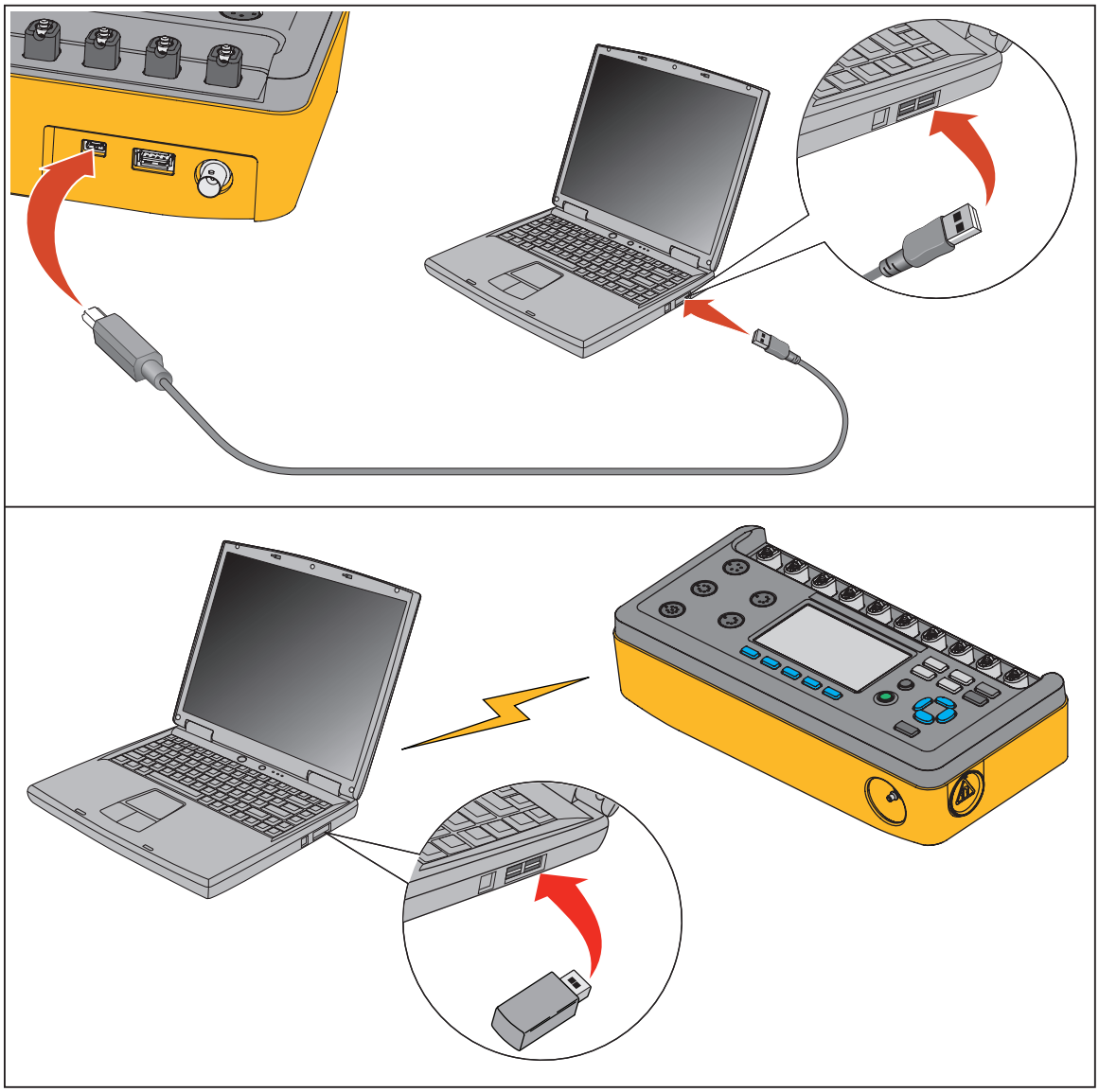
You must have Ansur Test Executive version 2.9.6 or higher installed on your PC to use this Mini Plug-In.

To use the Mini Plug-In:

1. Connect a USB port on your PC or laptop to the Mini B USB device Port of the Simulator.

   Or

   For the ProSim 8 only, Plug in an XStick USB dongle to your PC USB port. See Figure 5-1.



gjp070.eps

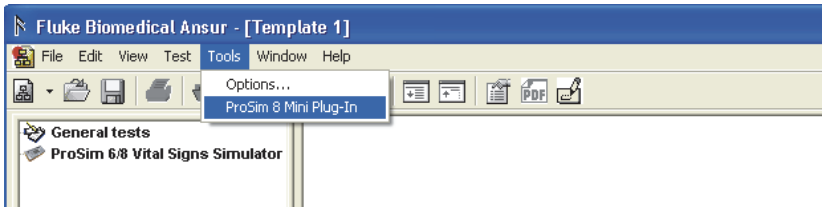
Figure 5-1. Laptop to PC Connection

2. Double-click the Ansur icon on your desktop or start it from the programs menu.

How to Open the ProSim 8 Mini Plug-In

To open the Mini Plug-In:

1. Open Ansur Test Executive.
2. Click **Tools | ProSim 8 Mini Plug-In** in the Ansur main menu. See Figure 5-2.



gjp046.bmp

Figure 5-2. Start the ProSim 8 Mini Plug-In

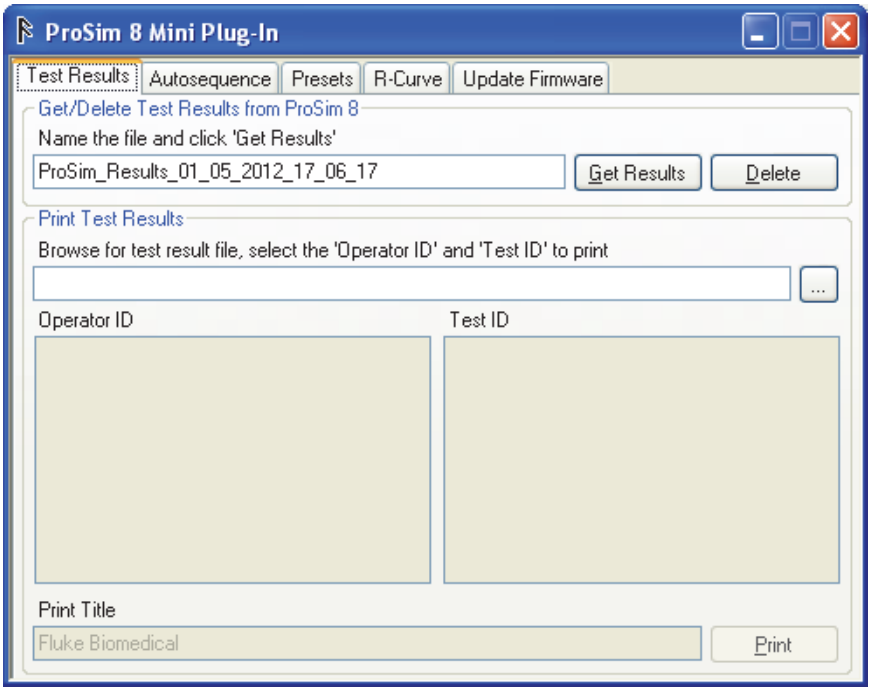
Or

Click on the ProSim 8 Mini Plug-In shortcut on the PC desktop.

Or

Click **Start | All Programs | Fluke | ProSim 8 Mini Plug-In**.

The Mini Plug-In window in Figure 5-3, shows in the display.



gjp047.bmp

Figure 5-3. ProSim 8 Mini Plug-In Window

You can do all the Mini Plug-In functions from this window. Click a feature tab along the top of the window to show the controls for that feature.

