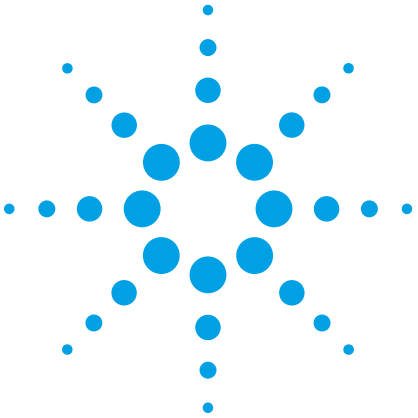

Agilent Automated Card Extraction Dried Blood Spot LC/MS System

SCAP DBS Software

User Guide

Agilent Technologies

Notices

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In This Guide...

This guide describes how to install and use the SCAP DBS software that controls the Agilent Automated Card Extraction Dried Blood Spot LC/MS (AACE DBS LC/MS) System. It includes the following chapters:

1 Installation

This chapter explains how to install and configure the SCAP DBS software.

2 Using the SCAP DBS Software

This chapter explains how to set or change the SCAP DBS settings, how to create methods, and how to execute samples. It also explains possible error conditions, and describes how to display and use the history viewer.

3 Troubleshooting

This chapter describes some of the error conditions that you might encounter.

Content

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1 Installation

This chapter provides instructions on how to install the SCAP DBS software for extraction of dried blood spot (DBS) and other dried matrix spots (DMS).

Installation and Configuration

Before you begin, make sure you have the appropriate computer hardware and software.

PC Hardware

- One free USB port for the camera
- One free serial (COM) port for the PAL, or a USB to Serial Adapter supported by CTC (e.g. Digi EdgePort /c)

PC Software

- A Windows version supporting the Microsoft .NET Framework 4 (client profile), see http://msdn.microsoft.com/en-us/library/8z6watww.aspx
- Windows 7, 64-bit is recommended.

Step 1. Prepare for installation

1 Install and set up the AACE system instruments:
   - Agilent Automated Card Extraction instrument
   - Agilent 1200 Series Infinity HPLC
   - Agilent 6400 Triple Quadrupole LC/MS system

   Refer to the installation instructions for these instruments for more information.

2 Install the MassHunter Workstation software.

   Make sure you install the MassHunter Workstation software before you install the SCAP DBS software. The SCAP DBS software can optionally control MassHunter via a software interface. See the *Agilent 6400 Series Triple Quad LC/MS System Installation Guide*.

   Refer to the *Agilent Automated Card Extraction Dried Blood Spot LC/MS System Technical Reference Guide* for more information about the required cabling of AACE system components.

Step 2. Install the Silicon Labs CP210x device driver

1. Insert the SCAP DBS Software installation disc into the disc drive.
2. From the **Camera-Driver** folder, run **CP210x_VCP_Win_XP_S2K3_Vista_7.exe**. Use the standard settings.

NOTE Local administrator privileges are required for this installation.

Step 3. Install the SCAP DBS software

1. From the **scap-sw-v*X.X.X*** folder (where *X.X.X* represents the version number of the SCAP DBS software), run **setup.exe** .
2. When prompted, choose the **Advanced users (with Cycle Editor)** option during the installation.

NOTE Local administrator privileges are required for this installation.

Step 4. Configure the software

1. Disable computer sleep modes (energy saving options). These options can interfere with the proper execution of SCAP DBS methods.
2. Start SCAP DBS program.

   Click the SCAP DBS System icon on the desktop, or click **Start > All Programs > SCAP > SCAP DBS System**. The Settings dialog opens automatically on first start.
3. To change the default locations any of the paths for data output, methods, or sample lists, do one of these two options:
   - In the **Paths** tab, type the path for the desired location, *or*
   - Click [...] , browse to the desired folder and then click **OK**.
4. Click the **PAL** tab and select the used serial port name.
5. Click the **Camera** tab. Next to **Camera Interface**, select the COM interface name for the camera.

To determine the COM interface name of the camera, connect the camera and then open **Devices and Printers** from the Windows start menu. The device is labeled **Silicon Labs CP210x USB to UART Bridge**. (See Figure 1 on page 10.)

