

Larson Davis

SLM Utility-G3

for use with the
Model 831 and *SoundTrack LxT*[®]

Technical Reference Manual

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Getting Started

Installing the SLM Utility-G3 Software

When you insert the SLM Utility-G3 CD, it will start automatically. If it does not, access the CD drive and click setup.exe.

The install program installs the program files and prompts for any additional required information. A **PCB Piezotronics** menu item will be created under the Program menu item in the Start menu.

Configuring the USB Port

The first time you connect an instrument to the computer via the USB cable, Windows will display the following dialog box.



FIGURE 1-1 Found New Hardware Dialog Box

Left click to select “No, not this time” then left click **Next** to obtain the display shown in FIGURE 1-2.

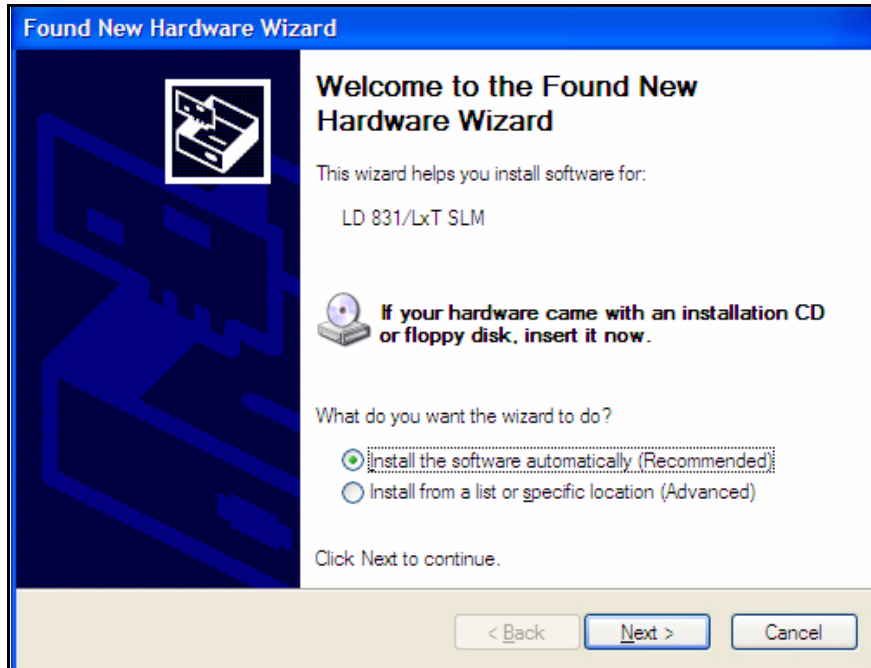


FIGURE 1-2 Automatic Installation

Left click the radio button for “Install the Software automatically (Recommended)” and left click **Next** to continue. The installation procedure should begin as indicated by the display of the Installation Dialog Box as shown in FIGURE 1-3. If this happens, skip the following section by jumping to FIGURE 1-5 "Completion of Installation Dialog Box” on page 1-5 and proceed from that point.

Alternative Procedure

If a failure dialog box should appear, left click the **Back** box on the failure screen, which will return you to the screen shown in FIGURE 1-2. Left click the “Install from a list or specific location” to select it and obtain the display shown below in FIGURE 1-3.

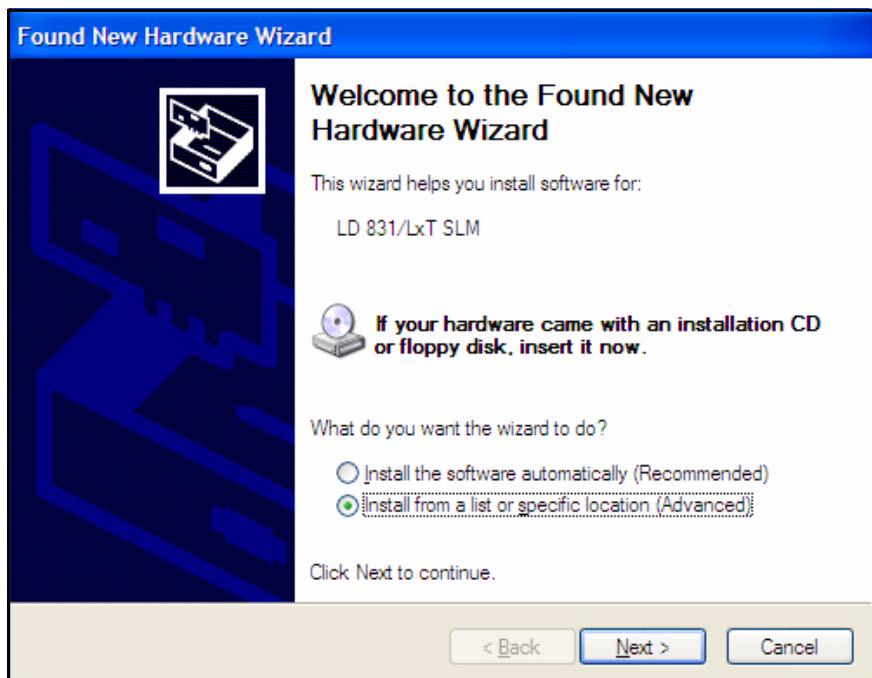


FIGURE 1-3 Install Software Dialog Box

Left click **Next** to open the following dialog box..

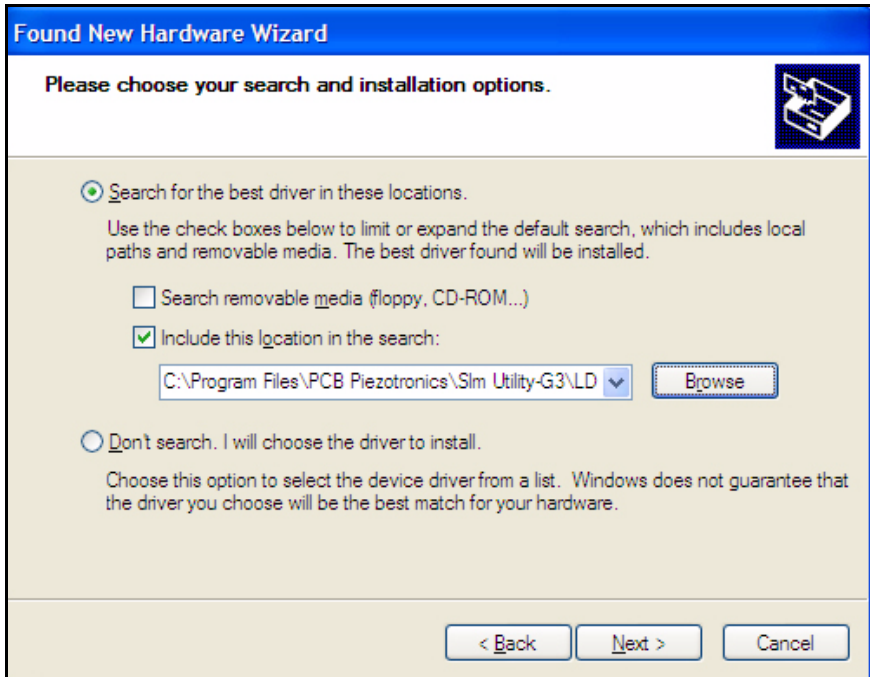


FIGURE 1-4 Search and Install Options Dialog Box

Select the "Search for the best driver ...", Uncheck the "Search removable media..." check box, Check the "Include this location ..." check box and enter the path name for the USB drivers. The default path name is **c:\Program files\PCB Piezotronics\Slm Utility-G3\LD Slm USB Drivers**.

The dialog box should look as shown in FIGURE 1-4. Then press **Next**.

After the installation is complete, Windows displays the dialog box shown in FIGURE 1-5.

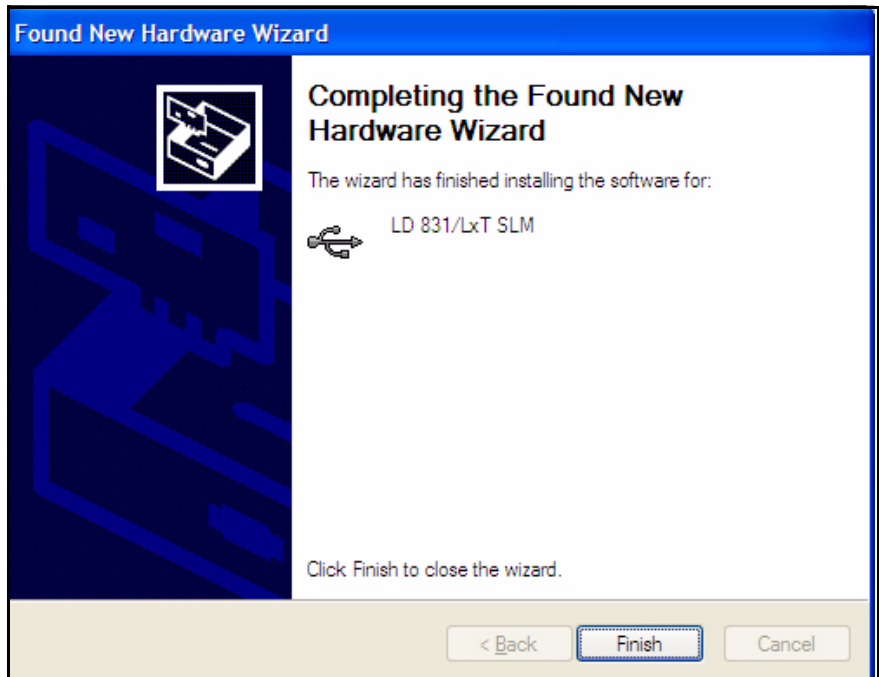


FIGURE 1-5 Completion of Installation Dialog Box

Left click **Finish** and the USB drivers will be installed.

Once the USB drivers are installed and you connect a different instrument to the computer or the same instrument to a different USB port, you will once again get the Found New Hardware dialog as shown at the start of this chapter. Follow the instructions associated with that.

Upgrading Software to Version 1.313

In previous versions of the SLM Utility-G3 software the files were saved in the C:\Program Files\Larson Davis\Slm Utility-G3 folder. If you wish to keep these settings and calibration history files after upgrading to the version 1.313, copy the following files from that folder to the C:\Program Files\PCB Piezotronics\Slm Utility-G3 folder where the new program files are located.

- 831setup.dat**
- SLM Preference.dat**
- 831CalHistory.log**

Note: If the user attempts to connect with the instrument before it has completed its bootup sequence, the connection will fail and the instrument may lock up.

The install program should place a shortcut to the SLM Utility-G3 program on the desktop. Double click this shortcut icon to start SLM Utility-G3. If the icon is not present, do the following:

Step 1 Click on the **Start** menu on the Task bar at the bottom of the Windows® desktop.

Step 2 Go to the **Programs** submenu.

Step 3 From the **PCB Piezotronics** submenu (or wherever the program was installed), select **Slm Utility-G3**.

SLM Utility-G3 Main Window

When the SLM Utility-G3 Software is fully loaded, the SLM Utility-G3 Main window is displayed as shown in FIGURE 1-6.

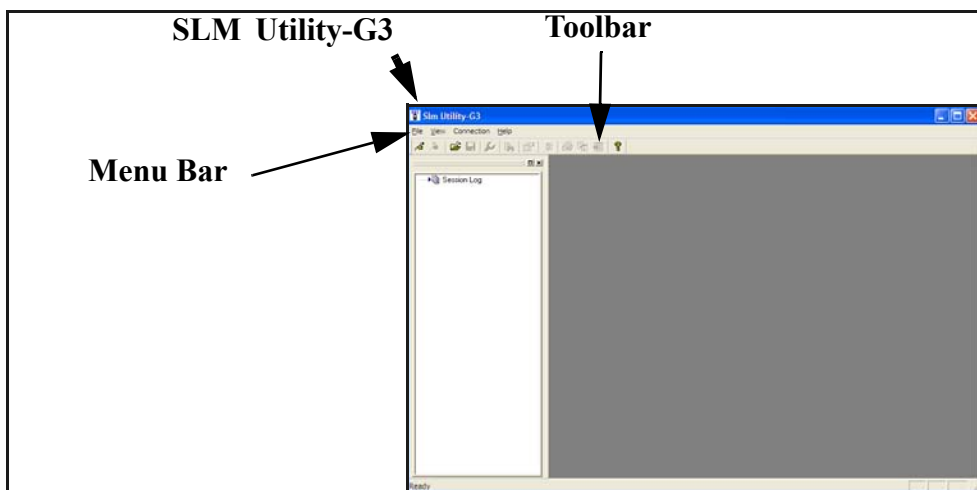


FIGURE 1-6 SLM Utility-G3 Main Menu

Menu Bar

The Menu Bar, a standard Windows feature, contains the following eight drop-down menus, which are opened by left clicking the title.

- File
- View
- Connection
- Help

When a file is loaded into SLM Utility-G3 by either opening a file or downloading a file, the menu bar changes with the addition of the Window menu.

Although most of the SLM Utility-G3 operations can be performed using icons in the SLM Utility-G3 Toolbar, all functions can be performed by selecting one of the options listed on one of these menus as described in this manual.

SLM Utility-G3 Toolbar

Just below the menu bar is the toolbar as shown in FIGURE 1-7.



FIGURE 1-7 Toolbar

Note that some of the icons in the toolbar are for future enhancements, so they will remain inactive as indicated by a lack of color on the icon. The functions corresponding to the 6th and 7th icons from the left are not implemented at this time.

The tool bar provides quick access to commonly used software functions. A description of the function of each toolbar button, or icon, is presented in Table 1: "SLM Utility-G3 Toolbar Buttons" below

	The Connect button will make the connection to the instrument connected to the computer.
	The Disconnect button will terminate the connection between SLM Utility-G3 and the instrument connected to the computer.
	The Open File button will bring up a standard windows browse window that will allow the user to open an existing database record.
	The Save File button will bring up a standard windows save file dialog box, that will allow the user to save the current SLM Utility-G3 file. The dialog window will also allow the user to select a file name and location.
	The Instrument Manager button will bring up the Instrument manager screen. The user can then setup the instrument, set the clock, download data files, etc.
	The Print button will print the currently displayed record.
	The Export Data button will export the currently displayed record as an Excel spreadsheet or a Comma-Delimited File that can be opened in a spreadsheet application. It will also allow the user to select the output location and file name, and whether or not to automatically launch the viewer application.
	The About button will bring up the SLM Utility-G3 splash screen with the current revision number.