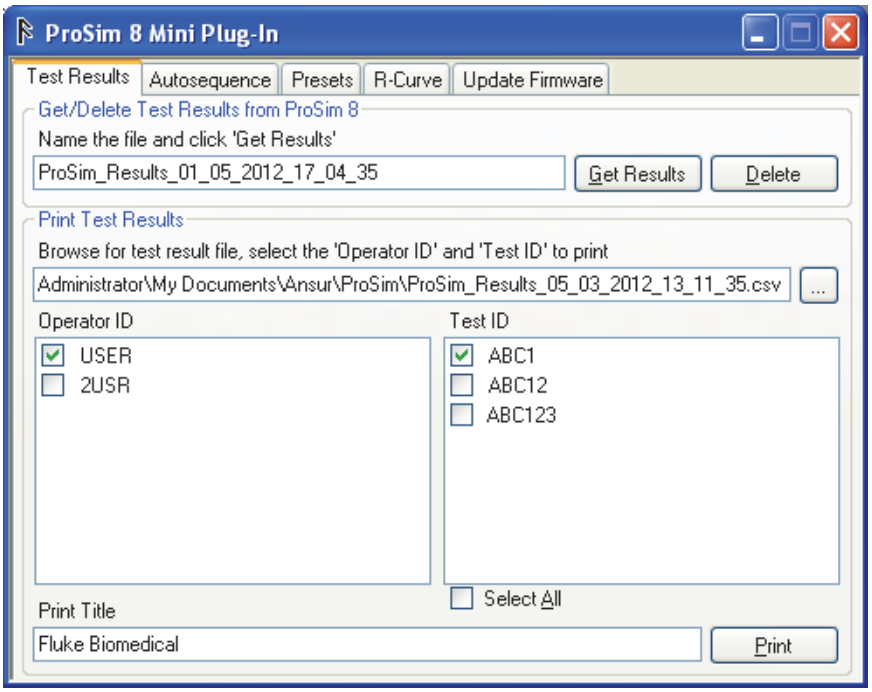
How to Manage Test Results

The test results created on the ProSim 8 can be downloaded to a PC with the Mini Plug-In. You can also print test results data from the PC.

How to Get Test Results Data

The Get Results feature lets you download test results data from the Simulator to the PC. To download test results:

1. Click the **Test Results** tab along the top of the window. The test results window in Figure 5-4 shows in the display.



gjp125.bmp

Figure 5-4. Test Results Download Window

Note

The filename field is filled in automatically. You can change the filename before you download the data.

2. Click the **Get Results** button to start the download.

   The test results file is kept in My Documents\Ansur\ProSim and will have a default name of ProSimResults_Date_Time. You can change this name as needed.

   All test results in the Simulator are contained in a single file.

How to Print Test Results

With the test result files stored on a PC, the Mini Plug-In can be used to print results. To print test results:

1. Click the **Test Results** tab in the Mini Plug-In.
2. Click ... and navigate to the print results file location. The Operator ID(s) and Test ID(s) contained in the file show in the window.
3. Click the checkbox next to an Operator ID. Only one Operator ID can be selected at a time.
4. Click the checkbox next to the Test ID names. More than one Test ID can be selected at one time.

Note

You can change the Print Title. Fluke Biomedical is a default title.

5. Click the **Print** button.

Note

The path to the downloaded file shows in the Browse field when you Get results. You can print the file without navigating to the location.

Print preview will not show Chinese or Japanese strings if East Asian Languages are not

installed on your computer. To install the East Asian Languages on your computer:

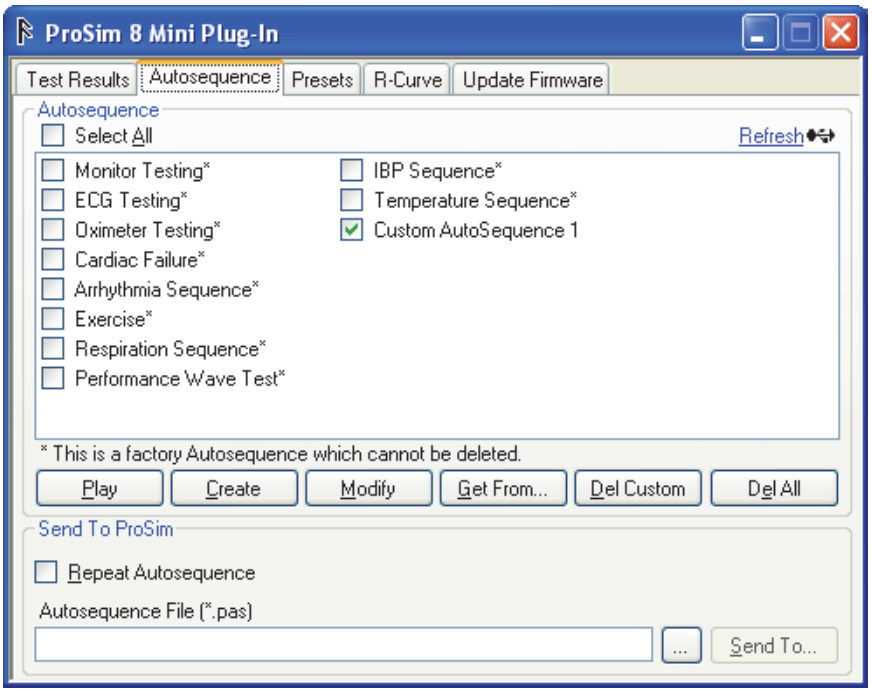
1. Open the Regional and Language Options from the PC Control Panel.
2. Select Languages tab and check “Install files for East Asian Languages”.
3. Click **Apply**.
4. When the Insert Disk message shows in the display, insert the operating system CD and click **OK**.

How to Delete Test Results on the Simulator

The Mini Plug-In can delete all the test results files in the Simulator. Click the **Delete** button.

How to Manage and Create Autosequences

The Autosequences used in the Simulator can be downloaded and uploaded between the Simulator and PC with the Mini Plug-In. Click the **Autosequence** tab to show the window in Figure 5-5.



gjp048.bmp

Figure 5-5. Autosequence Window

The window shows all the autosequences in the Simulator. The first ten autosequences are pre-defined and cannot be changed or deleted from the Simulator. You can open a pre-defined autosequence and change it, then add it to the Simulator as a custom autosequence.

A list of the controls and their explanation is shown in Table 5-1.

Table 5-1. Autosequence Window Controls

Control	Description
Select All	Sets or clears all the checkboxes in the autosequence list.
Refresh	Reconnects the Simulator and loads the autosequences.

Table 5-1. Autosequence Window Controls (cont.)

Control	Description
Connected Icon (USB / wireless)	To disconnect from the Analyzer, right-click on the USB or wireless icon.
Play	Opens the test guide to play the autosequence checked in the autosequence list.
Create	Opens the Ansur Mini Plug-In editor to create a new autosequence.
Modify	Opens the autosequence file for modification.
Get From…	Gets the autosequence from the Simulator and loads it into the PC.
Del Custom	Deletes the custom autosequence checked in the list from the Simulator.
Del All	Deletes all the customer autosequences in the Simulator.
Repeat Autosequence	Causes the checked autosequence to repeat in the Simulator.
Send To…	Sends the autosequence (*.pas) shown in the **Send To ProSim** field to the Simulator.

How to Play an Autosequence

Each autosequence in the Simulator can be started from a PC through the Mini Plug-In. To start an autosequence:

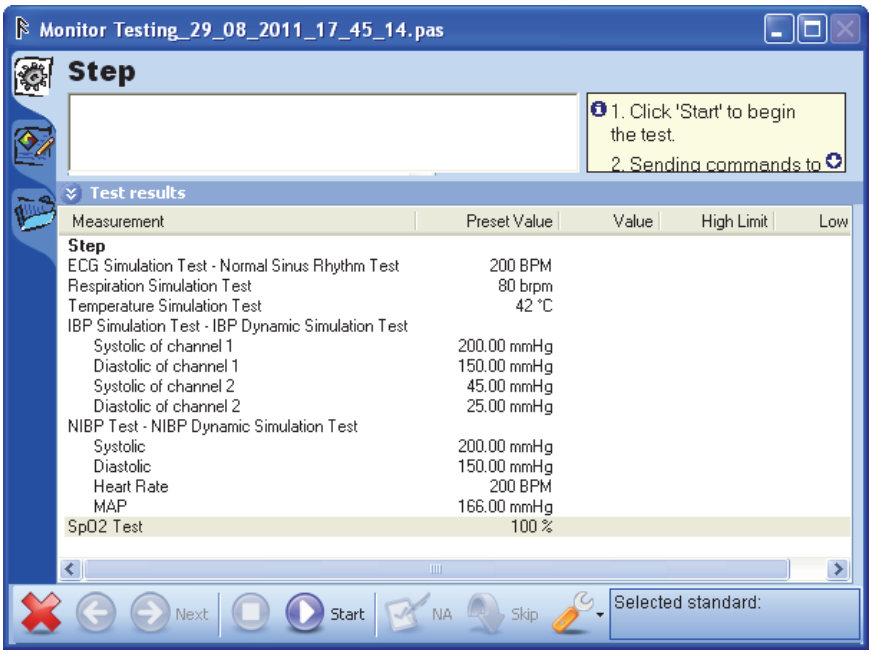
1. Check the checkbox next to one autosequence name in the autosequence list.