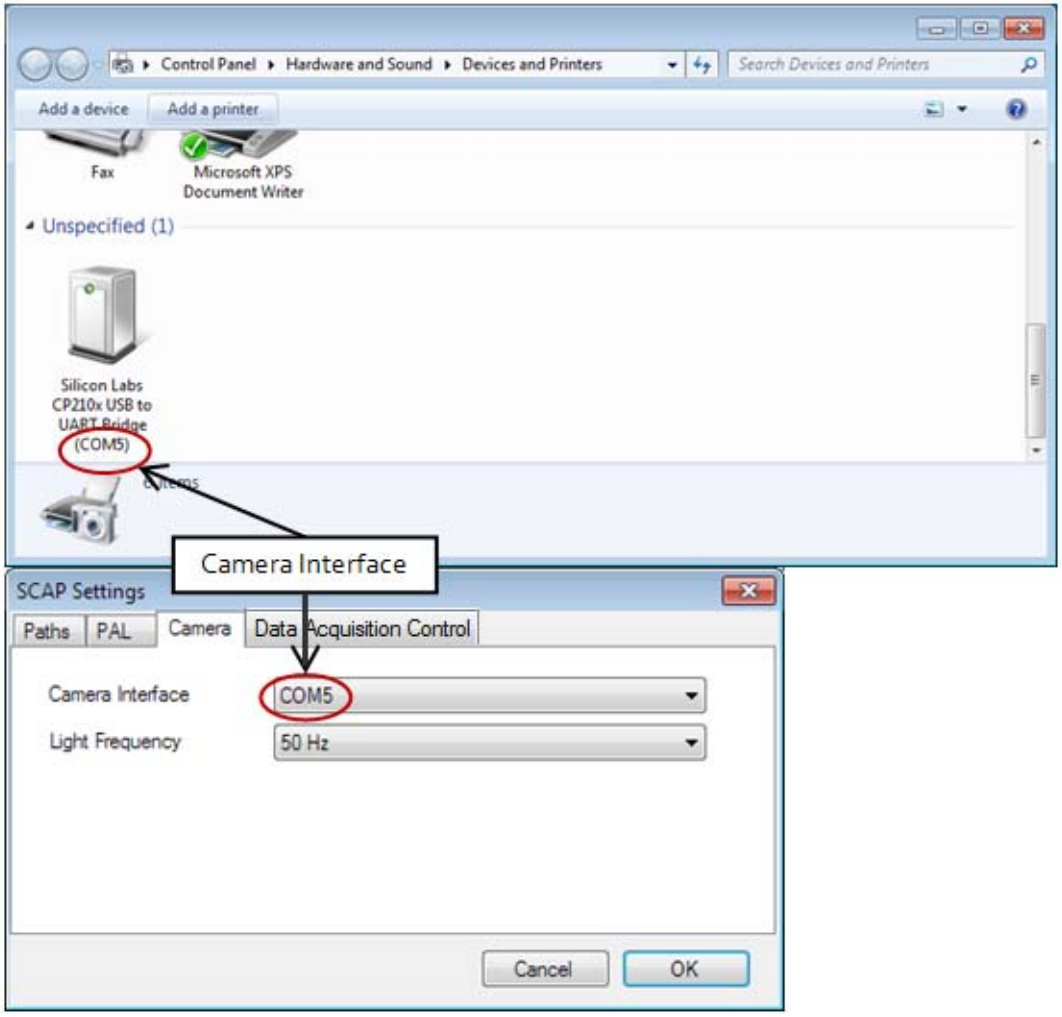


Figure 1 Determine COM name for camera interface

6 In the **Camera** tab, next to **Light Frequency**, select the electric power frequency (also known as “utility frequency”, “power line frequency”, or “mains frequency”) for your location (this setting affects the automatic exposer of the camera automatic exposure).

- Europe, Russia, China, western part of Japan: 50 Hz
- USA, Canada, South Korea, Taiwan, eastern part of Japan: 60 Hz
- For all other countries, see

  http://en.wikipedia.org/wiki/Mains_electricity_by_country

7 Click the **Data Acquisition Control** tab.

a Choose **Via cable contacts** if your acquisition system starts through a contact closure. In this case, choose the external Start signal (output) contact used.