Table 1: SLM Utility-G3 Toolbar Buttons

SLM Utility-G3 Session Log

On the left side of the screen you will find the SLM Utility-G3 Session Log. .

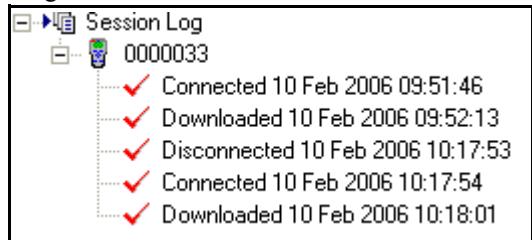


FIGURE 1-8 SLM Utility-G3 Session Log

This useful area provides information with respect to the status of an active (connected) instrument, providing the following information:

- If the PC is currently connected to an instrument
- Whether the connected instrument is running or stopped
- The serial number of the instrument
- If data has been downloaded from the instrument
- If the unit has been calibrated

The SLM Utility-G3 Session Log will be automatically updated when any of these operations has occurred

Closing Session Log

To close it, left click the close icon located in the upper right corner of the Session Log window, as shown in FIGURE 1-9.

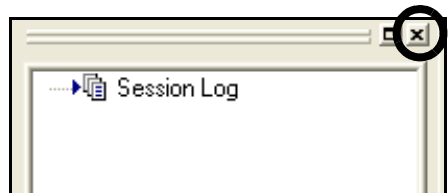


FIGURE 1-9 Close Session Log Icon

Reopening Session Log

The Open/Closed status of the Session Log can also be changed by clicking **View** from the Menu Bar, shown in FIGURE 1-6 "SLM Utility-G3 Main Menu" , which will open the menu shown in FIGURE 1-10.

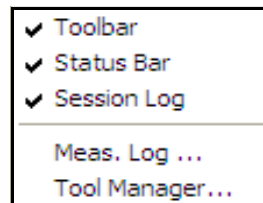


FIGURE 1-10 View Menu

A check in front of an item indicates that it is already being displayed. Left clicking an unchecked item will open it and place a check in front of that item.

Clicking on **Meas. Log** will activate the Measurement Log display. If the instrument is still connected, clicking on **Tool Manager** will activate the Tool Manager.

Connecting to an Instrument

Making the Connection

To connect to an instrument, left click the **Connect** icon on the toolbar as shown in FIGURE 1-11 or select USB in the Connection menu.



FIGURE 1-11 Toolbar; Connect Icon

Single Instrument Connected to Computer

If only a single instrument is connected to the computer via the USB port, the connection to the SLM Utility-G3 Software will be implemented and the Instrument Status page of the Instrument Manager will be displayed as shown in FIGURE 1-14 ".Instrument Manager; Instrument Status"

Multiple Instruments Connected to Computer

When more than one instrument is connected to the computer via USB ports, the window shown in FIGURE 1-12 will open.

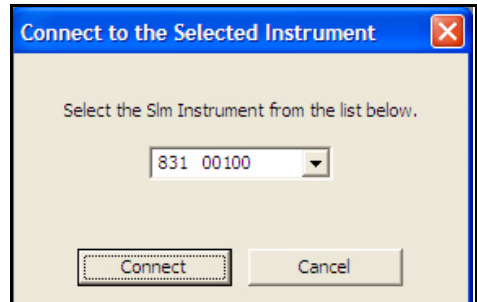


FIGURE 1-12 Connect to Selected Instrument

Left click the down arrow next to the data field to list the connected instruments by model and serial number as shown in FIGURE 1-13.

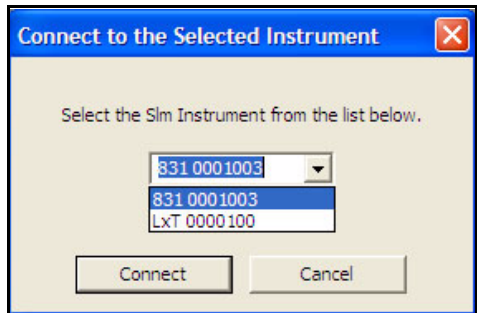


FIGURE 1-13 List of Connected Instruments

In this instance, there are two instruments connected, a Model 831 and an LxT.

In this manual the displays will correspond to those obtained when the connected instrument is a Model 831

Highlight the particular instrument to which you want to connect and left click to make a selection. Left click the "Connect" button to implement the connection. The Instrument Status page of the Instrument Manager will be displayed as shown in FIGURE 1-14 "Instrument Manager; Instrument Status".

Multiple Instruments, Changing Instruments

Note that you must close the Instrument Manager before you can click on any toolbar button or menu.

When connected to one of multiple instruments connected to the computer via USB, to change the connection to a different instrument, left click **Connection/Change Instrument**, which will open the “Connect to Selected Instrument” menu shown in FIGURE 1-12. Use this menu and proceed as described to select the new instrument with which to make the connection.

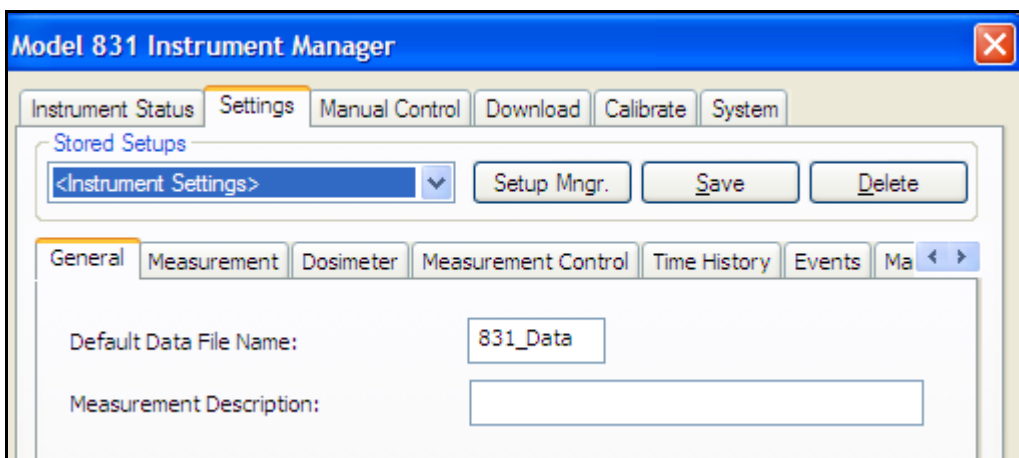


FIGURE 1-14 .Instrument Manager; Instrument Status

Most of the operations of the SLM Utility-G3 Software are performed from the Instrument Manager as described in the following chapter.

Once a connection has been made, the Session Log will be updated to show that the instrument is connected and its serial number displayed. The data and time of the connection also appear, as shown in FIGURE 1-15.

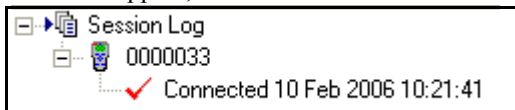


FIGURE 1-15 SLM Utility-G3 Session Log

Interface Active Message

If the instrument is in the Measurement Setup or Preferences Mode at the time the connection operation is initiated, the message shown in FIGURE 1-16 will be displayed..

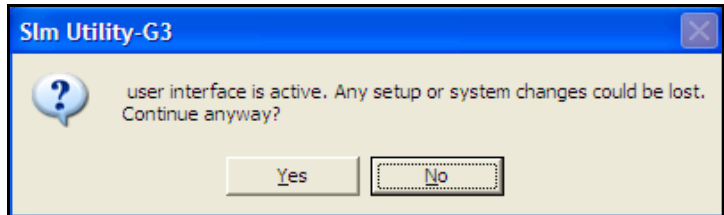


FIGURE 1-16 Interface Active Message

Click **Yes** to continue the connection or press **No** to abort the connection operation and manually save the setup in the instrument. Clicking **Yes** may cause the loss of setting changes when the user closes the instrument's user interface.

Disconnecting the Instrument

To disconnect the instrument from the software, left click the Disconnect icon from the toolbar as shown in FIGURE 1-17.



FIGURE 1-17 Toolbar; Disconnect Icon

Reconnecting the Instrument

After disconnecting from the instrument, left clicking the connect icon, as shown in FIGURE 1-11 "Toolbar; Connect Icon" on page 1-10, will reconnect the software to the same instrument to which it had been connected prior to disconnecting.

If there are multiple instruments connected to the computer via USB ports and you wish to connect to a different instrument than the one to which it had been connected prior to the disconnect, left click **Connection/USB** on the Menu Bar to open the menu shown in FIGURE 1-12 "Connect to Selected Instrument" on page 1-11. Use this to select the other instrument, as described in the section "Multiple Instruments Connected to Computer" on page 1-11.

Introduction

Larson Davis SLM Utility-G3 Software works in conjunction with both the Larson Davis Model 831 and *SoundTrack LxT*®. However, some of the functionalities described in this manual will not work with the *SoundTrack LxT* because they involve features not provided in the LxT instrument.

This manual is a companion manual to the Model 831 User Manual (I831.01) and LxT User Manual (I770.01) which provide complete technical specifications, standards met and step-by-step instructions for the manual operation of these instruments.

Overview

The SLM Utility-G3 Software enhances the flexibility and ease-of-use of the Model 831 and LxT by providing setup utilities, instrument calibration, computer-based control of the instrument, data downloading and printing, and an export routine to transfer data to third party software such as a spreadsheet for post processing.

Organization of the Manual

We invite you to read this manual to optimize the benefits to be gained from this powerful software package.

This manual has six chapters covering the following the topics:

Chapter 1 - Introduction

This chapter begins with a brief overview of the features of the Model 831 and the SLM Utility-G3 Software. This is followed by a description of the structure of the manual to assist you in finding the information you need.

Chapter 2 - Getting Started

This chapter will assist you in the preliminary steps in getting online with your system:

- Installing the software

- Starting the program
- Presenting the main window
- Describing the toolbar and the actions associated with its icons
- Establishing communication between the computer and the instrument.

Chapter 3- Instrument Manager

Most of the operations of the SLM Utility-G3 Software are controlled from the Instrument Manager. Specific features which are addressed are as follows:

- Determination of instrument status; serial number, firmware version, battery status, data records in memory and date/time.
- Management of instrument setups, including creation, modification and deletion of setups and utilization of the setup database.
- Manual control of the instruments via the PC.
- Downloading of measured data from the instruments to the PC
- System calibration
- Defining System Parameters such as language, decimal format, time and date format
- Setting power options such as power save, backlight timer and auto off time and also setting the keyboard lock options.

Chapter 4 - Data Display

In this chapter we will discuss operations related to the Measurement Summary, which provides numeric values of sound levels, noise dose and statistics data as well as general information, user-defined notes and instrument setting. The Measurement Log identifies voice annotations created and stored during the measurement and implements the playback of these records via the computer sound card, as well as

documenting significant keypad actions which took place, such as Run, Pause, Resume and Stop.

Chapter 5 - Data Export

This chapter describes the export of data in three different formats:

- Excel Workbook
- Text file format, for use with word processing programs
- Comma-delimited format, for use with spreadsheet programs

Special Features of the Electronic Version

There are a variety of special techniques for navigating through pdf documents which can greatly simplify finding specific items in this manual. Two of these, bookmarks and links, are discussed below.

Bookmarks

Opening Bookmarks

Bookmarks are clickable navigation tools in pdf files. To open bookmark, left click the upper Tab on the left of the screen labeled Bookmarks. These will appear as shown in FIGURE 2-1.

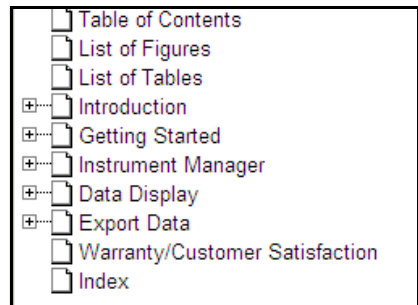


FIGURE 2-1 Bookmarks

Closing Bookmarks

To close bookmarks, simply left click the tab once more.

Expanding Bookmarks

For any entry, if there is a + within the rectangle to the left, there are sub entries which can be displayed upon expanding the tree by clicking the rectangle. For example, clicking the + to the left of any chapter will expand it into major headings and, by clicking all the + symbols, the complete tree for that chapter will be shown. In FIGURE 2-2 we can see the entry Introduction completely expanded.

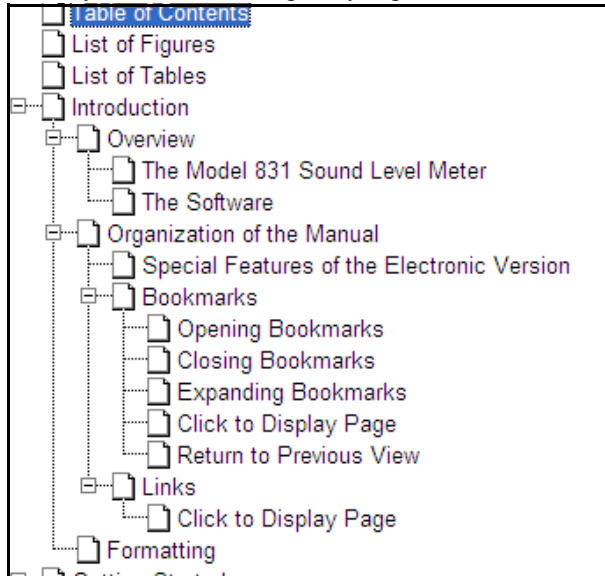


FIGURE 2-2 Bookmarks, Expanded

Click to Display Page

Left click on any text field (Chapter name, Appendix name, Table of Contents, Index, or any sub heading) and the page displayed on the right will jump to the page associated with that text field.