   Note

   The Play button will be disabled (grey) if more than one autosequence checkbox is enabled.

2. Click the **Play** button.

   The Mini Plug-In gets and loads the autosequence data from the Simulator to the PC and opens a test guide window similar to the one shown in Figure 5-6.



gjp108.bmp

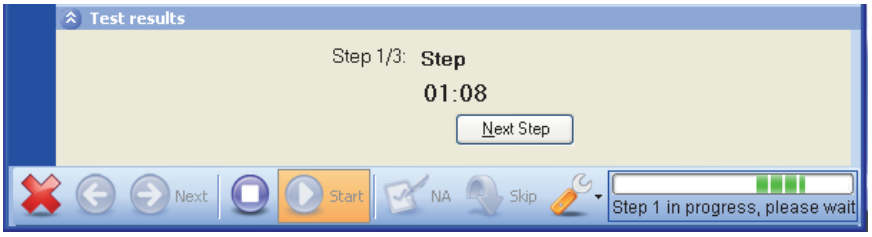
Figure 5-6. Autosequence Test Guide

Note

The date and time is appended to the filename. See the banner of the test guide in Figure 5-6.

3. Click to start the autosequence.

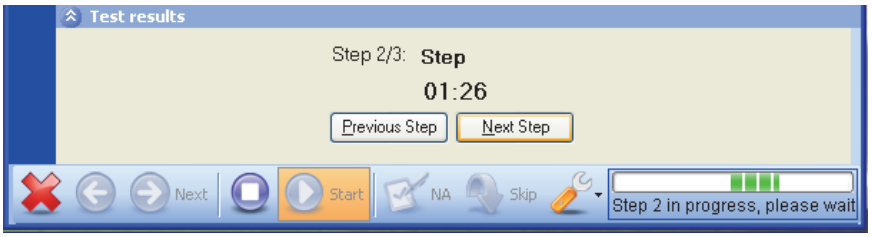
   The test results pane in Figure 5-7 shows at the bottom of the test guide window.



gjp109.bmp

Figure 5-7. Autosequence Test Results First Step Pane

When the duration of the step is done, Ansur starts step 2 automatically. If you want to stop step one and move on to the next step, click the **Next Step** button. When a step is between two other steps, the test results pane shown in Figure 5-8 shows in the display.

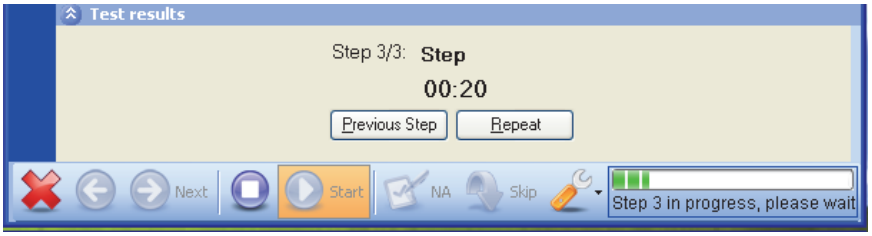


gjp112.bmp

Figure 5-8. Autosequence Test Results Middle Step Pane

In addition to a **Next Step** button, a **Previous Step** button allows you to go back and do the previous step. When the last step starts, the test results pane shown in

Figure 5-9 shows in the display.



gjp113.bmp

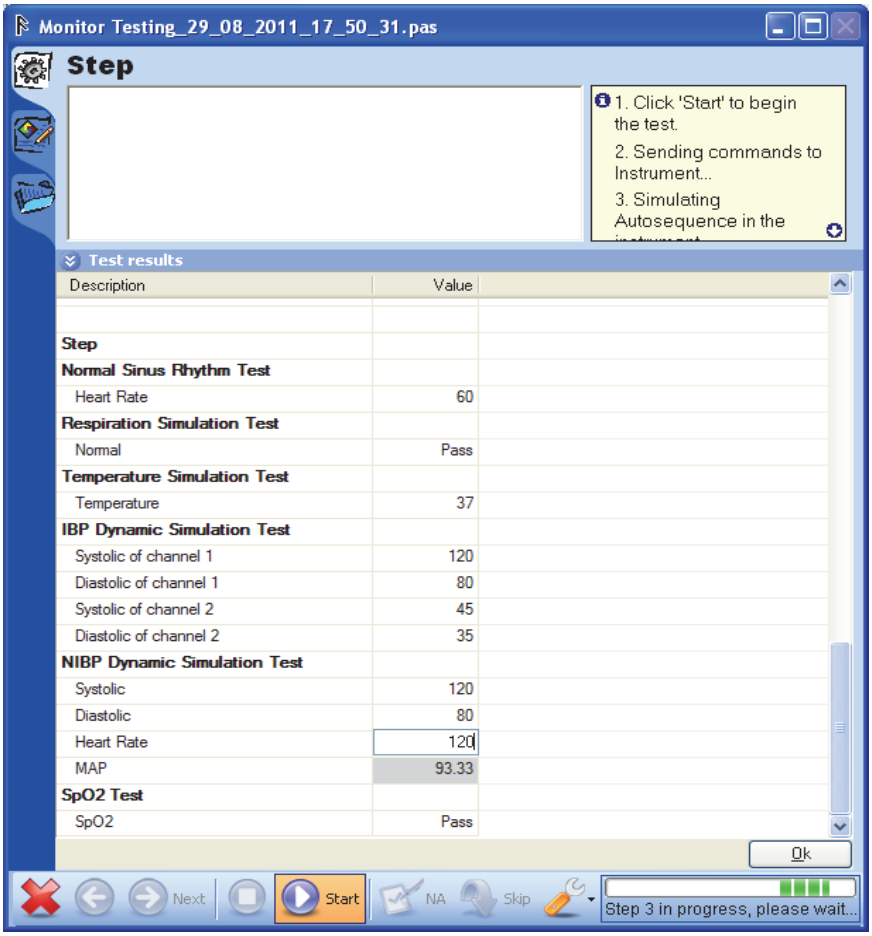
Figure 5-9. Autosequence Test Results Last Step Pane

The last step test results pane has the **Previous Step** button and a **Repeat** button. When you click on the **Repeat** button, Ansur starts the first step of the autosequence. When the duration of the last step expires, Ansur will wait for you to either repeat or stop the autosequence.

Note

Test results values can only be typed in after all the steps of the autosequence are done.

4. Click to stop the autosequence and open the test results window shown in Figure 5-10.

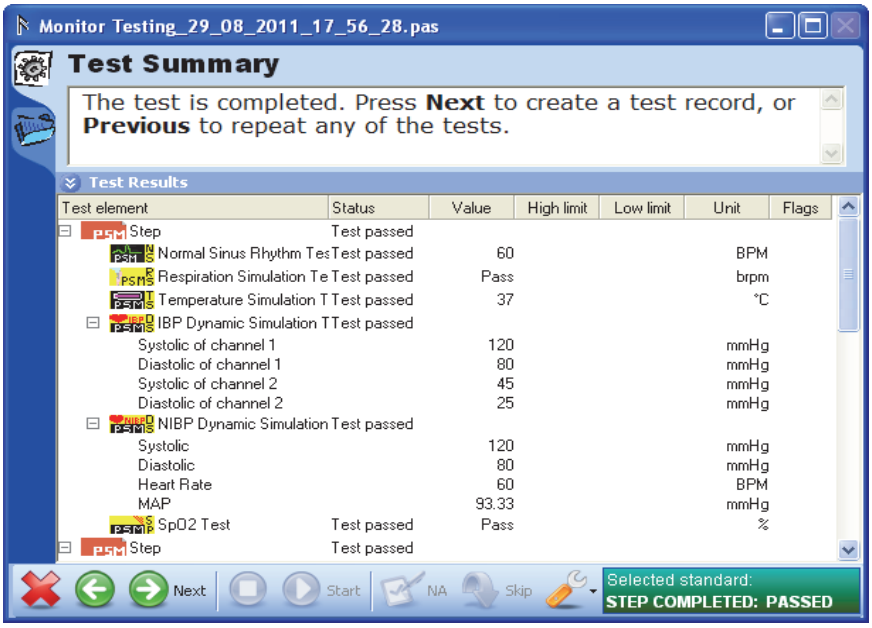


gjp114.bmp

Figure 5-10. Autosequence Test Results Window

The **OK** button is disabled (grey) until all test results values are filled in.