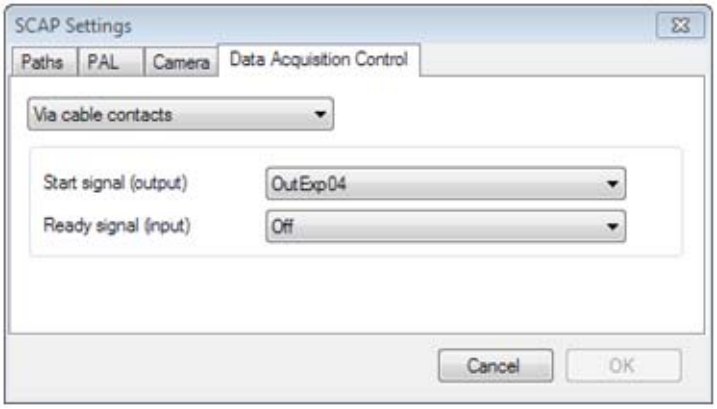


Figure 2 Selection for start using external contact closure

b Choose **Via MassHunter software integration** if your acquisition starts by the MassHunter software installed on the same computer.

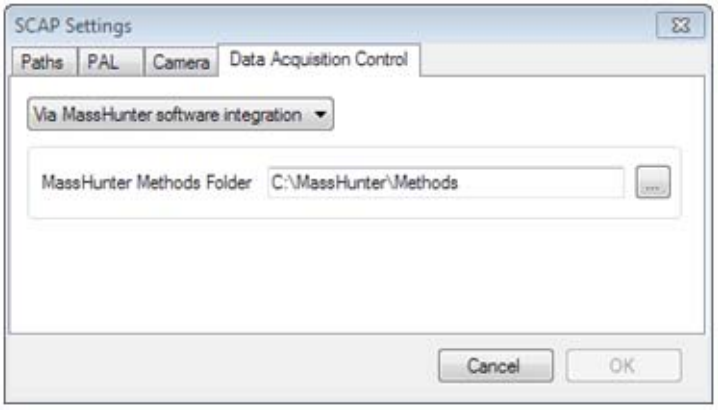


Figure 3 Selection for start via MassHunter

8 Click **OK.**

Step 5. Connect to the instrument for the first time

1 After you select the settings, turn on the power supply of the AACE DBS LC/MS system.

2 At the bottom of the SCAP program window, click **Connect** and wait.

The software downloads all object definitions (including the taught positions) and subsequently performs a camera calibration routine during which the gripper moves in front of the camera.

NOTE These steps are only performed automatically when the newly-installed software is connected to the AACE DBS LC/MS system for the first time.

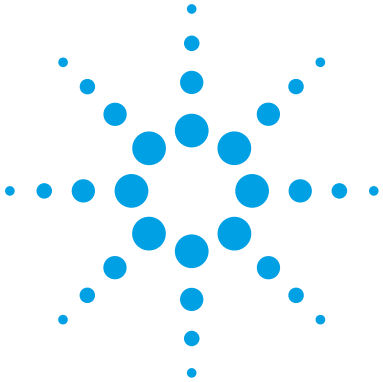
Figure 4 Connecting to the instrument

As soon as the download and calibration are complete, the status text on the bottom of the window displays “Idle”.

Figure 5 Download and calibration complete

3 Close the SCAP DBS software after it connects and displays “Idle”.

The AACE DBS LC/MS system SCAP DBS software is now ready to use.



2
Using the SCAP DBS Software

To set or change SCAP DBS settings

1. If needed, click **Settings** in the upper right corner of the SCAP DBS software window to open the **Settings** dialog box.

   The Settings dialog box automatically opens the first time you start the SCAP DBS software.

2. Change one or more settings on the dialog box, and then click **OK**.

Some of the settings cannot be changed while the instrument is connected. To change a setting while the instrument is already connected, close and then restart the software.

The following commands are available in the Settings dialog box.

New Creates a new empty sample list.

Open Lets you select and open a saved sample list. You can also open a sample list directly from Windows Explorer by double-clicking a saved sample list file. You cannot use this method if the SCAP DBS program is open.

Save Saves changes to the current sample list using the existing sample list name and location. For new sample lists, use the Save As command.

Save As Lets you save a new sample list with a name and/or storage location.

Revert Throws away all changes that were done after the last Open, Save, or Save As operation.