Return to Previous View

To return to the page which was displayed previous to clicking on a bookmark text line, right click on the display page, then left click on “Go to Previous View”.

Links

Click to Display Page

The Table of Contents and the Index have a page number associated with each item. For the Table of Contents, left click on the text line and that page will be displayed. For the Index, left click on the page number itself to display the page associated with that entry. To return to the previous display, follow the procedure described in Return to Previous View on page 2-4.

Formatting

This manual uses the following format conventions:

In step-by-step directions, the process (what you do) is shown in the right column, and the rationale (why you do it) with other cautions and comments are shown in the left column.

Instrument Manager

Most of the operations of the SLM Utility-G3 Software are controlled from the Instrument Manager. Specific features implemented from the Instrument Manager include the following:

- **Determination of instrument status; serial number, firmware version, battery status, data records in memory and date/time.**
- **Management of instrument setups, including creation, modification and deletion of setups and utilization of the Setup Manager to work with the setup database.**
- **Manual control of the instrument via the PC.**
- **Downloading of data from the instrument to the PC**
- **System calibration**
- **Defining user preferences**

Each of these functions will be discussed in this chapter.

Opening the Instrument Manager

To view the instrument manager window an instrument must be connected, as described in the section "Connecting to an Instrument" on page 1-10. If you inadvertently close the Instrument Manager window, you can re-open it by pressing the Instrument Manager icon on the toolbar.



The Instrument Manager is displayed following satisfactory connection of the instrument to the PC. It will initially open with the Instrument Status page selected, as shown in FIGURE 3-2 "Instrument Manager; Instrument Status Page".

The Session Log will indicate the data and time the connection was established, as shown in FIGURE 3-1.



FIGURE 3-1 Session Log; Connected

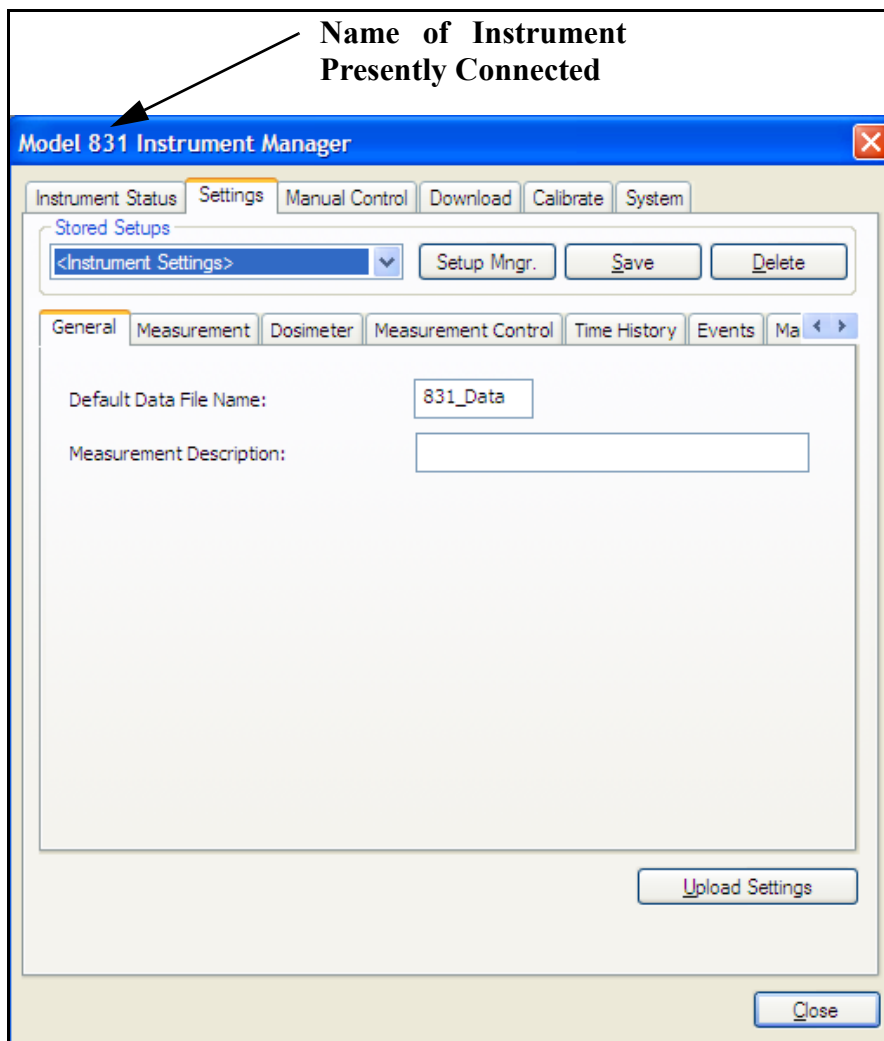


FIGURE 3-2 Instrument Manager; Instrument Status Page

Closing the Instrument Manager

To close the Instrument Manager, regardless of which tab page is being displayed, left click **Close** on the lower right as shown in FIGURE 3-3.

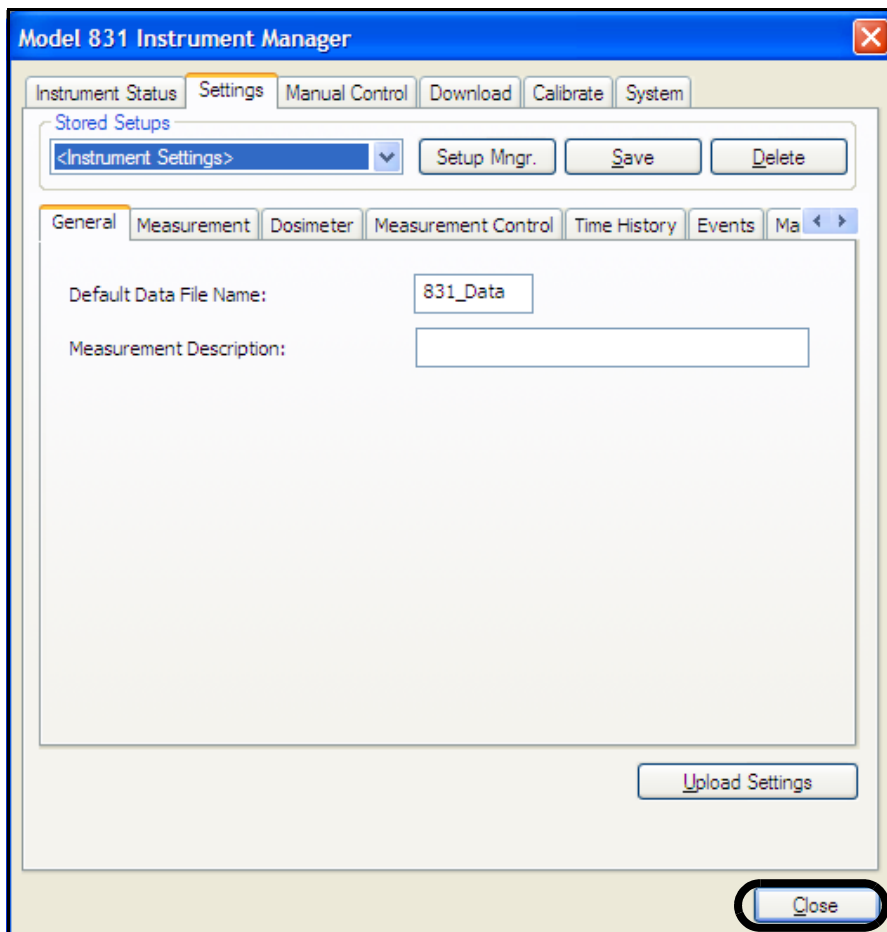


FIGURE 3-3 Close Instrument Manager

Tab Pages

The functionality of the Instrument Manager window is distributed over six tab pages, entitled as follows:

- **Instrument Status**
- **Settings**
- **Manual Control**
- **Download**
- **Calibrate**
- **System**

Displaying a Tab Page

To display any of the six tab pages, simply left click the tab having the desired title. Each of these six tab pages will be described later in this chapter.

Instrument Status Page

The Instrument Status Page, shown in FIGURE 3-2 "Instrument Manager; Instrument Status Page", presents the following information about the presently connected instrument:

- **The model number of the instrument connected**
- **The instrument's serial number**
- **The firmware version**
- **The battery voltage (6 Volts with fresh batteries) along with the external voltage applied when an external power source is connected**
- **The amount of free memory in the instrument**
- **The number of data records stored in the instrument**
- **The date/time of the instrument's built-in clock**
- **The date/time setting of the computer**

Setting the instrument's Data and Time

Set the date and time of the built-in clock of the instrument as follows.

Press **Set Time** as shown in FIGURE 3-4.

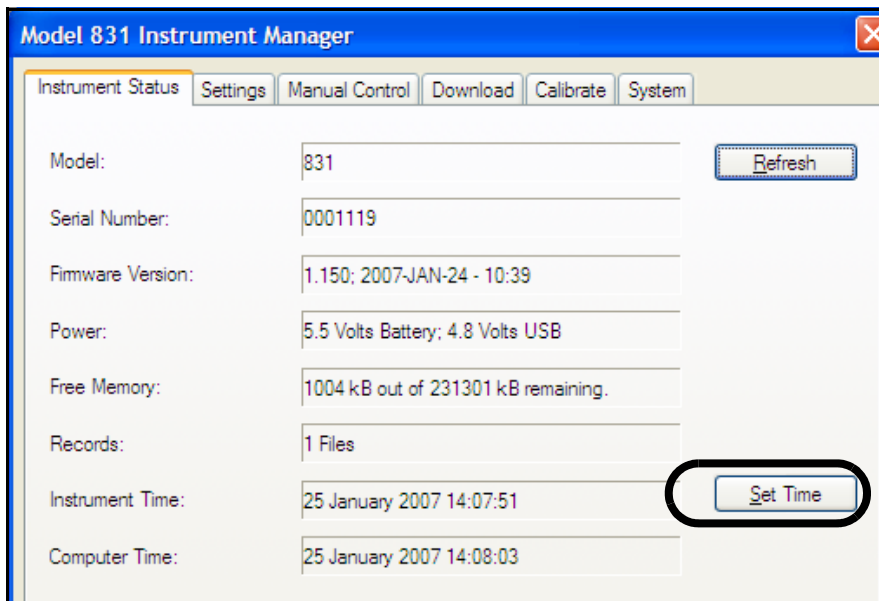


FIGURE 3-4 Set Time

This will open the Instrument Date and Time dialog box as shown in FIGURE 3-5.

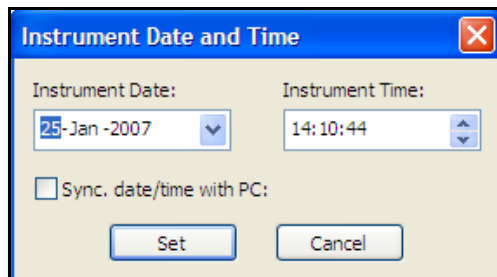


FIGURE 3-5 Instrument Date and Time Dialog Box

Note that there are two formats available for date. See "Date Format" on page 3-57 for further detail.

Two options are available for setting the date and time.

Manual Setting of Date and Time

When “Sync. date/time” is not selected, the date and time in the instrument can be set manually (if this has already been checked, left click the check box to deselect it). Left clicking the down arrow to the right of the Instrument Date field will open the Instrument date calendar shown in FIGURE 3-6.

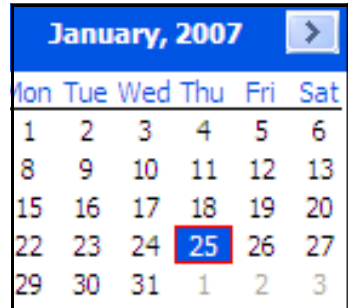


FIGURE 3-6 Instrument Date Calendar

Left click the left or right arrow keys at the top to bring up the desired month and year, then left click the desired day to complete input of the date.

In the Instrument Time field, the hours, minutes and seconds are selected separately, highlighting each and using the up and down arrow keys to the right of the data field to select the desired values. Press **Set** to complete the selection of date and time.

Synchronizing Instrument Date and Time with the Computer

The date and time in the instrument can be set to match those of the computer by checking the “Sync.date/time with PC” check box as shown in FIGURE 3-7 and pressing **Set**.

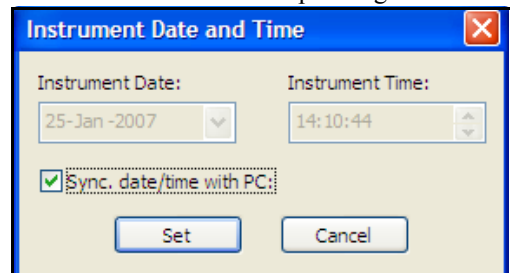


FIGURE 3-7 Synchronize to Computer Time

Refreshing the Instrument Status Page

In order to update the Instrument Status display to reflect changes in the battery life, memory available, etc. since the window was last opened, click **Refresh** as shown in FIGURE 3-8.

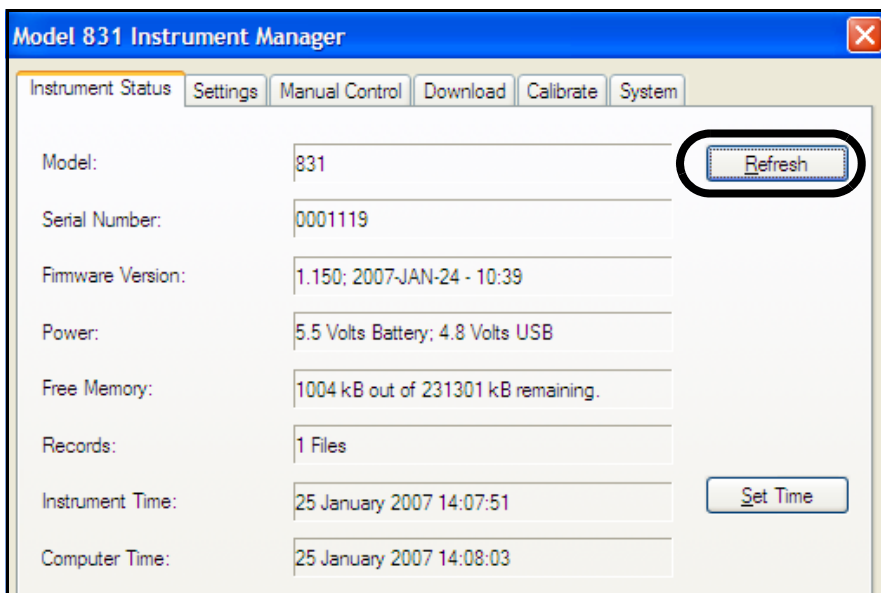


FIGURE 3-8 Refresh Instrument Status

Settings Page

When first displayed, the Settings Page displays the settings of the instrument which is connected to the computer at the time the connection is made. It may subsequently be used to create and download new setups to the instrument.