Click the OK button to open the test summary window similar to the one shown in Figure 5-11.



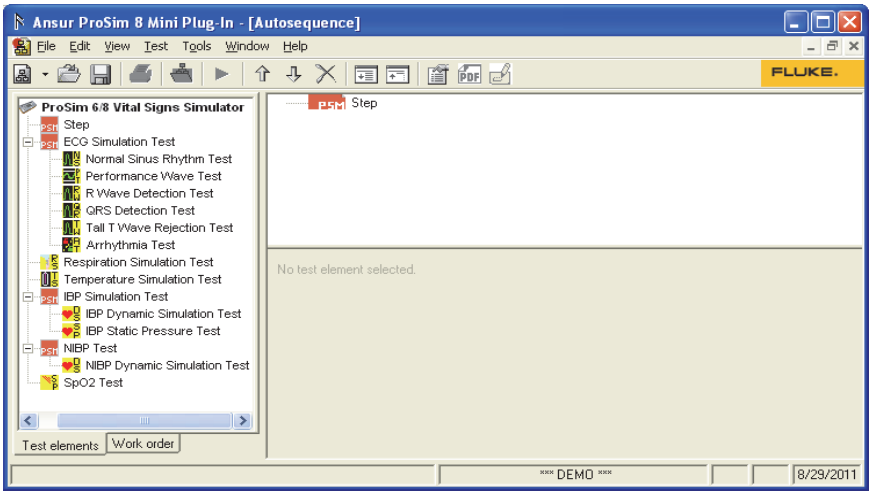
gjp115.bmp

Figure 5-11. Autosequence Test Summary Window

5. Click to save the results file.

How to Create a New Autosequence

1. Click **Create** to open the window shown in Figure 5-12.

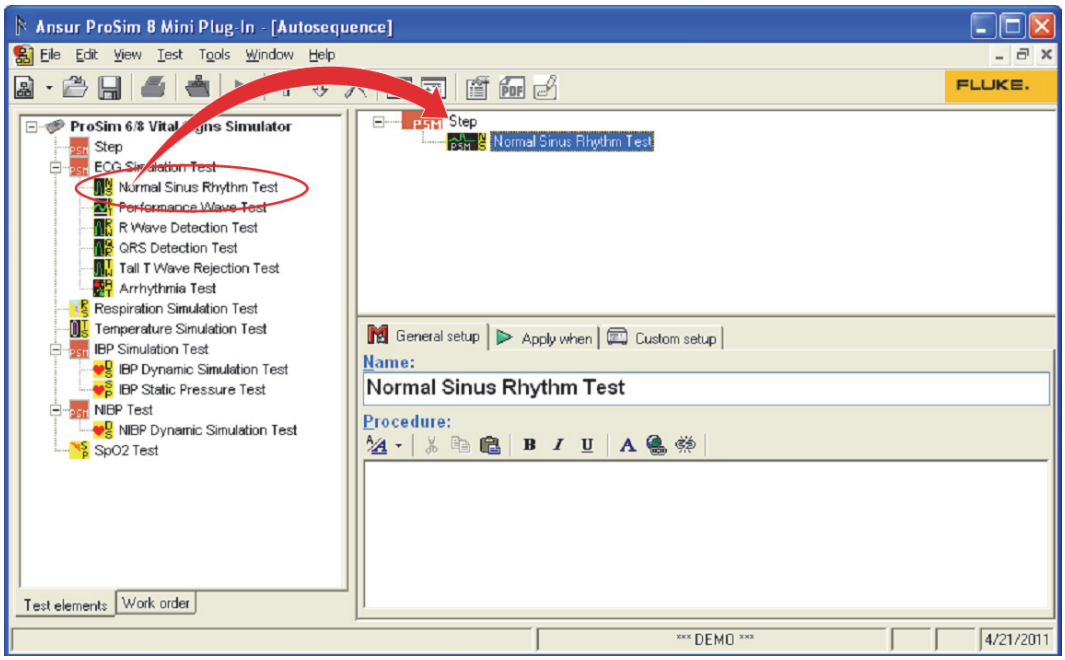


gjp069.bmp

Figure 5-12. Build Autosequence Window

You can change the word step to any name by highlighting the word and then type in the new name.

2. Pull a test element from the explorer window to the step container icon in the autosequence window. Figure 5-13 shows the Normal Sinus Rhythm Test element placed into the step container.



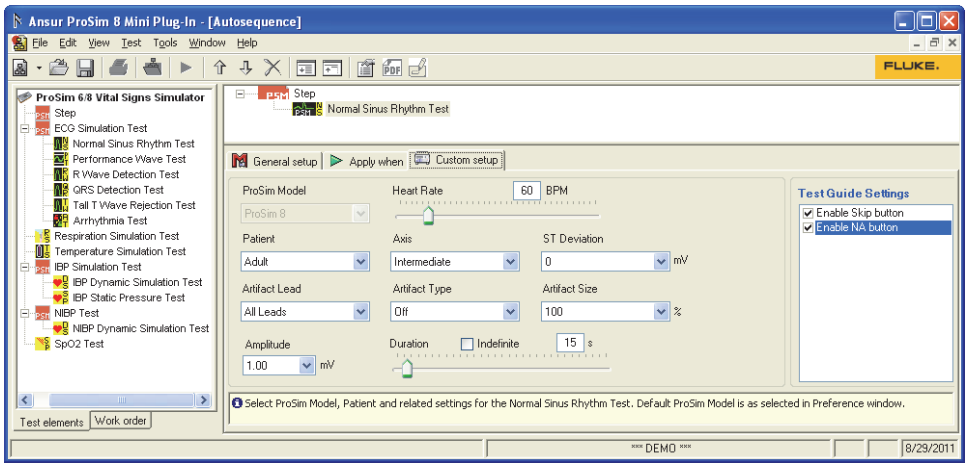
gjp074.bmp

Figure 5-13. Add a Test Element to a Step Container

Note

Once you add a test element to a step, you cannot add a test element of the same group to that step. If you put in an incorrect test element to an autosequence step, first delete it and then pull the correct test element in to the autoseqence.

3. Click **Custom Setup** tab to show the window in Figure 5-14.



gjp073.bmp

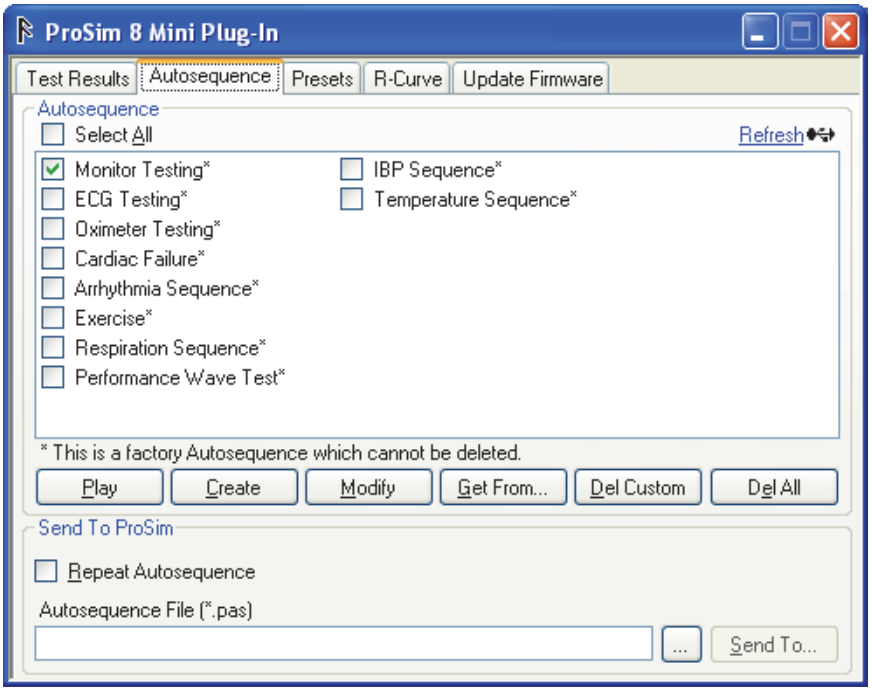
Figure 5-14. Custom Setup for a Test Element

You can set all the parameters for the ECG function of the Simulator through the custom setup window. Refer to the *ProSim™ 6/8 Users Manual* for more information on these parameters.