Import Lets you select a sample list to import. A sample list can be imported from any software that is able to write CSV files according to the following requirements (for example, Microsoft Excel™):

- Fields separated by semicolons (;)
- Text fields do not contain any semicolons within the text
- The first row contains column titles

  The following column titles are recognized:

In the software	In the first line of the CSV file
Run No.	LineNo
SCAP Method	Method
Card Type	CardType

Tray	Tray
Card Position	Position
Spot	SpotNo
X Offset	ManualOffsetX
Y Offset	ManualOffsetY
PRE Picture	TakePrePicture
POST Picture	TakePostPicture
Sample Name	SampleID
Sample Type	SampleType
Sample Type	MHSampleType
Calibration Level	CalibrationLevel
Acquisition Method	AcquisitionMethod

- Columns can appear in any order.
- Columns with other than the recognized titles are ignored
  - Allows for using larger spreadsheets containing additional columns for controlling another software (for example, the data acquisition system), which can therefore both import the same sample list. Make sure that the other software ignores the SCAP-specific columns.

Export Used to export a sample list in the CSV format specified in "Import".

NOTE A convenient way to prepare an empty table to fill for later import is to Export an empty sample list.

You can open the resulting CSV file using Excel. In cases where Excel does not automatically detect the correct format, use the Data > From Text command from the Excel Menu (Ribbon) to open a dialog where you can choose Semicolon as the delimiter (see Figure 6).

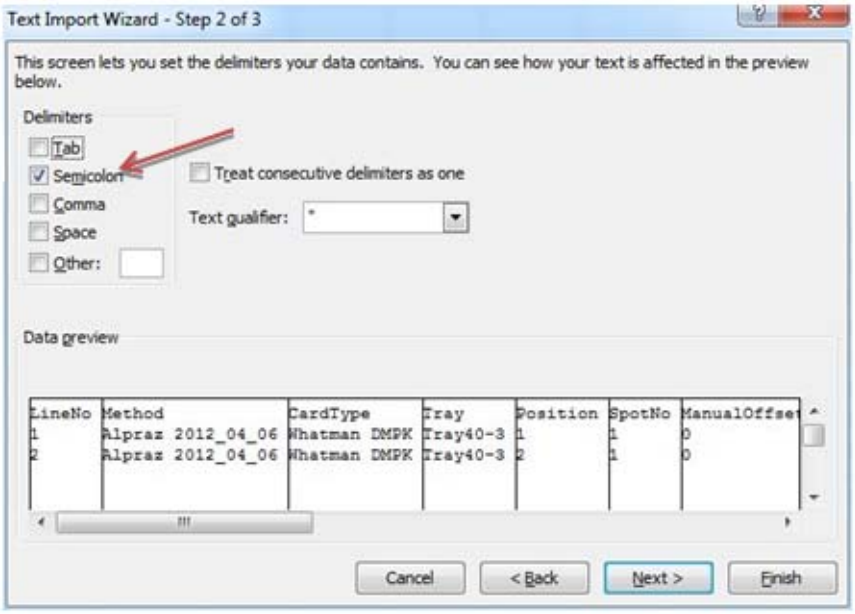


Figure 6 Selection of format for data import in Excel

Add Sample Adds a new line at the end of the sample list. To add a new line in a different position, add the line, and then place the cursor in the new line and use Move Up command to move it to the correct location.

Remove Sample Deletes the currently selected row.

Move Down Changes the position of the currently selected row.

Move Up Changes the position of the currently selected row.

Settings for MassHunter Integration

In case the MassHunter Software Interface is selected in the Settings dialog as the mechanism for Data Acquisition Control, there are three sample list columns specific to MassHunter:

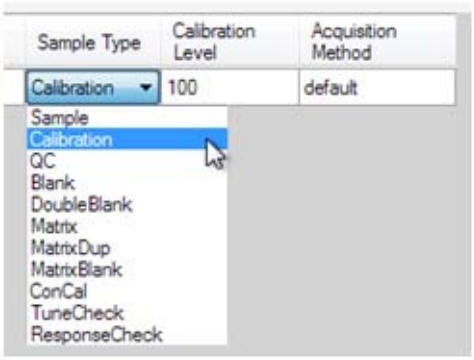


Figure 7 Sample list columns specific to MassHunter

Sample Type The Sample Type is chosen from a selection of predefined names.

Calibration Level The Calibration Level is only available if the Sample Type is **Calibration** or **QC**.

Acquisition Method The Acquisition Method is chosen from the .m files found in the MassHunter Methods Folder designated in the Settings dialog.

To create a method

Methods are created using the SCAP Method Editor, which is a separate program installed with the SCAP DBS software.

1 Start the Method editor.

  Click the SCAP Method Editor icon on your desktop. Or, click **Start > Programs > SCAP > SCAP Method Editor**.