Left click the **Settings** tab at the top of the Instrument Manager to display the Setting Page, shown in FIGURE 3-9.

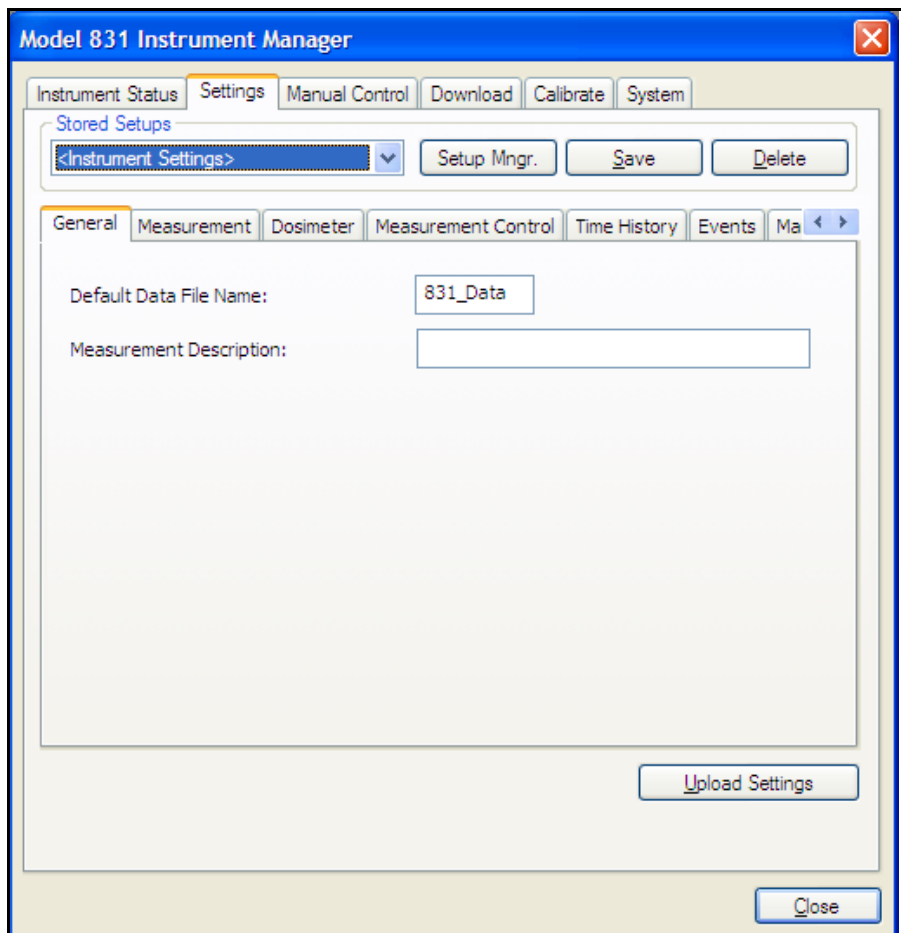


FIGURE 3-9 Instrument Manager; Setting Page

Displaying the Instrument's Setup

During connection the setup parameters of the instrument are downloaded to the computer. These will be displayed on the Setting Page when it is first opened, along with the name “Instrument Settings” in the **Stored Setups** field at the upper left of the page to indicate that these values do represent the present setup of the instrument.

Displaying the Settings

Instrument settings are distributed over eight menus, labeled as follows:

- General
- Measurement
- Dosimeter
- Measurement Control
- Time History
- Events (Labeled Trigger for LxT)
- Markers
- Miscellaneous (Model 831 Only)

These menus, which are displayed by left clicking on the tab bearing the desired label, present setup parameters as shown in the following figures:

General Menu

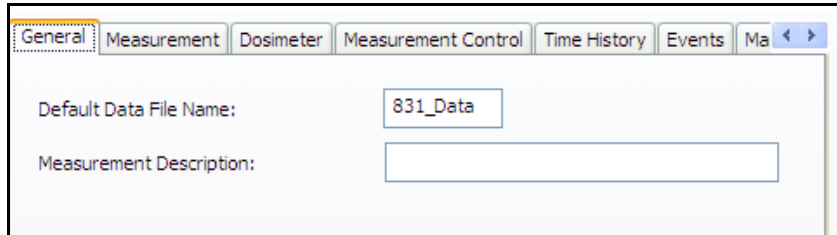
The screenshot shows a software interface for instrument settings. At the top, there is a row of tabs: 'General', 'Measurement', 'Dosimeter', 'Measurement Control', 'Time History', 'Events', and 'Ma'. The 'General' tab is selected and highlighted with a dashed border. Below the tabs, the 'Default Data File Name:' is set to '831_Data' in a text box. Below that, the 'Measurement Description:' is followed by an empty text box. The interface has a light gray background and a standard Windows-style window border.

FIGURE 3-10 Settings: General Menu

Measurement Menu

The screenshot shows the 'Measurement' tab of a software interface. It contains several sections for configuring measurement parameters:

- General Settings:**
 - Frequency Weighting: A Weight (dropdown)
 - Detector: Slow (dropdown)
 - Peak Weighting: Z Weight (dropdown)
 - Gain: ☒ None, ☐ 20 dB
- OBA Settings:**
 - OBA Range: ☒ Normal, ☐ Low
 - OBA Bandwidth: 1/1 and 1/3 (dropdown)
 - Freq. Weighting: Z Weight (dropdown)
 - OBA Max Spectrum: ☒ At Lmax, ☐ At Bin Max
 - ☒ Spectral Ln Mode
- Integration Method:**
 - ☒ Linear
 - ☐ Exponential
- Ln Percentages:**

1	5.00
2	10.00
3	33.30
4	50.00
5	66.60
6	90.00

An 'Upload Settings' button is located at the bottom right of the settings area.

FIGURE 3-11 Settings: Measurement Menu

Dosimeter Menu

The screenshot shows a software window titled "Dosimeter Menu" with several tabs: "General", "Measurement", "Dosimeter" (which is selected and highlighted in orange), "Measurement Control", "Time History", "Events", and "Ma". The "Dosimeter" tab contains the following settings:

- Select Dosimeter:** A dropdown menu showing "Dosimeter 1".
- Dosimeter Name:** A text field containing "OSHA-1".
- Exchange Rate:** A dropdown menu showing "5".
- Threshold Enable:** A checkbox that is checked, followed by a text field containing "90" and the unit "dB".
- Criterion Level:** A text field containing "90" and the unit "dB".
- Criterion Duration:** A text field containing "8" and the unit "Hr".

Below these settings is a button labeled "Load Std. Criteria". At the bottom right of the window are two buttons: "Upload Settings" and "Close".

FIGURE 3-12 Settings: Dosimeter Menu

Measurement Control Menu

The screenshot shows the 'Measurement Control' tab of a software interface. At the top, there are tabs for 'General', 'Measurement', 'Dosimeter', 'Measurement Control' (selected), 'Time History', 'Events', and 'Main'. Below the tabs, the 'Select Run Mode:' dropdown is set to 'Continuous'. A 'Properties' section contains several settings: 'Interval Time Sync.' is unchecked, 'Interval Time: hh:mm' is set to '00:01', 'Daily Auto-Store' is unchecked with a 'Time: 00:00:00' field, 'Enable Measurement History' is checked, and 'Daily Cal-Check' is unchecked with a 'Time: 00:00:00' field. An 'Upload Settings' button is located at the bottom right.

General Measurement Dosimeter **Measurement Control** Time History Events Ma

Select Run Mode: Continuous

Properties

☐ Interval Time Sync. Interval Time: hh:mm 00:01

☐ Daily Auto-Store Time: 00:00:00

☒ Enable Measurement History ☐ Daily Cal-Check Time: 00:00:00

Upload Settings

FIGURE 3-13 Setting: Measurement Control Menu

Time History Menu

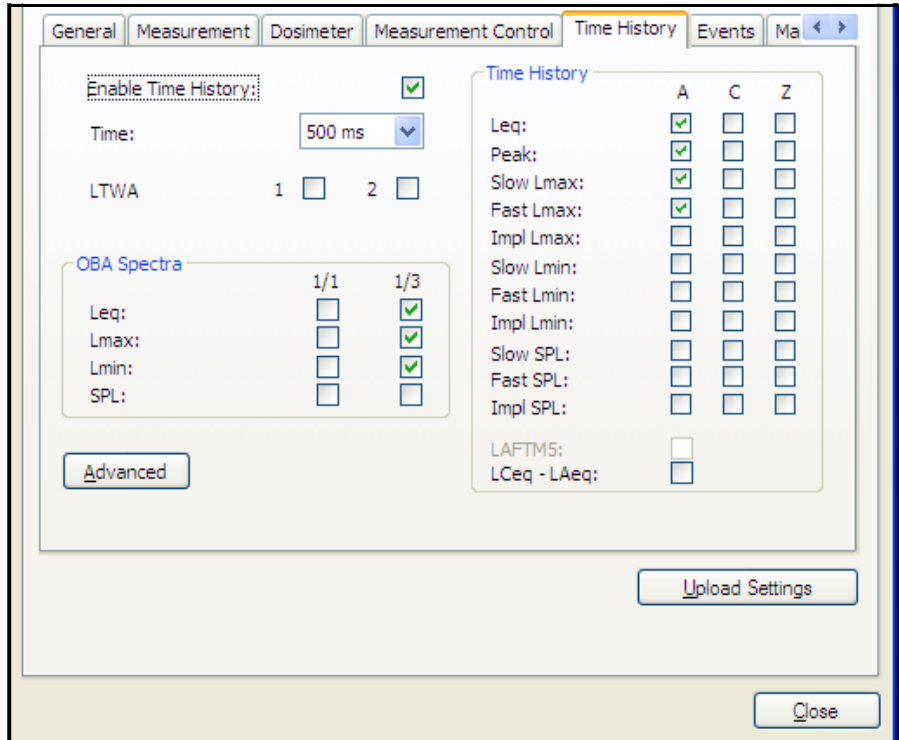


FIGURE 3-14 Settings: Time History Menu

Max/Min Parameters

This does not apply to the LxT, for which the time interval cannot be set to less than one second.

When connected to a Model 831, the Max and Min OBA spectra and sound level options will be greyed out when the time history interval is set to 50 ms or less.

LAFTM5

The parameter LAFTM5 will only appear on the listing of time history parameters which can be logged when “Takt Maximal Data” has been enabled in the Systems Properties, Preferences page of the instrument prior to connecting to the instrument.

Events Menu (Labeled Trigger for LxT)

Model 831 Instrument Manager

Instrument Status | **Settings** | Manual Control | Download | Calibrate | System

Stored Setups
<Instrument Settings> [v] [Setup Mngr.] [Save] [Delete]

General | Measurement | Dosimeter | Measurement Control | Time History | **Events** | Ma [v] [v]

Event Counter Levels

SPL 1:	75.0	dB
SPL 2:	115.0	dB
Peak 1:	135.0	dB
Peak 2:	137.0	dB
Peak 3:	140.0	dB

Event Sound Snapshots

☐ Save Snapshot:

Snapshot	4	s
Pre-Trigger	0	s

☒ **Event History:**

Minimum Duration: 0.0 s

Continuation Period: 0 s

Trigger Method: Level [v]

Dynamic Trigger Offset: 20.0 dB

Dynamic Response: 3 [v]

☒ **Event Time History:**

Event T.H. Period: 50 ms [v]

☐ **Event Spectral T.H.:**

Pre-trigger: 10

Maximum Samples: 1000

[Upload Settings]

FIGURE 3-15 Settings: Events Menu

Markers Menu

The screenshot shows the 'Markers' tab in the settings application. It features a table with 10 rows, each representing a marker. The columns are 'Marker', 'Text', and 'Record Sound'. The 'Text' column contains a list of vehicle types: Truck, Automobile, Motorcycle, Aircraft, Exclude, #6, #7, #8, #9, and #10. The 'Record Sound' column contains checkboxes, all of which are currently unchecked. To the right of the table, there are two settings: 'Pre-marker Time' set to 4 seconds and 'Record Time' set to 5 seconds. At the bottom right, there is an 'Upload Settings' button.

Marker	Text	Record Sound
1	Truck	☐
2	Automobile	☐
3	Motorcycle	☐
4	Aircraft	☐
5	Exclude	☐
6	#6	☐
7	#7	☐
8	#8	☐
9	#9	☐
10	#10	☐

Pre-marker Time: 4 sec
Record Time: 5 sec

Upload Settings

FIGURE 3-16 Settings: Markers Menu

Miscellaneous Menu (Model 831 Only)

The screenshot shows the 'Miscellaneous' tab in the settings application. It is divided into three main sections: 'Ldn and Lden', 'Sound Recording', and 'Measurement'. The 'Ldn and Lden' section includes 'Start Time (hh:mm)' with three time slots: Day (07:00), Evening (19:00), and Night (23:00). Below these are 'Evening Penalty' (5.0 dB) and 'Night Penalty' (10.0 dB). The 'Sound Recording' section has 'Sound Record Range' (Low selected, Hi unselected) and 'Recording Sample Rate' (48 kHz). The 'Measurement' section includes 'Save Distribution Table' (unchecked) and a 'Sound Snapshot' section. The 'Sound Snapshot' section has a description, an 'Enable' checkbox (checked), and a 'Time' set to 4 seconds. At the bottom right, there is an 'Upload Settings' button.