How to Create a New Autosequence from a Stored Autosequence

When the Test Executive was installed, all pre-defined autosequences for the Simulator were installed in the Auto Sequence directory in the ProSim Mini Library. These autosequences can be used to make new autosequences. To create an autosequence from another autosequence:

1. Check the checkbox next to the autosequence you want to start with in the Autosequence window. See Figure 5-15.



gjp118.bmp

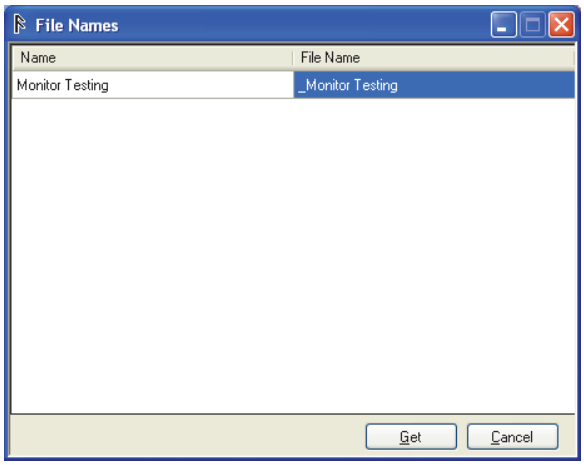
Figure 5-15. Autosequence Window

2. Click the **Modify** button.

Note

The Modify button will be disabled (grey) when more than one autosequence is checked.

The name of the checked autosequence is used for the new autosequence but modifies the name with an underline character in front of the first character of the autosequence name. The **File Names** dialog box, similar to the one in Figure 5-16, shows in the display.

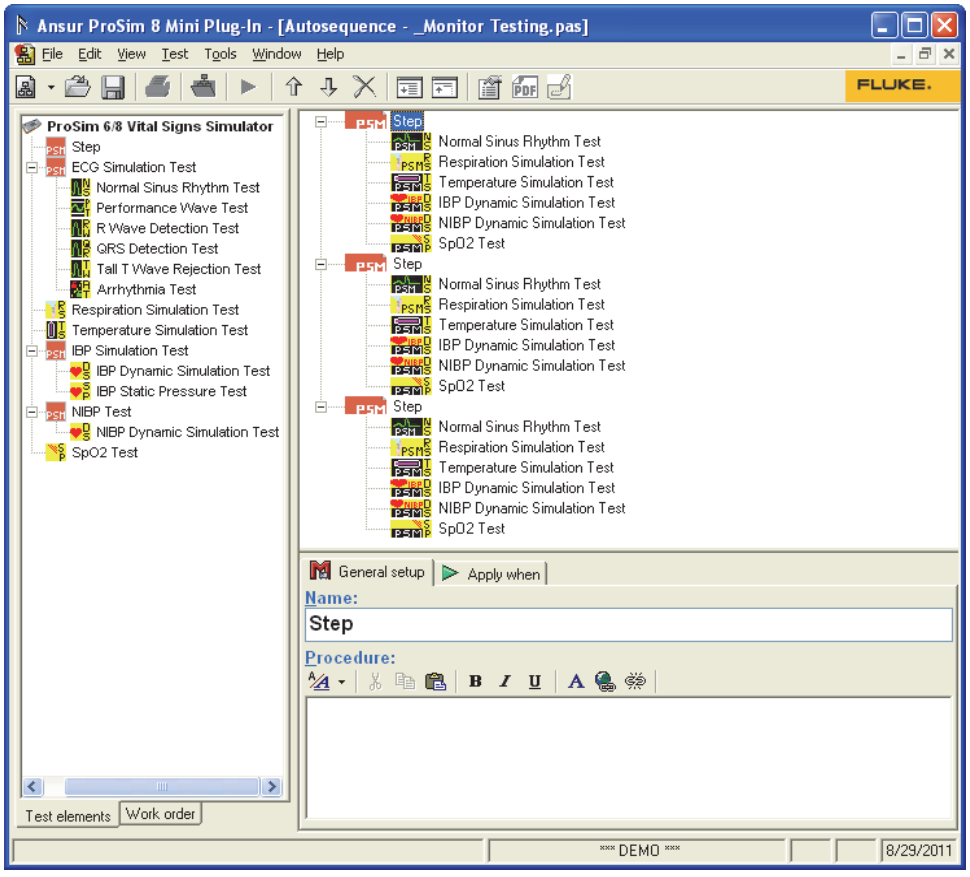


gjp116.bmp

Figure 5-16. Autosequence File Name Dialog Box

If you want a different name for the new custom autosequence, type in the name.

3. Click the **Get** button. Ansur gets and loaded the checked autosequence from the Simulator into the PC and then opens the Autosequence window shown in Figure 5-17.



gjp117.bmp

Figure 5-17. Monitor Testing Autosequence Window

Add/remove test elements as needed and change the custom settings

4. Click to save the autosequence.

Note

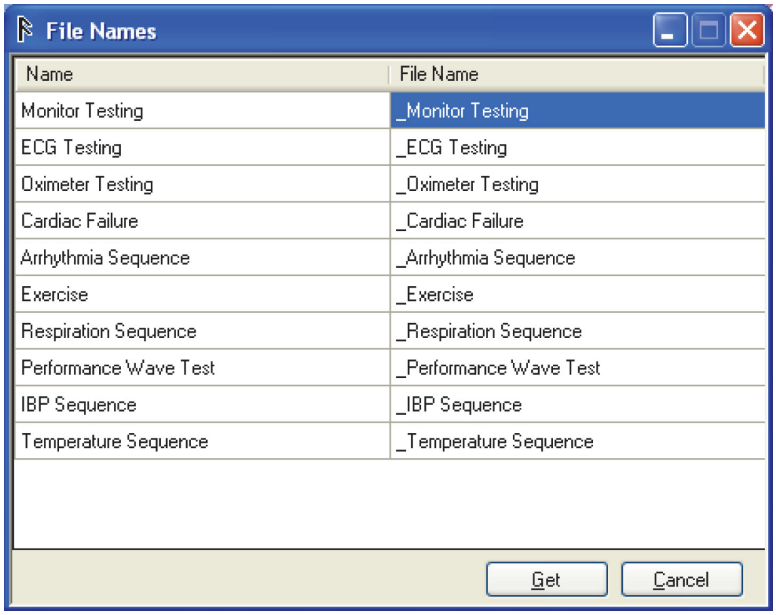
Autosequence files are kept at \...\Program Files\Fluke\ProSim Test Library\Autosequences.

The save function only stores the file on the PC. Refer to the How to Send Autosequences to the Simulator section to add to the autosequences in the Simulator.

How to Get Autosequences from the Simulator

The Get from… function is used to copy the autosequences in the Simulator to your PC. To get an one or more autosequence(s):

1. Click the checkbox next to each autosequence name you want to get from the Simulator. You can get more than one autosequence at a time.
2. Click the **Get From…** button. The names of all the checked autosequences are modified with an underline character before the first character of the name. The File Names dialog box shown in Figure 5-18 shows in the display.



gjp119.bmp

Figure 5-18. File Names Dialog with All Built-In Autosequences

The example in Figure 5-18 shows all the predefined autosequences. You can leave the name with the underline character or change it. You cannot use the names of the predefined autosequences.