2 In **Available cycles**, select the appropriate cycle.

3 Set all options except the ones named “SCAP_Auto_...”. The SCAP_Auto options are assigned automatically by the SCAP DBS software during execution.

4 Click **File > Save As** to name the new method and save it to ***user*\Documents\SCAP\Methods**.

NOTE For information on how to develop extraction methods and determine values for method timers, see the *Agilent Automated Card Extraction Dried Blood Spot LC/MS System Method Development Guide*.

When the SCAP DBS software is restarted, the new method is available to use in the SCAP Method column of the sample list.

A method consists of a cycle, which defines a sequence of commands, and a number of cycle arguments, which define values for the variables of the cycle. Refer to the *Agilent Automated Card Extraction Dried Blood Spot LC/MS System Method Development Guide* for instructions on how to determine the values of these arguments.

The SCAP DBS Software comes with two standard pre-installed cycles:

- Extraction-setting-T1-2-3-2V is a cycle used only for the development of new methods, specifically, in order to determine the values of three timer variables.
- Standard_basic_cycle_2V is a cycle used for the normal use of the AACE DBS LC/MS system.

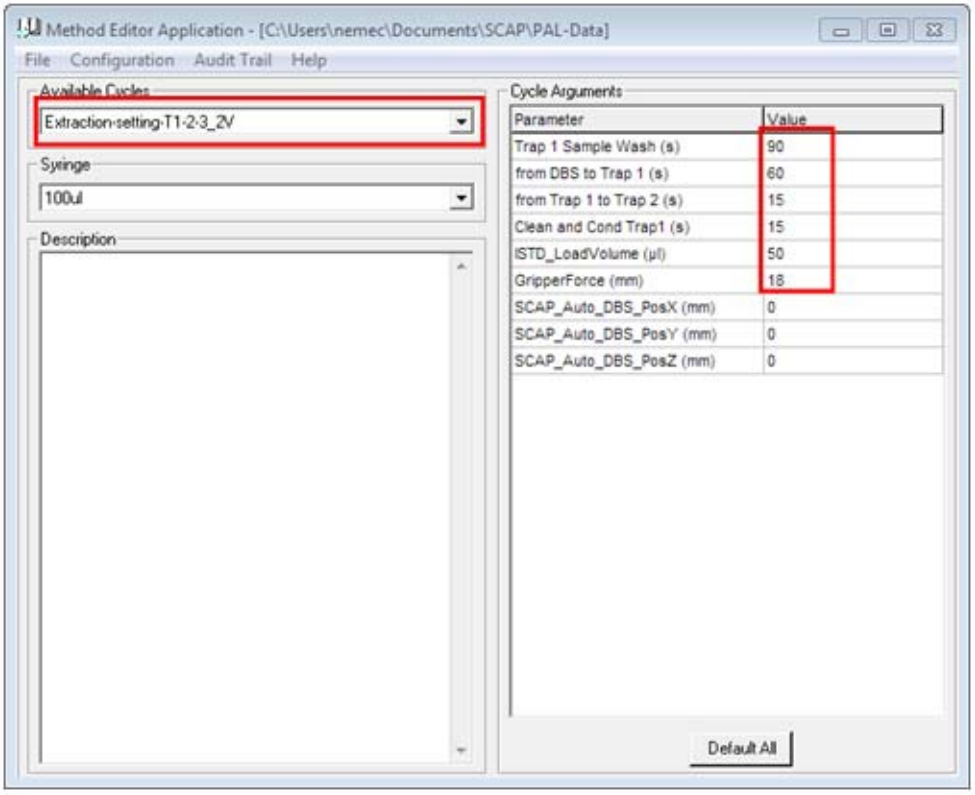


Figure 8 SCAP Method Editor

To run samples

- Use the commands described in this topic to run samples.

Connect You can click the Connect button on the lower right corner as soon as the PAL is connected and powered on and the camera is connected. Connecting resets the PAL, which takes a variable amount of time depending on its previous status. As soon as the PAL and the camera are ready, the green Start button is available.

Depending on whether the currently loaded sample list includes taking pictures, the Start button may also be enabled without a connected camera.

Start Starts processing of the sample indicated by the Start at Run No. drop-down box next to the Start button.

Pause The execution is put on hold after completing the currently running sample run. As soon as this button is clicked, you can switch back to the Sample List Editor tab and change or append any sample lines after the line currently executing.