Ldn and Lden

Start Time (hh:mm)

Day: 07:00
Evening: 19:00
Night: 23:00

Evening Penalty: 5.0 dB
Night Penalty: 10.0 dB

Sound Recording

Sound Record Range: Low ☒ Hi ☐
Recording Sample Rate: 48 kHz

Measurement

Save Distribution Table: ☐

Sound Snapshot

Sound Snapshot begins at start of measurement or of each interval depending on measurement mode.

Enable: ☒
Time: 4 Secs

Upload Settings

FIGURE 3-17 Settings: Miscellaneous Menu

Creating a New Setup

Note that setups which have been created and stored previously can be recalled, and modified if necessary, instead of creating new ones. For more details on recalling a setup, see “Recalling a Setup” on page 3-28.

Working with the General, Measurement, Dosimeter, Measurement Control, Time History, Events, Markers and Miscellaneous Menus shown above, the user can create and store a new instrument setup. See the instrument’s user manual for detailed descriptions of the parameters which are set when creating a setup.

Name and Measurement Description

The name and measurement description of the setup appear in the General Menu, shown in FIGURE 3-10 "Settings: General Menu". Each is entered by left clicking on the appropriate parameter field and typing alphanumeric data using the keyboard.

Measurement Control

For a detailed description of the measurement control options, with and without time history, refer to the instrument’s user manual.

The following options are available for measurement control:

- Manual Stop
- Stop When Stable
- Timed Stop
- Continuous
- Block Timer
- Daily Timer

To make a selection, left click the down arrow to the right of the Measurement Control data field to open the menu shown in FIGURE 3-18.

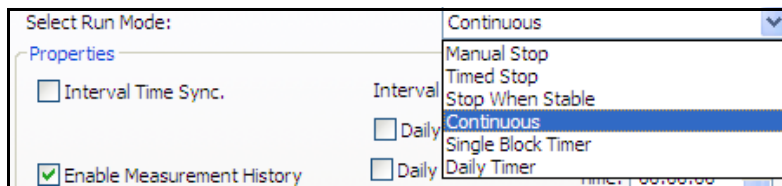


FIGURE 3-18 Measurement Control Selection

Measurement History (Model 831 Only)

Any of the measurement control options shown in FIGURE 3-18 can be used with or without measurement history. To select measurement history, left click the check box to the left of the Measurement History test, which will place a check mark in the box.

Run Mode Selection

Manual Stop

When Manual Stop is selected, the menu will remain as shown in FIGURE 3-13.

In this mode, the measurement will continue until the measurement is manually stopped by the user.

Timed Stop

In this mode, the measurement is stopped after a user-defined time period. When this mode is selected, the Measurement Control Menu will change to add two fields as shown in FIGURE 3-19.

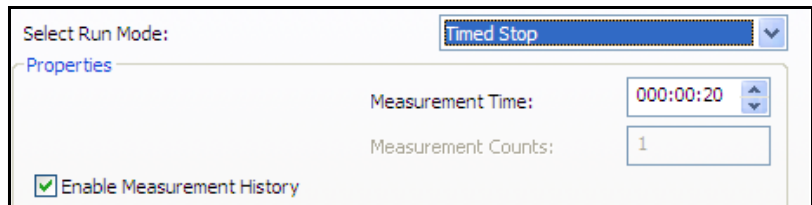
The screenshot shows a software interface for selecting a run mode. At the top, there is a label 'Select Run Mode:' followed by a dropdown menu currently displaying 'Timed Stop'. Below this, there is a section titled 'Properties'. Inside the 'Properties' section, there are two fields: 'Measurement Time:' with a value of '000:00:20' and 'Measurement Counts:' with a value of '1'. At the bottom left of the 'Properties' section, there is a checked checkbox labeled 'Enable Measurement History'.

FIGURE 3-19 Timed Stop Parameters

Use the Measurement Time field to set the desired measurement time, and the Measurement Counts field to select the number of measurements which will be performed. If Measurement History has been selected, there will be Measurement Counts records; otherwise, there will be one record of time length = meastime*counts.

Stop When Stable

In this mode, the measurement will be automatically stopped when the measured level remains within a user-defined amplitude range for a user-defined time period. When this

mode is selected, the Measurement Control Menu will appear as shown in FIGURE 3-20.

The screenshot shows a software interface for the 'Stop When Stable' measurement mode. At the top, a dropdown menu is set to 'Stop When Stable'. Below it, a 'Properties' section contains two input fields: 'Delta' set to '0.20 dB' and 'Time' set to '000:00:20'. At the bottom, there is a checkbox labeled 'Enable Measurement History' which is checked.

FIGURE 3-20 Stop When Stable Parameters

Use the Time field to set the minimum time required for the automatic stop, and the Delta field to set the amplitude range in which the level must dwell before an automatic stop.

Continuous

In this mode, the measurement will continue until manually stopped. If Measurement History has been checked, a series of measurements will be automatically made and stored. The parameters which govern this automatic storage process appear in the Measurement Control Menu as shown in FIGURE 3-21.

The screenshot shows a software interface for the 'Continuous' measurement mode. At the top, a dropdown menu is set to 'Continuous'. Below it, a 'Properties' section contains several options: 'Interval Time Sync.' (unchecked), 'Interval Time: hh:mm' set to '00:01', 'Daily Auto-Store' (unchecked) with a 'Time' field set to '00:00:00', 'Enable Measurement History' (checked), and 'Daily Cal-Check' (unchecked) with a 'Time' field set to '00:00:00'.

FIGURE 3-21 Continuous Mode Parameters

For long-term unattended noise monitoring, the instrument is often used with a Model PRM2102 Outdoor Microphone System which has a built-in electrostatic actuator. When an 800 Vac voltage is applied to the electrostatic actuator, it will vibrate the microphone diaphragm which will generate an acoustical output as if it had been excited by a sound field. Under remote control via the USB peripheral port, the instrument can switch this voltage On or Off, permitting a remote calibration check of the measurement system. The **Auto Cal-Check** feature permits an automatic calibration check to be performed daily at a user-specified time and a report to be stored. Use the data field to the right to set the time at which the Auto Cal-Check will be performed.

When **Daily Auto-Store** is checked, daily measurement reports for 24-hour time periods, beginning at a user-specified time, will be automatically stored (assuming that the measurement time period encompasses at least one 24-hour time period as programmed). Use the data field to the right to set the time defining the beginning of each 24-hour time period.

To measure and store measurement history data, left click the **Measurement History** check box.

The **Interval Clock Sync.** feature ensures that all measurement records, except the first, will begin at a time equal to a multiple of the measurement time selected. For example, if the measurement time is five minutes, and the measurement is begin at 08:14:23 (h:m:s format), the first measurement will be cut short such that the subsequent measurements will begin at 08:15:00, 08:20:00, 08:25:00, etc. To implement this feature, left click the Interval Clock Sync. check box.

Single Block Timer

In this mode, the user can select a single time block during which a measurement is to be made. The Start and End dates and times are set using the four data fields at the bottom of the menu.

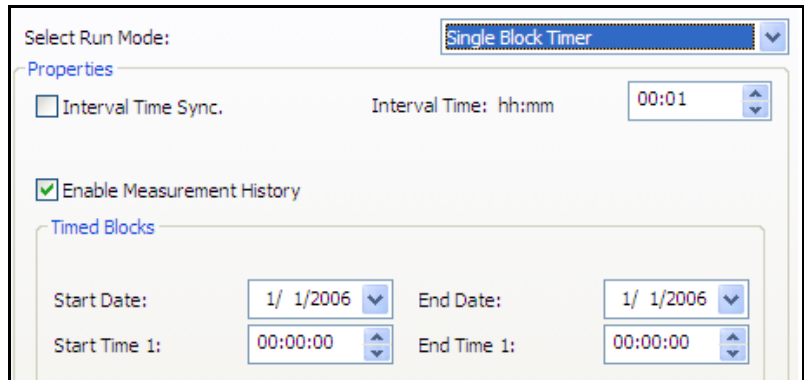
The image shows a software dialog box titled "Single Block Timer Parameters". At the top, there is a "Select Run Mode:" label followed by a dropdown menu currently set to "Single Block Timer". Below this is a "Properties" section containing two checkboxes: "Interval Time Sync." (unchecked) and "Enable Measurement History" (checked). To the right of the first checkbox is a label "Interval Time: hh:mm" and a numeric input field showing "00:01" with up and down arrow buttons. Below the "Properties" section is a "Timed Blocks" section. It contains four data fields arranged in two rows. The first row has "Start Date:" followed by a date picker showing "1/ 1/2006" and "End Date:" followed by a date picker showing "1/ 1/2006". The second row has "Start Time 1:" followed by a time picker showing "00:00:00" and "End Time 1:" followed by a time picker showing "00:00:00". All date and time pickers have up and down arrow buttons.

FIGURE 3-22 Single Block Timer Parameters

Daily Timer

In this mode, the user defines one, two or three time blocks per day when the measurement is to be performed.

Select Run Mode: **Daily Timer**

Properties

☐ Interval Time Sync. Interval Time: hh:mm **00:01**

☒ Enable Measurement History

Timed Blocks

☒ One Time Block ☐ Two Timed Blocks ☐ Three Timed Blocks

Start Date: **1/ 1/2006** End Date: **1/ 1/2006**

Start Time 1: **00:00:00** End Time 1: **00:00:00**

Start Time 2: **00:00:00** End Time 2: **00:00:00**

Start Time 3: **00:00:00** End Time 3: **00:00:00**

FIGURE 3-23 Daily Timer Parameters

Basic Sound Measurement Parameters

For a detailed description of the parameters defined in this menu and the following menus, refer to the instrument's user manual.

The parameters defining the measurement of sound pressure level and 1/1 and/or 1/3 octave spectra are set from the Measurement Menu, shown in FIGURE 3-11 "Settings: Measurement Menu" on page 3-10.

Octave Band Data

The instrument must have the appropriate optional firmware loaded in order to measure the data associated with the OBA files appearing in FIGURE 3-11 "Settings: Measurement Menu" on page 3-10. These are as follows:

- Model 831:** 831-OB3 (1/1 and 1/3 octave bands)
- LxT:** LxT-OB1 (1/1 octave bands only) or LxT-OB3 (1/1 and 1/3 octave bands)

Noise Dosimeter Parameters

In order to measure noise dose, the Model 831 must have the optional firmware 831-IH loaded. This functionality is standard with the LxT.

The parameters defining the measurement of noise dose are set from the Dosimeter Menu, shown in FIGURE 3-12 "Settings: Dosimeter Menu" on page 3-11.

Predefined Setups

One way to create a dosimeter setup is to select from a list of predefined setups. Left click **Load Std. Criteria** to open the list of predefined dosimeter setups as shown in FIGURE 3-24.

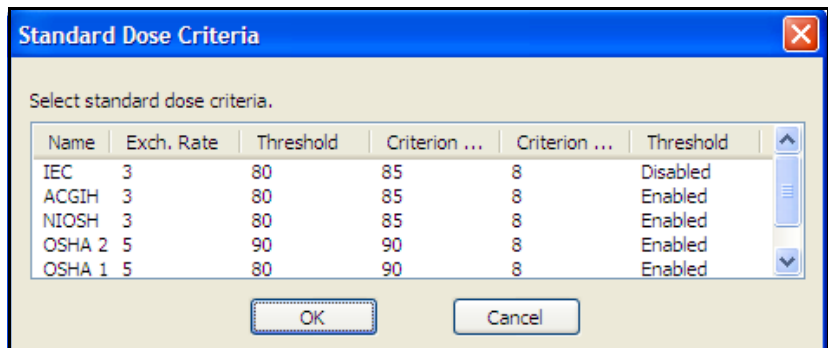


FIGURE 3-24 Pre-Defined Dosimeter Setups

Left click on the name of the desired setup in the first column and left click **OK**. The name and all the associated parameters values will be copied to the active dosimeter setup.

Manual Setups

Alternatively, the parameters can be entered one at a time. Dosimeter name is a user-defined text field. Exchange rate is selected from a list displayed by pressing the down arrow to the right of the parameter field. Criterion Level, Criterion Duration and Threshold are numerical values entered into the fields using the keyboard.

Noise Exceedance Parameters (Model 831 Only)

In order to measure noise exceedance events, the Model 831 must have the optional firmware 831-ELA loaded.

The parameters defining the measurement of noise exceedance events are set from the Exceedance Menu, shown in "Events Menu (Labeled Trigger for LxT)" on page 3-14.

Exceedance Time History

In order to measure Exceedance Time History data, the Model 831 must also have the optional firmware 831-LOG loaded.

Exceedance Spectral Time History

In order to measure Exceedance Spectral Time History data, the Model 831 must also have the optional firmware 831-OB3 loaded.

Time History Parameters

In order to measure time history, the instrument must have the optional firmware 831-LOG or LxT-LOG enabled.

The parameters defining the measurement of time history data are set from the Time History Menu, shown in FIGURE 3-14 "Settings: Time History Menu" on page 3-13.

1/1, 1/3 Octave Spectra

In order to be able to log 1/1 and/or 1.3 octave spectra, the optional firmware described below must be enabled.

- Model 831:** 831-OB3 (1/1 and 1/3 octave bands)
- LxT:** LxT-OB1 (1/1 octave bands only) or LxT-OB3 (1/1 and 1/3 octave bands)

And, in order to be able to measure them 1/1, 1/3 or both must be selected from the OBA Setting Page.

Max/Min Parameters

This does not apply to the LxT, for which the time interval cannot be set to less than one second.

When connected to a Model 831, the Max and Min OBA spectra and sound level parameter values will not be logged when the time history interval is set to 50 ms or less.

LAFTM5

Since the calculation of LAFTM5 utilizes an averaging time of five seconds, no values will be calculated if a time

interval less than five seconds is selected for the time history.

Marker Parameters

The parameters defining the marker data are set from the Markers Menu, shown in FIGURE 3-16 "Settings: Markers Menu" on page 3-15.

Audio Recording is only available on the Model 831.

To automatically initiate an audio recording whenever a specific marker is set by the user, left click to place an "x" in the Record Sound check box for that marker.