3. Click the **Get** button.

   The new autosequence(s) is/are kept at \...\Program Files\Fluke\ProSim Test Library\Autosequences.

How to Delete Autosequences from the Simulator

You can remove custom autosequences from the Simulator with the Mini Plug-In. The ten predefined autosequences cannot be deleted from the Simulator. To delete autoseqences from the Simulator:

1. Click the checkbox next to each custom autosequence name you want to delete.
2. Click the **Del Custom** button.

Note

You can click the checkboxes for the ten predefined autosequences and click the delete button without an error message. However, none of the predefined autosequences will be removed from the Simulator.

The **Del All** button will remove all custom autosequences from the Simulator.

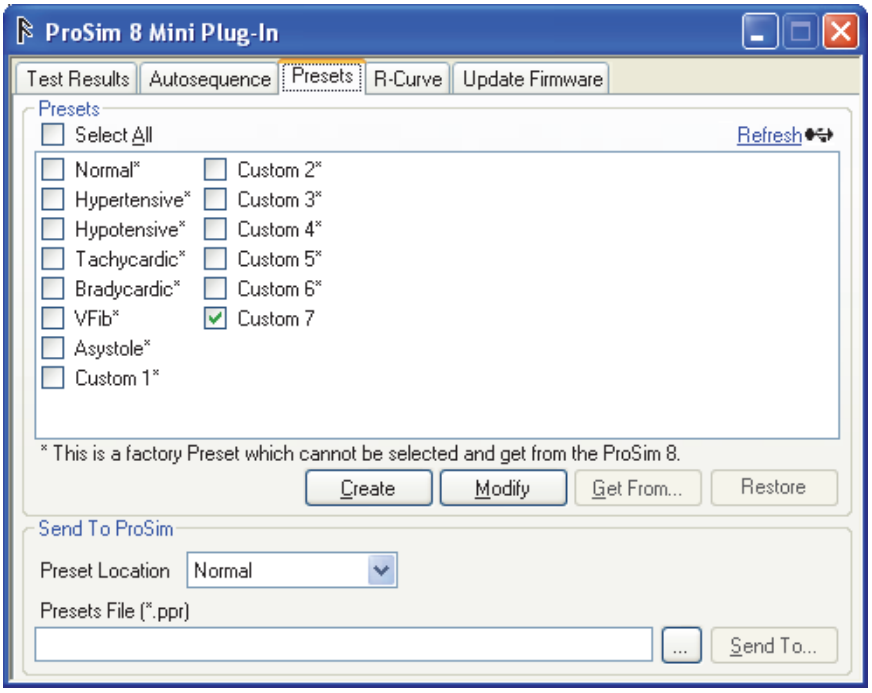
How to Send an Autosequence to the Simulator

Custom made autosequences can be uploaded to the Simulator. To upload an autosequence:

1. Click [...] and navigate to the directory where the custom autosequence is stored.
2. Highlight the autosequence to upload.
3. Click **Open**.
4. Click **Send To…** The autosequence file will be transferred to the Simulator and the list of autosequences will be updated to reflect the new autosequence.

How to Manage and Change Presets

The Simulator can have up to fourteen pre-defined patient simulations or presets. Each simulation sets each Simulator function to a pre-defined value. You can create and modify custom preset files with the Mini Plug-In and then upload them to the Simulator. To see the presets in the Simulator, click the **Presets** tab to open the window shown in Figure 5-19.



gjp050.bmp

Figure 5-19. Presets Window

Note

Custom presets do not have an asterisk after the name.

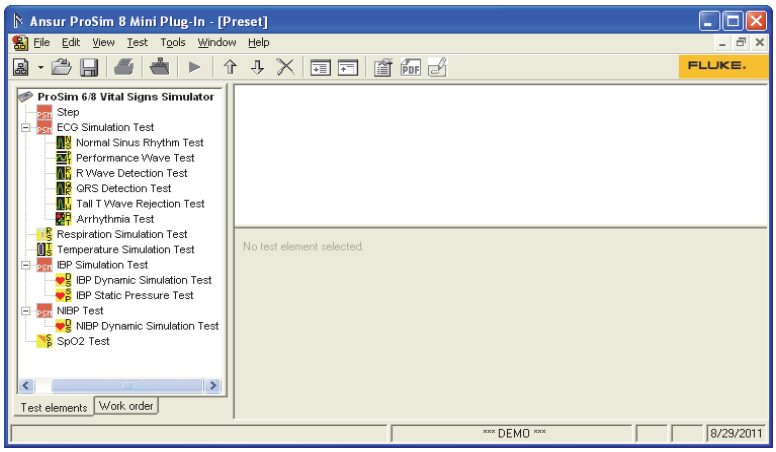
A list of the controls and their explanation is shown in Table 5-1.

Table 5-2. Presets Window Controls

Control	Description
Select All	Sets or clears all the checkboxes in the presets list.
Refresh	Reconnects the Simulator and loads the presets.
Connected Icon (USB / wireless)	To disconnect from the Analyzer, right-click on the USB or wireless icon.
Create	Opens the Ansur Mini Plug-In editor to create a new preset.
Modify	Opens the preset file for modification.
Get From…	Gets the preset from the Simulator and loads it into the PC.
Restore Original	Restores the custom preset to factory preset.
Preset Location	Sets one of the 14 locations that can accept a preset in the Simulator.
Send To…	Sends the preset (*.prr) shown in the **File Name** field to the Simulator.

How to Create a New Preset

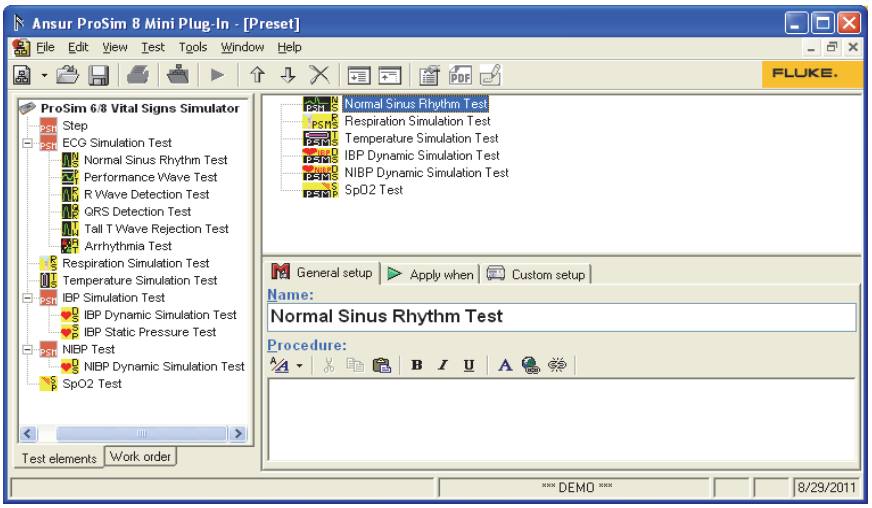
1. Click **Create** to open the window shown in Figure 5-20.



gjp077.bmp

Figure 5-20. Open Presets Dialog Box

2. Drag and drop test elements as shown in Figure 5-21.



gjp078.bmp

Figure 5-21. Asystole Preset

Note

Once you add a test element to the preset, you cannot add a test element of the same group. If you put in an incorrect test element in a preset, first delete it and then pull the correct test element in to the preset window.

3. Click the **Custom Setup** tab to show the window in Figure 5-14.

   You can set all the parameters for the ECG function of the Simulator through the custom setup window. Refer to the *ProSim™ 6/8 Users Manual* for more information on these parameters.

   Continue to add more test elements to the preset and set the parameters as necessary.