Resume Releases the hold caused by Pause, and automatically continues with the next sample as soon as the current one is finished.

Abort Interrupts the current sample run, puts the card back into the tray, and saves this execution of the sample list in the history.

To use the History Viewer

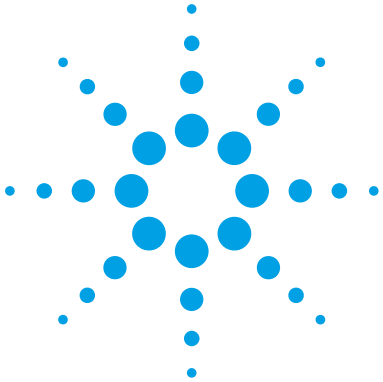
- Use the tree view on the left pane to navigate to a specific run of a sample list.

The initial view after opening the History Viewer shows either the most recent sample list run, or the sample list run that was opened in the History Viewer last, whichever happened last.

To export the sample run list

- Right-click the history grid view to export the same table as comma separated values (CSV), and to optionally open it in Microsoft Excel (or another installed program that is registered for handling CSV files).

The CSV export file contains additional technical columns for internal use that are not shown during execution or in the History Viewer.



3
Troubleshooting

Run Abort and Error Conditions

In some cases, the Abort procedure is called automatically by the software. In this case, a small icon appears within the current line of the sample list after completion of the procedure. The reason for the run abort is shown when moving the mouse pointer over it:

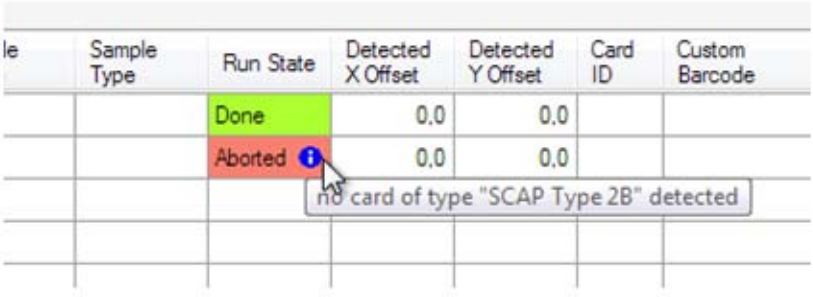


Figure 9 Reason for automatic run abortion

The possible reasons are:

- The Abort button was clicked by the user.
- Take Pre Picture is checked and no card is detected by the camera. Note that the reason for not detecting a card can also be that the card type specified in the sample list does not match the card used.
- The acquisition system was not reporting readiness at the time when the AACE cycle was trying to start the acquisition. The readiness check only works when the settings for Data Acquisition control are either “Cable connect” with a connected “Ready input signal”, or “MassHunter Software integration”.
- The acquisition system reported an error condition on its side. In this case, the currently running method is aborted immediately because its acquisition cannot be expected to be ready to start when it should. This feedback mechanism only works when Data Acquisition control is set to “MassHunter Software integration”.
- The AACE DBS LC/MS system encountered an unexpected error condition during the execution of a method. Possible causes are:

- Object definitions do not match: Objects may have been removed or renamed after the PAL configuration was loaded into the SCAP software the last time. Please refer to the *Agilent Automated Card Extraction Dried Blood Spot LC/MS System Technical Reference Guide* to change any PAL object definitions.
- The robot “crashed”; that is, the actual position does not match the expected position. Make sure that no foreign object is in the way of the gripper, and that all installed components are correctly configured as objects.
- The camera connection was lost because the cable was unplugged.
- The PAL reported any other error during the execution of a method, which might result from loose or disconnected cables, worn out parts or software bugs. If the cause of the error is not clear, call Agilent technical support.

Limitations and Known Issues

Limitations of the current SCAP DBS software:

- There is no way of reconnecting, if Connect was already clicked, other than to restart the software.
- If you add or delete methods in the Methods directory, they are not available to choose in the sample list until next start. As a workaround, close and restart the SCAP DBS program.
- In the Method Editor, “Save As...” saves the current method under a new name, but the old file remains open as the active file. The next time you save the file, you overwrite the old file.

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In this book

This book contains brief instructions on using the SCAP DBS software. This book shows you:

- How to install the SCAP DBS software.
- How to use the SCAP DBS software to create methods and edit/save settings.
- How to use the SCAP DBS software to execute a sample run.

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