Data fields are provided for Recording Time and Prerecording time as shown in FIGURE 3-25.

Pre-marker Time:	4	sec
Record Time:	5	sec

FIGURE 3-25 Record/Pre-marker Times

Enter an integer value for Record Time.

The Recording Sample Rate is set as described in "Sample Rate" on page 3-25.

If you wish the audio recording to include signals which occurred prior to the setting of the marker, enter an integer value for Pre-marker Time. The maximum permitted value of Pre-marker Time is a function of the Recording Sample Rate, as indicated in Table 3-1

Recording Sample Rate, kHz	Maximum Pre-marker Time, seconds
51.2	5
48	9
24	18
16	27
8	54

Table 3-1 Maximum Pre-marker Time

Miscellaneous Parameters

This section is used to define various other parameters which do not fit into the pages defined above.

Daily Settings

The section entitled “Daily Settings” is used to set the parameters defining the Day, Evening and Night periods used in the calculation of Lden and also the penalties applied to noise levels measured during the evening and night periods.

Sound Recording (Model 831 Only)

The sound recording parameters are set using the fields shown in FIGURE 3-26.

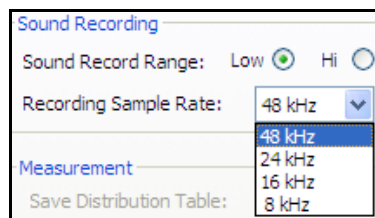


FIGURE 3-26 Sound Recording

Sound Recording Range

Select the **Low** or **High** range by clicking on the corresponding radio button.

Sample Rate

The sound recording sample rate, in kHz, can be set to any one of the following values:

48, 24, 16 or 8

To open a listing of available sample rates, left click the down arrow to the right of the Recording sample Rate field as shown in FIGURE 3-26. Use the cursor to highlight the desired sample rate and left click to make a selection.

Sound Snapshot (Model 831 Only)

To enable sound snapshots, left click the Sound Snapshot Enable box. This will open a field for the recording time, as shown in FIGURE 3-27.

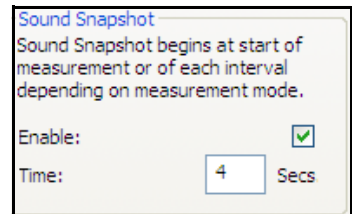


FIGURE 3-27 Sound Snapshot Time

Enter an integer value of recording time in seconds.

Uploading a Setup to the instrument

To upload the new setup to the 831, which will replace the previously stored setup, left click **Upload** as shown in FIGURE 3-28.

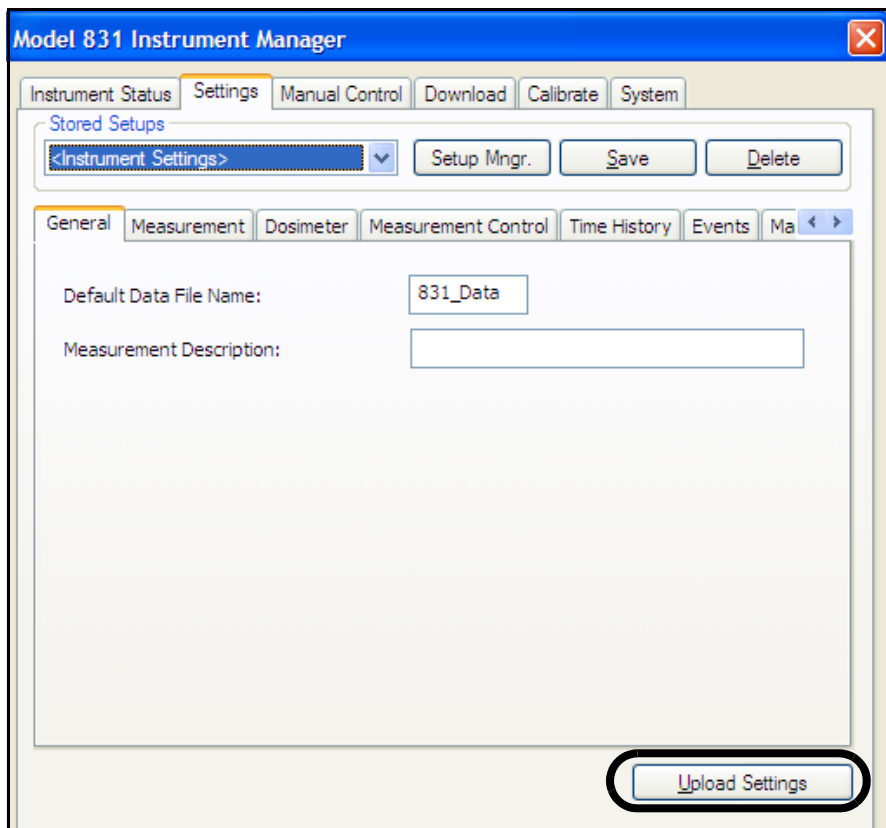


FIGURE 3-28 Uploading a Setup

Saving a Setup

Instrument setups may be saved as Stored Setups in a database of the PC. To save a newly created setup, press **Save** as shown in FIGURE 3-29.

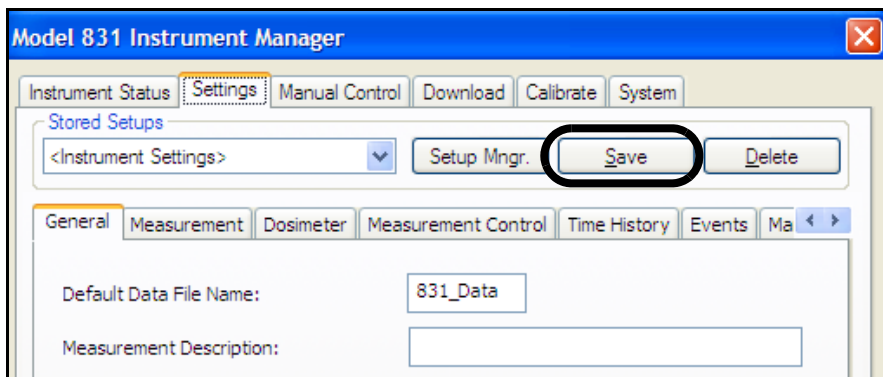


FIGURE 3-29 Save a Setup

This will bring up the Save Configuration Menu shown in FIGURE 3-30.

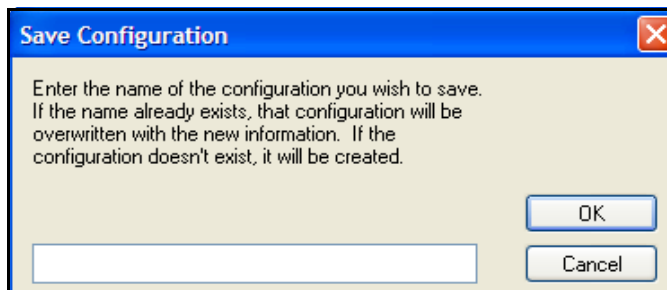


FIGURE 3-30 Save Configuration Menu

Enter a name for this setup file using the keyboard and left click **OK**.

Recalling a Setup

To recall a previously stored setup, left click the down arrow to the right of the “Stored Setups” field to open a list of stored setups, as shown in FIGURE 3-31, and left click the name of the desired setup to make a selection.

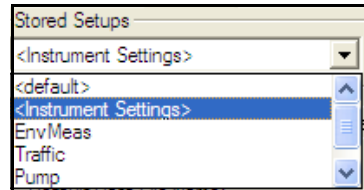


FIGURE 3-31 Stored Setups Menu

The General, Measurement Control, Measurement, Dosimeter, Exceedances, Time History, Markers and Miscellaneous Pages will now display the setup parameters corresponding to this recalled setup.

Deleting a Setup

To delete a stored setup, recall that setup as described in the preceding section "Recalling a Setup" on page 3-28 and then delete it by left clicking **Delete** as shown in FIGURE 3-32.

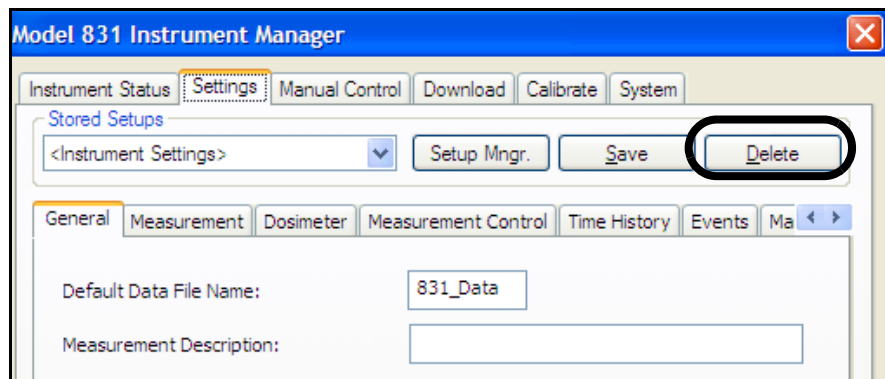


FIGURE 3-32 Delete a Setup

Setup Manager

The Setup Manager allows transferring user-defined measurement setups stored on the instrument to the PC and vice versa.

To open the Setup Manager, press Setup Manager as shown in FIGURE 3-33.

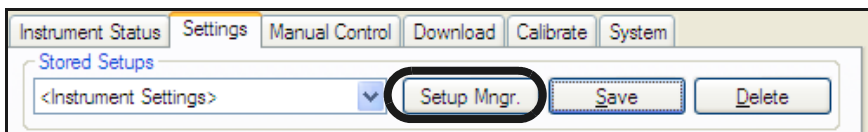


FIGURE 3-33 Setup Mngr Button

This will open the Setup Manager Menu, shown in FIGURE 3-34.

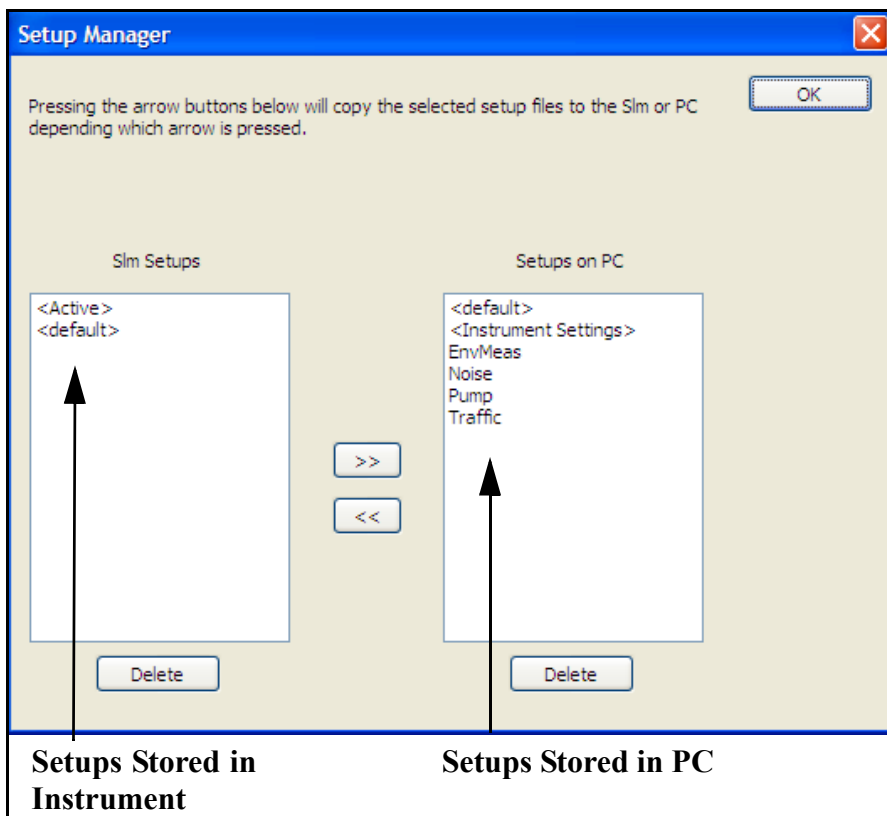


FIGURE 3-34 Setup Manager Menu

The **Setups on PC** window lists the setups already saved on the PC. Note that these are the same setups which appear when the Stored Setups window is opened, as shown in FIGURE 3-31 "Stored Setups Menu" on page 3-28.

Moving Setup Files

To move one or more setups from the PC to the instrument, select the desired setups in the **Setups on PC** window by left clicking each once, then press the left double arrow key between the two windows. Clicking a selected setup a second time will deselect it.

Note that <default>, <Instrument Settings> and <Active> cannot be moved from the instrument to the PC and vice versa.

The **Slm Setups** window lists the setups already saved in the instrument. To move one or more setups from the instrument to the PC, select the desired setups in the **Slm Setups** window by left clicking each once, then press the right double arrow key between the two windows.

Delete a Setup

To delete a setup from either the **Slm Setups** or the **Setups on PC window**, left click to select the files to be deleted and left click the corresponding **Delete** button below the window.

Manual Control Page

Note that the instrument can also be operated manually when not connected to the PC.

The Manual Control Page permits the user to remotely operate an instrument which is connected to the PC.

Left click the **Manual Control** tab to open the Manual Control Page, shown in FIGURE 3-35.