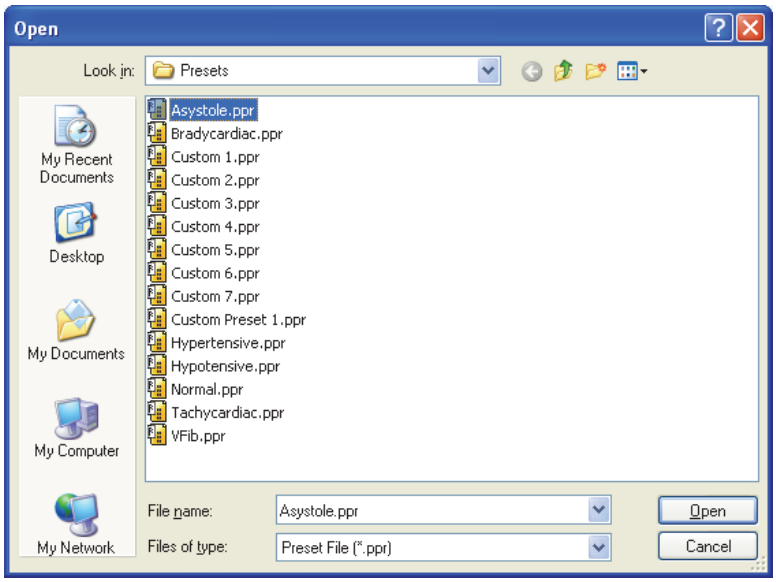
4. Click to save the preset to the present directory.

   See the How to Send Presets to the Simulator section to send the preset to the Simulator.

How to Create a New Preset from a Stored Preset

When the Test Executive was installed, all the pre-defined presets for the Simulator were installed in the presets directory in the ProSim Mini Library. These presets can be used to make new presets. To create a preset from another preset:

1. Click **Modify** to open the window shown in Figure 5-22.



gjp122.bmp

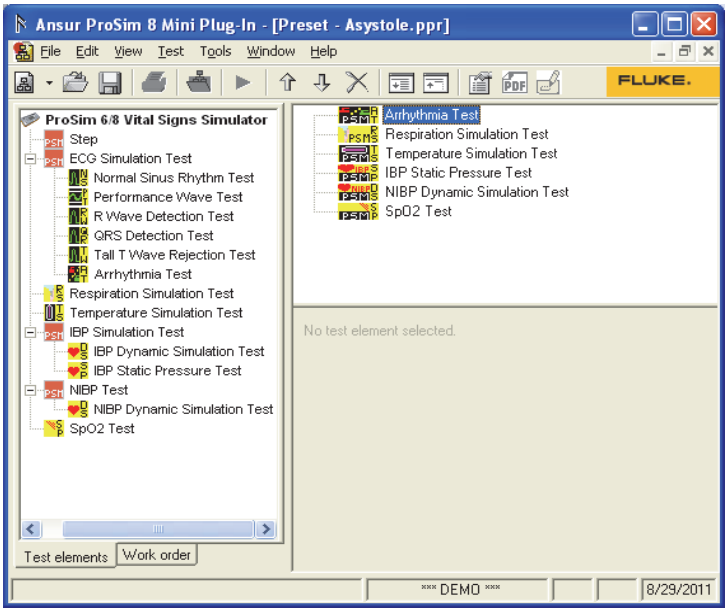
Figure 5-22. Build Presets Window

2. Highlight the preset you want to modify and click **Open**.

Note

Once you add a test element to the preset, you cannot add a test element of the same group. If you put in an incorrect test element in a preset, first delete it and then pull the correct test element in to the preset window.

3. Click the **Custom Setup** tab to open the window in Figure 5-23.



gjp123.bmp

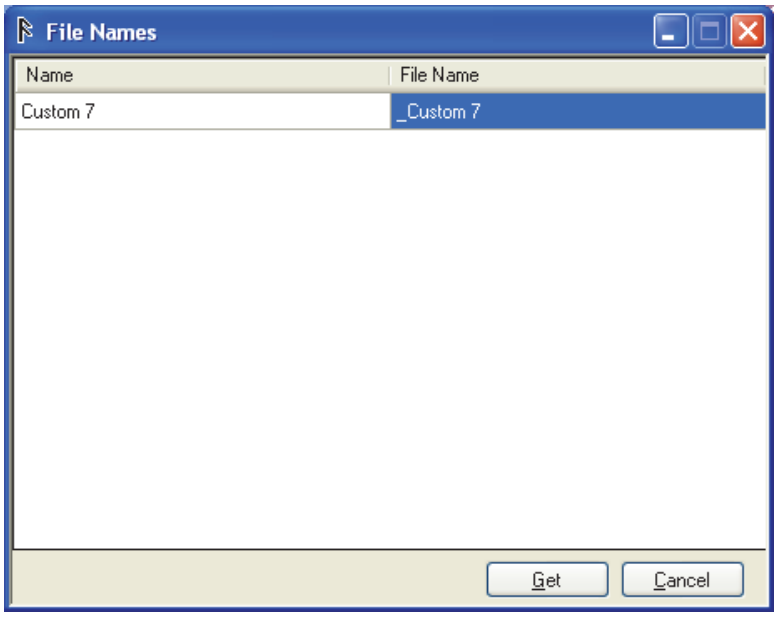
Figure 5-23. Custom Setup for a Test Element

4. Add, remove, or change test elements as necessary.
5. Click **File | Save As…** to save the preset.
6. Use the **Send To…** feature to send the modified preset to the Simulator.

How to Get Presets from the Simulator

The **Get From…** function of the presets is used to get the presets in the Simulator to your PC. To get presets:

1. Click the checkbox next to each custom preset name you want to get into the PC.
2. Click the **Get from...** button and the **File Names** dialog box in Figure 5-24 shows in the display.



gjp120.bmp

Figure 5-24. File Names Dialog with Preset Name

3. Type in a name for the new preset or keep the name Ansur created.
4. Click **Get** to store the preset in the PC.

   The presets are kept at \...\Program Files\Fluke\ProSim Test Library\Presets

How to Send Presets to the Simulator

Custom made presets can be sent to the Simulator. To send a preset:

1. Click the down arrow at the right end of the **Preset Location** combo box and highlight one of the fourteen locations you want to replace with the custom preset.
2. Click ....
3. Highlight the preset file name.
4. Click **Send To..**. The preset file will be transferred to the Simulator and the list of presets will be updated reflect the new preset. The asterisk is removed from the file name.

How to Restore a Preset

After a preset has been changed, it can be restored to its original settings through the Mini Plug-In. To restore a preset to its original settings:

1. Click the checkbox to the left of the preset you want to restore. You can check more than one preset.

Note

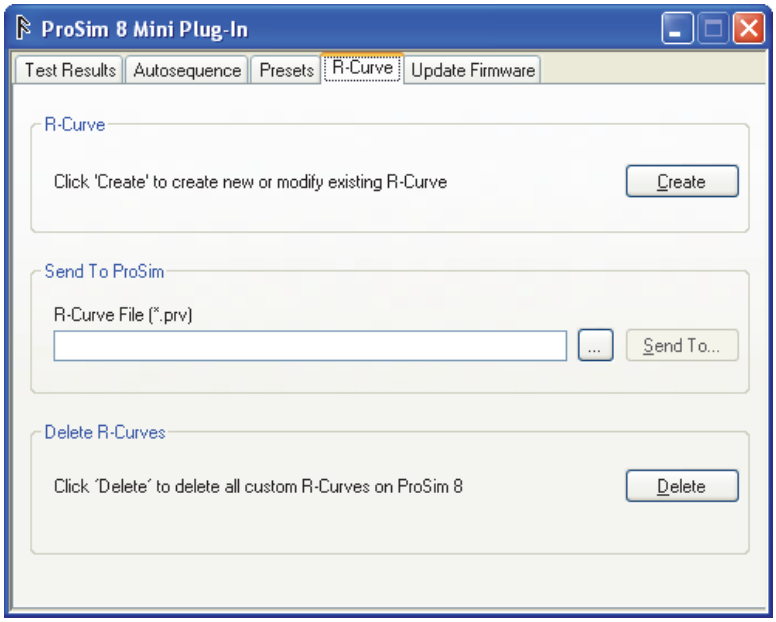
Presets with "" after their name are already in their original state. The checkbox for these presets will not change when you click on it.*

2. Click the **Restore Original** button.

To restore all the presets to their original settings, click the **Select All** checkbox and then click the **Restore Original** button.