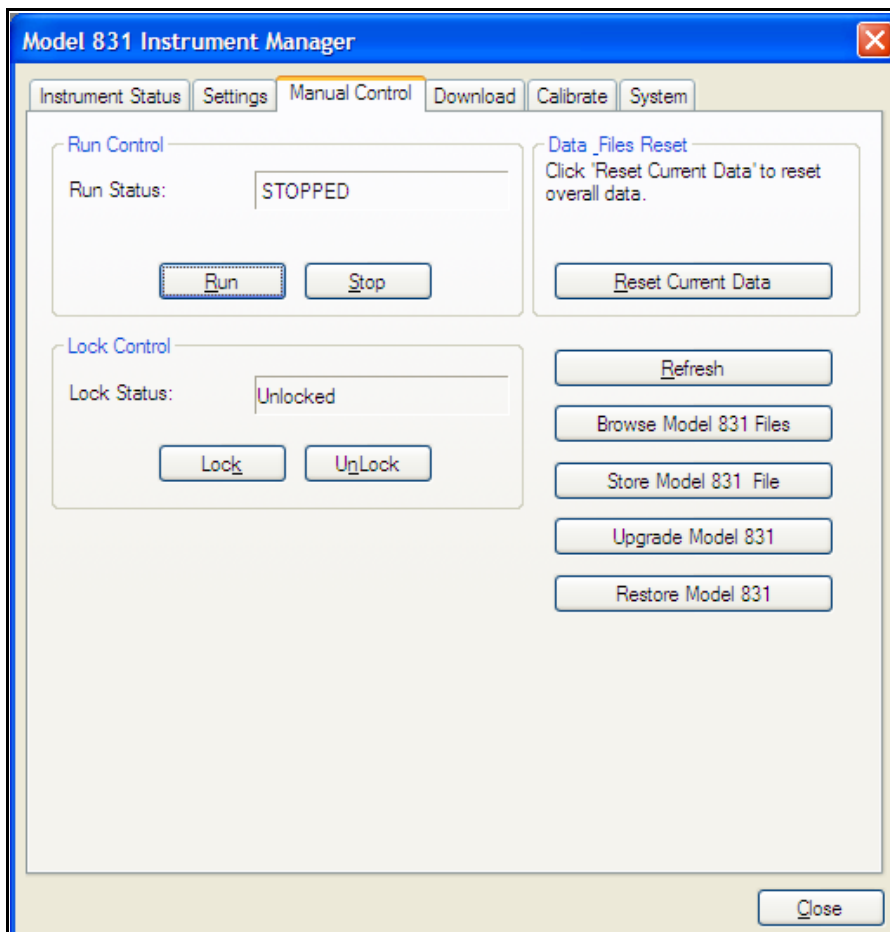


FIGURE 3-35 Manual Control Page

From the Manual Control page, the following operations can be performed:

- Run the instrument
- Stop the instrument

- Reset the data to clear the instrument memory
- Lock the instrument
- Unlock the instrument
- Browse instrument Files
- Upgrade the instrument
- Restore the instrument

Begin a Measurement

Left click **Run**, as shown in FIGURE 3-36, to put the instrument into the Run mode and begin a measurement .

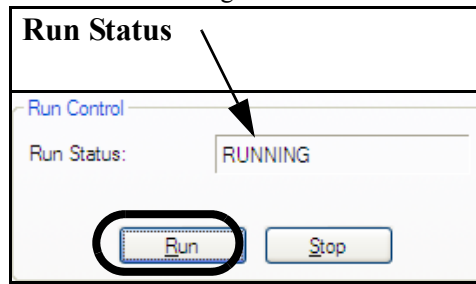


FIGURE 3-36 Run Key

When the instrument is running, the Run Status will be set to "RUNNING". Also, the Session Log will be updated to reflect the running status of the instrument and the date and time the run was initiated..

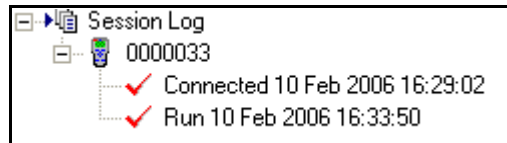


FIGURE 3-37 Session Log: Running

Stop a Measurement

Left click **Stop**, as shown in FIGURE 3-38, to put the instrument into the Stop mode and terminate a measurement.

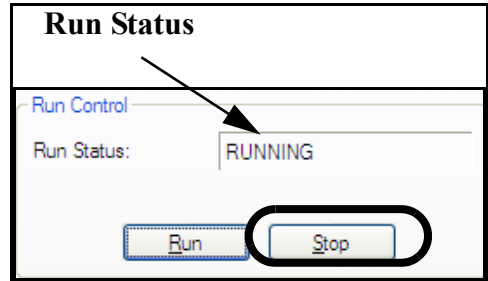


FIGURE 3-38 Stop Key

When the instrument is stopped, the Run Status will change to "STOPPED". Also, the Session Log will be updated to reflect the stopped status of the instrument, along with the data and time of the stop, as shown in FIGURE 3-39.

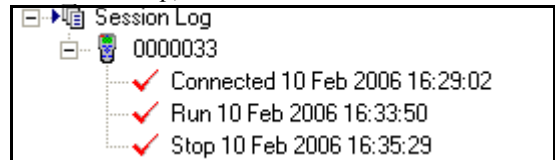


FIGURE 3-39 Session Log: Stopped

Reset Current Data

Warning: Exercise caution when using this action since deleted data cannot be recovered. Data you wish to keep should be stored to a file, which will also reset the current data, prior to using the Reset Current Data function.

To clear the current data memory of the connected instrument, left click **Reset Current Data** as shown in FIGURE 3-40.

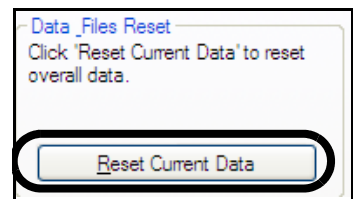


FIGURE 3-40 Reset Current Data

The data and time of a reset appears in the Session Log as shown in FIGURE 3-41.

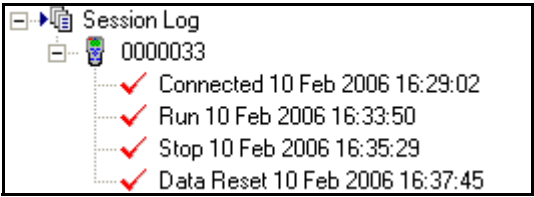


FIGURE 3-41 Session Log: Reset

Locking the Instrument Keypad

The 831 and LxT have a very useful keypad Lock feature. The Lock Control section of the Manual Control Menu is shown in FIGURE 3-42.

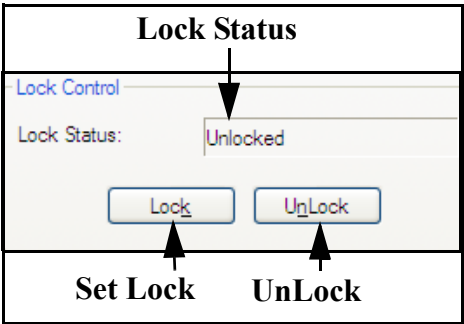


FIGURE 3-42 Lock Control

The lock status; locked or unlocked, is indicated in the Lock Status field. Keys for locking and unlocking the instrument keypad are located near the bottom of the Lock Control area.

To Lock the instrument, left click the Lock key shown in FIGURE 3-42 "Lock Control", which will open the Set Password Menu shown in FIGURE 3-43.

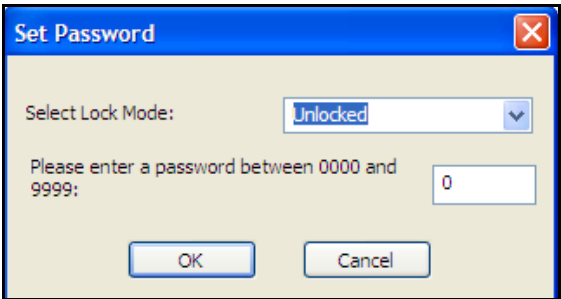


FIGURE 3-43 Set Password Menu

Left click the down arrow to the right of the “Select Lock Mode:” field to open the drop-down menu shown in FIGURE 3-44.



FIGURE 3-44 Lock Mode Options

Lock Preferences

See the instrument's user manual for a description of the locking feature.

There are four options available for the lock mode.

- Unlocked:** The keyboard is not locked; all functions are accessible to the instrument user
- Manual Stop:**
- Locked, Auto Stop:**
- Fully Locked:**

Left click on the desired option to make a selection.

Store an Instrument File

The keys will indicate Lxt or 831 depending on the instrument connected.

To store a measurement file in the instrument, left click **Store 831 File** as shown in FIGURE 3-45.

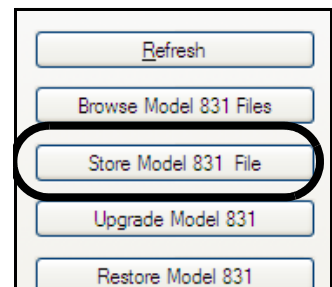


FIGURE 3-45 Store Instrument File

This will display the **Enter 831 Data Filename** window as shown in FIGURE 3-46.

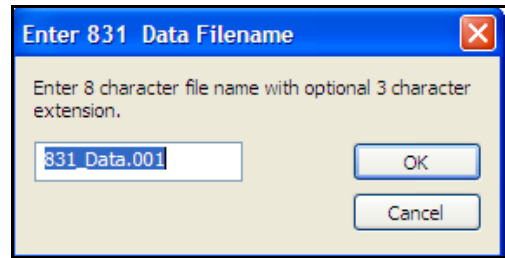


FIGURE 3-46 Enter Instrument Data Filename Window

A default file name will appear corresponding the the next available file name and number. This can be modified by typing into the data field before completing the storage process. Left click **OK** to complete the data storage.

Browse Instrument Files

To browse the files stored in the 831, left click **Browse 831 Files** as shown in FIGURE 3-47

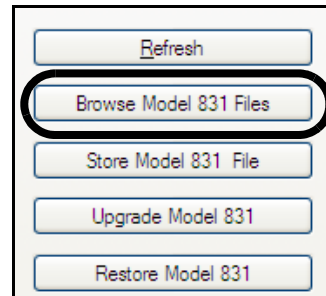


FIGURE 3-47 Browse 831 Files

This will open the 831 Files Browser window shown in FIGURE 3-48.

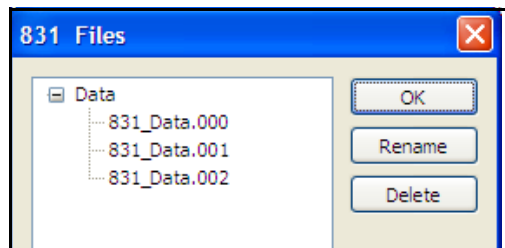


FIGURE 3-48 831 Files Browser

If there is a + in the box to the left of “Data”, the data files tree can be expanded by left clicking that box, which will change the + to a - to indicate that the tree is already expanded.

Rename Instrument Files

Any instrument file listed can be renamed by highlighting it with the cursor and left clicking **Rename**, which will create a frame around the file name as shown in FIGURE 3-49.

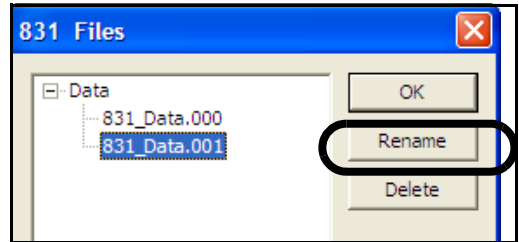


FIGURE 3-49 Rename 831 File

Modify the file name as desired and left click outside the frame to accept the new name.

Delete Instrument Files

Any instrument file listed can be deleted by highlighting it with the cursor and left clicking **Delete** as shown in FIGURE 3-50

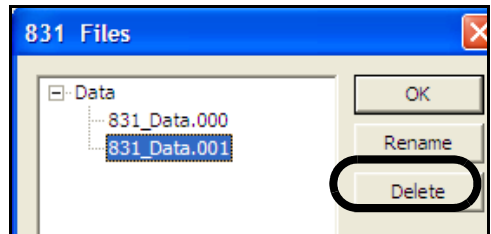


FIGURE 3-50 Delete 831 Files

Upgrade the Instrument

The keys will indicate Lxt or 831 depending on the instrument connected.

To upgrade the firmware in the instrument, first place the firmware file on your computer using a path you will remember. Then left click **Upgrade 831** as shown in FIGURE 3-51.

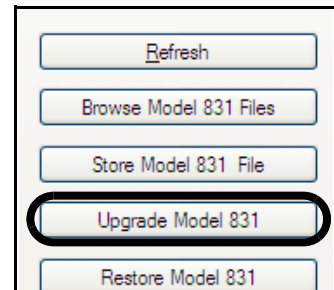


FIGURE 3-51 Upgrade 831

This will display the warning message shown in FIGURE 3-52.

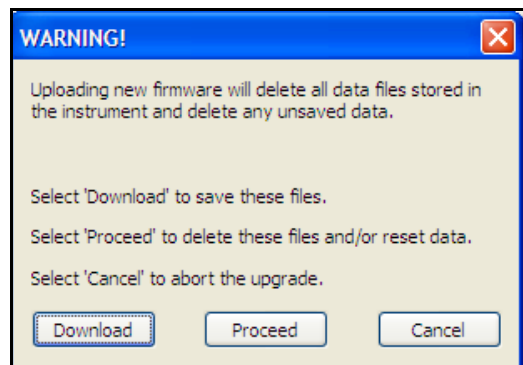


FIGURE 3-52 Upload 831 Warning Message

Press **Cancel** if you wish to abort the upload operation.

Press **Download** if you wish to download the data files and store them to your computer before performing the upload operation.

Press **Proceed** to continue the upload operation.

This will open a window containing the 831 Firmware Loader as shown in FIGURE 3-53.



FIGURE 3-53 831 Firmware Loader

Left click **Next** to display the Select File window shown in FIGURE 3-54.

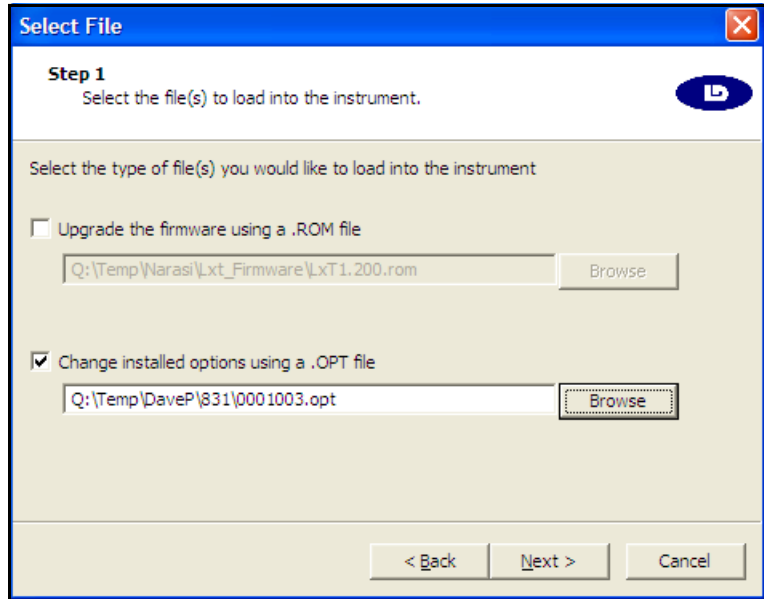


FIGURE 3-54 Select File Window

If you have received a .ROM firmware upgrade file, left click to select the “Upgrade the firmware using a .ROM file” check box. Enter the path name of the file you received, or click **Browse** to locate and select the appropriate file.