How to Manage and Create R-Curves

R-curves are used to help define the characteristics of a pulse oximeter. You can use the Mini Plug-In to create new R-curves and upload them to the Simulator. Click the R-curve tab to show the window in Figure 5-25.



gjp052.bmp

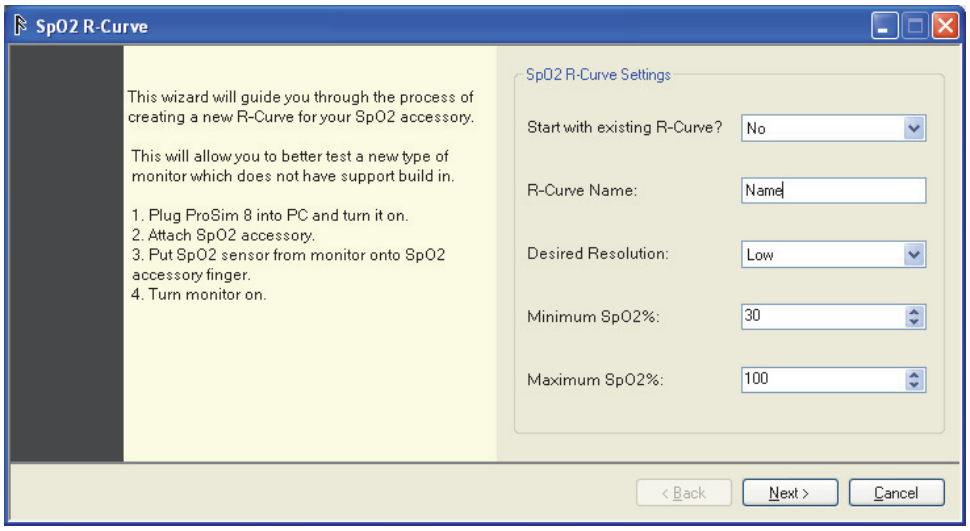
Figure 5-25. R-Curve Window

How to Upload an R-Curve

When you only need to upload an R-curve that already exists, click ... at the right end of the R-curve name field. Navigate to the location of the R-curve to upload and highlight the file name. Click the **Send To..** button to send the file to the Simulator

How to Create an R-Curve

To help create R-curves, an SpO2 R-Curve Wizard is included with the Mini Plug-In. To remove all custom R-Curves from the ProSim 8, click the **Delete** button. Click the **Create** button to show the SpO2 R-Curve window in Figure 5-26.



gjp053.bmp

Figure 5-26. SpO2 R-Curve Wizard Window

You can use R-curve data that already exists to start a new R-curve or start without data. If the "**Start with existing R-Curve?**" field is set to "No", then no R-curve data will be used. To use R-curve data, click on the down arrow at the right end of the combo box. Highlight the R-curve data you want to start with and the wizard will load the R-curve data.

Table 5-3 is a list of the other fields on the first page of the wizard.

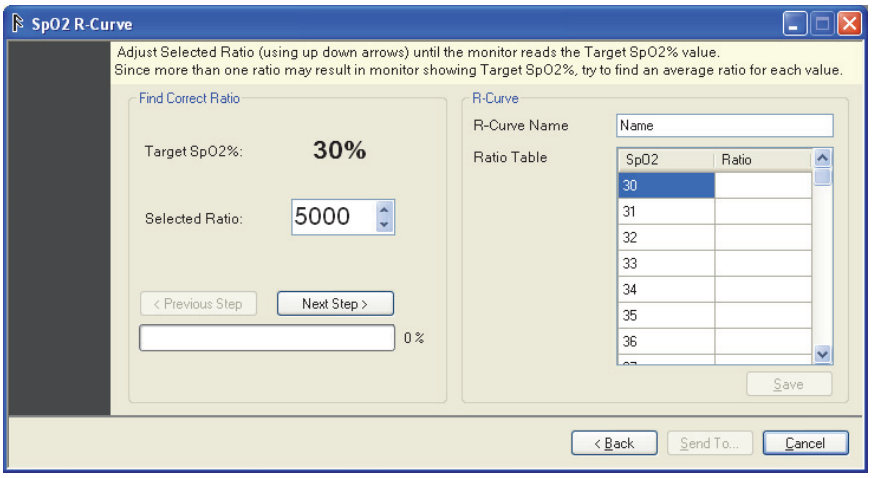
Note

To modify an existing R-curve, highlight an existing R-curve file from the drop-down list in the ***Start with existing R-Curve?*** *combo box.*

Table 5-3. SpO2 Wizard Fields

Field	Description/Use
R-Curve Name	Name of the new R-curve file
Desired Resolution	High, medium, or low resolution
Minimum SpO2%	Minimum SpO2% value between 30 and 100 %
Maximum SpO2%	Maximum SpO2% value between 30 and 100 %

After you fill in the fields on the first page of the wizard, click the **Next** button to open the window in Figure 5-27.



gjp054.bmp

Figure 5-27. SpO2 R-Curve Wizard - Page 2

The wizard steps you through SpO2 % values and inserts the SpO2 ratio for each target value. The ratio table shown in the window has SpO2 percentage values that range from the minimum to maximum percentage values that were input in page one of the wizard. To fill in the SpO2 ratio for the SpO2 % values:

1. Set the selected ratio value (0 to 25,500) with the up or down arrow at the right end of the field. The value increases or decrease in 25 unit steps for each click of an arrow.
2. Click the **Next Step** button.

   The wizard fills in the SpO2 ratio with the value in the selected ratio field. If the resolution on the first page is set to High, then only one SpO2 % value has an SpO2 ratio value. The target SpO2% value is increased by one. If the resolution is set to medium, then the first five SpO2 values in the table are filled in with the selected ratio and the target SpO2 % is incremented by five. If the resolution is set to low, then ten SpO2 % values are filled in with the selected ratio and the target SpO2% is incremented by ten.

   Note

   You cannot add or change the R-curve name or the SpO2 ratio value directly in the ratio table.

3. Repeat steps 1 and 2 until all SpO2 % values have an SpO2 ratio value. The progress bar below the Previous Step and Next Step buttons show you how much of the ratio table is filled in.

If you fill in a step with the wrong ratio, you can undo a step and enter the correct value. Click the **Previous Step** button to remove the ratio value from the SpO2 % values. Change the selected ratio to the correct ratio value and then click the **Next Step** button.

4. Click on the **Save** button to save the R-curve data.

   Note

   The saved R-curve files are kept in \..\Program File\Fluke\ProSim Test Library\R-Curve.

After you make an R-curve file, you upload the file to the Simulator when you click the **Send To…** button.

How to Update Simulator Firmware

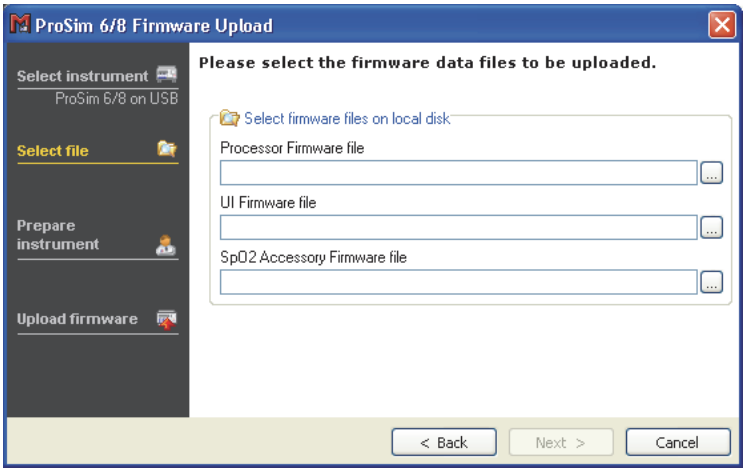
New firmware for the Simulator processor, user interface (UI), and SpO2 accessories can be downloaded from the Fluke Biomedical website. Save these files on your PC.

Note

Due to the large file size, you must use the USB connection (not wireless) to update the firmware in the Simulator.

To upload a firmware update to the Simulator:

1. Open the Mini Plug-In.
2. Click the **Update Firmware** tab to show the window in Figure 5-28.



gjp056.bmp

Figure 5-28. Firmware Upload Window

3. Click … at the right end of the field of the firmware you want to upload. You can upload all three types of firmware, any combination of two files, or just one file
4. Click the **Next** button.
5. Click the **Upload** button to send the file(s) to the Simulator.

Note

Ansur MLC can also be used to upload firmware to the Simulator.