If you have received a .OPT file to modify the options in your instrument, left click to select the “Change installed options using a .OPT file” check box. Enter the path name of the file you received, or click **Browse** to locate and select the appropriate file.

When the appropriate boxes have been checked, left click **Next** to complete the upgrade process.

Restore Instrument

Note: Restoring the instrument will delete all measurement files and restore all settings to factory defaults.

This action will restore the instrument to the exact status it had upon delivery from the factory. To do this, left click **Restore 831** as shown in FIGURE 3-55

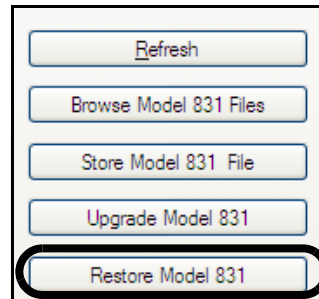


FIGURE 3-55 Restore 831

This will produce the warning message shown in FIGURE 3-56.

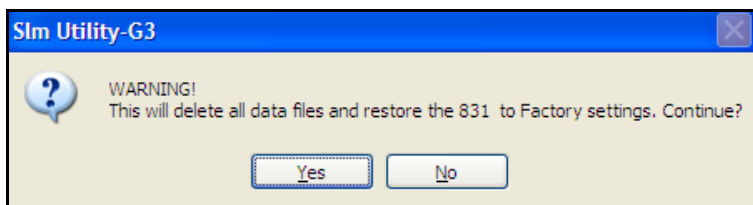


FIGURE 3-56 Restore 831 Warning Message

To proceed with the restoration, left click **Yes**.

To abort the restoration, left click **No**.

Download Page

To download measured data from the internal memory of the connected instrument to the PC, left click the **Download** tab to open the Download Page shown in FIGURE 3-57.

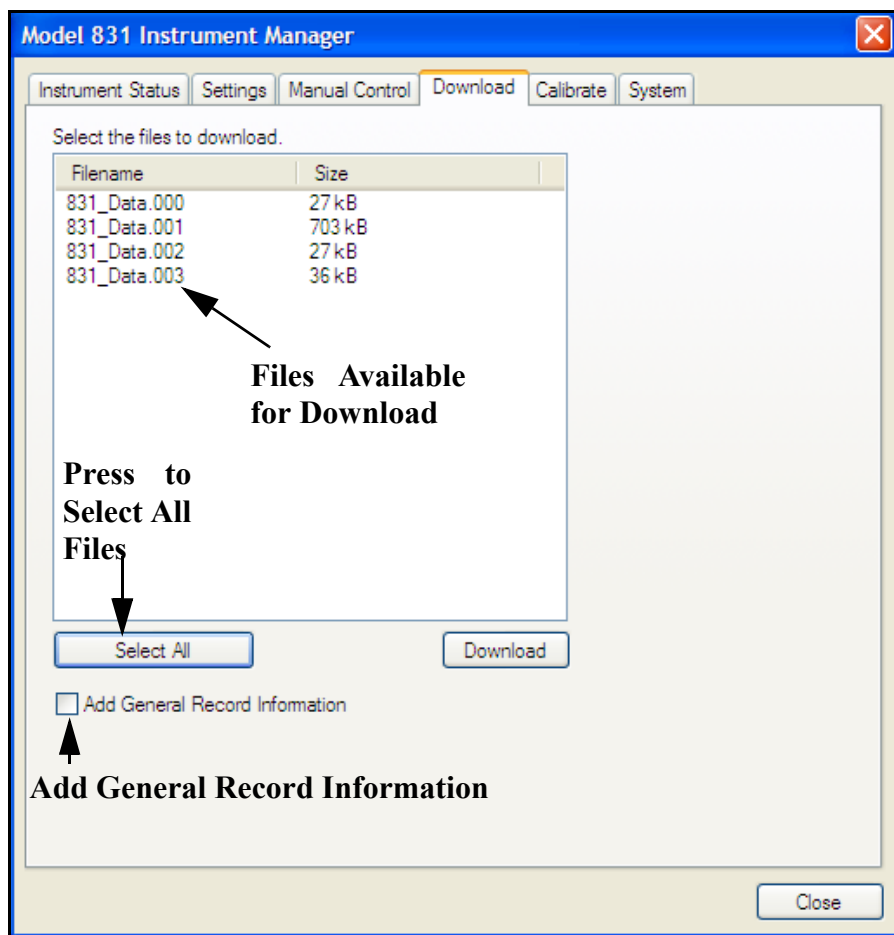


FIGURE 3-57 Download Page

Data can only be downloaded from the internal memory of the instrument. When using the Model 831, data can also be stored to a USB memory device. A description of how to bring data into the SLM Utility-G3 program from a USB memory device can be found in the section "Importing Data From USB Memory" on page 3-69.

Select File to Download

The files available for download from the instrument will be listed in the field on the lower left of the screen. There are two options for downloading files; all files or selected files.

Download All Files

Pressing the “Select All” button will highlight all the files. Pressing the “Download” button will then retrieve all the files from the instrument.

After the “Select All” button has been pressed, its name and function change to “Deselect All” which when pressed will unhighlight all the files.

Selected Files

Select the files you wish to download. More than two files can be selected.

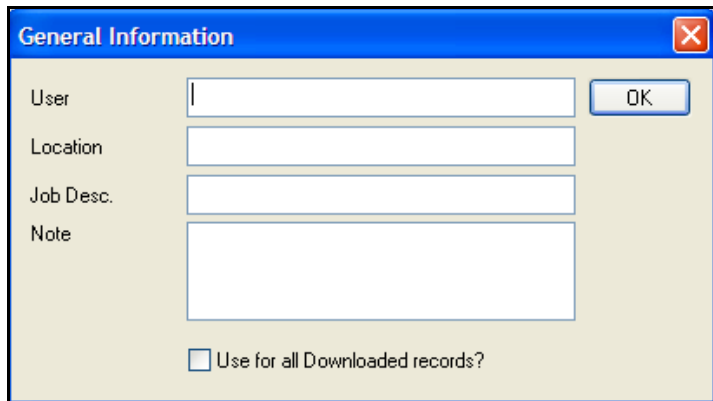
If the files to be downloaded are listed sequentially, you can select them as a block. Begin with a left click on the first file, then hold down the Shift key while using another left click to select the last file in the sequence. This will highlight all the files in the sequence.

If the files to be downloaded are not listed in a single sequence, use a left mouse click to select the first file, then hold down the Control key while left clicking on each additional file you wish to download.

Add General Record Information

Note that the general information stored during download can be modified later or, if it had not been added during download, it can be added later as well. See "Inputting or Modifying General Information" on page 4-11 for further details.

By checking the “Add General Record Info” box, shown in FIGURE 3-57 "Download Page” on page 3-42 prior to downloading, you will be able to add general information to each of the downloaded records during the download process. As the download process proceeds, the dialog box shown in FIGURE 3-58 will appear for each record, permitting information to be input using the computer keypad.

A screenshot of a Windows-style dialog box titled "General Information" with a blue header bar and a red close button in the top right corner. The dialog box has a light beige background. It contains four text input fields stacked vertically, each with a label to its left: "User", "Location", "Job Desc.", and "Note". To the right of the "User" field is an "OK" button. At the bottom of the dialog box, there is a checkbox followed by the text "Use for all Downloaded records?".

General Information	
User	
Location	
Job Desc.	
Note	
☐ Use for all Downloaded records?	

FIGURE 3-58 General Information Dialog Box

When the information for the record in question has been entered, press **OK** to continue the download process.

Same Information for All Records

If it is desired that the same general information provided for the first record be attached to all records, avoiding the necessity of entering information for each record, check the checkbox to the left of the text “Use for all Downloaded records?”

Download Files

When the files to be downloaded have been selected, left click Download as shown in FIGURE 3-59 to initiate the download process.

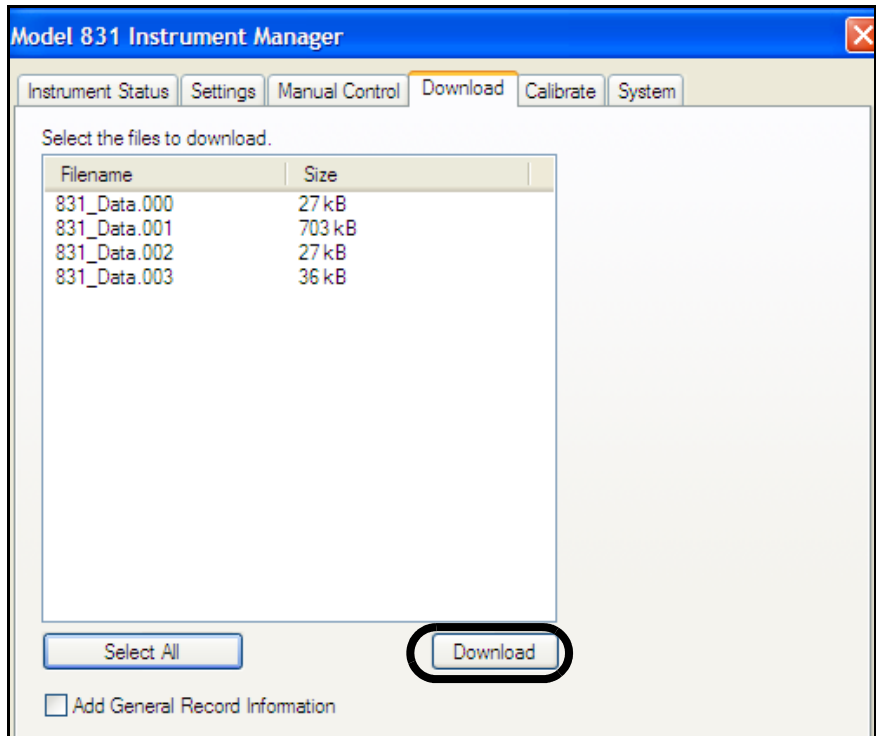


FIGURE 3-59 Download Key

The message “Data Transfer in Progress” will appear in a window along with a horizontal bar indicating the progress of the download for each data record.

Delete Downloaded Files From The Instrument

At the conclusion of the download, the dialog box shown in FIGURE 3-60 is displayed to indicate that the download process has been completed and to provide the user with the option of deleting the files in the instrument which have just been downloaded.

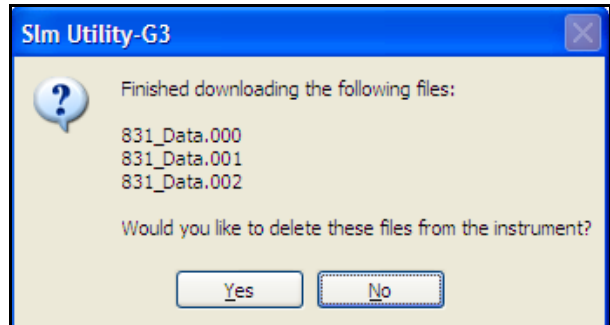


FIGURE 3-60 Delete Downloaded Files From Instrument Memory

Note that if all the files in the instrument had been selected for download, the message would look as shown in FIGURE 3-61.

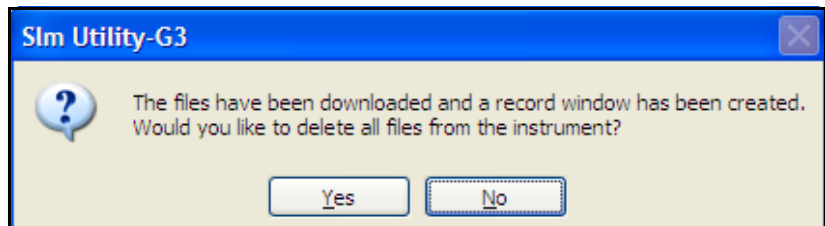


FIGURE 3-61 Reset 831 Data Memory

Left click **Yes** to perform the delete the files or **No** to leave the measured data in the instrument memory. Following this, the downloaded data will be displayed as shown in FIGURE 3-62.

01

02 TH EV M

1) 24 Jan 2007 14:45:28 to 24 Jan 2007 14:51:00

▼

General Information

Serial Number

01119

Model

831

File Name

831_Data.000

User

Job Description

Location

Latitude

0° 0.00'

Longitude

0° 0.00'

Altitude

0.0 m

Start Time (hh:mm)

Wednesday, 2007 January 24 14:45:28

Stop Time

Wednesday, 2007 January 24 14:51:00

Run Time

00:05:11.8

Pause

00:00:00.0

Pre Calibration

None

Post Calibration

None

Calibration Deviation

Note

FIGURE 3-62 Measurement Display

For further information on the display of downloaded data, see the chapter "Data Display" on page 4-1.

Session Log Indication

When the download is complete, a new item will appear on the session log indicating the data and time of the download as shown in FIGURE 3-63.



FIGURE 3-63 Session Log: Downloaded

Calibrate Page

Normally the instrument is calibrated using an acoustic calibrator which exposes the microphone to a known sound pressure level (dB) at a known frequency. The calibration procedure adjusts the sensitivity of the meter so that the meter reads the applied decibel level.

There is, however, an alternative mode in which a voltage is input directly to the input connector, without the preamplifier. In this case, the sensitivity is adjusted such that the meter reads a user-defined decibel level. This mode is useful when the meter is being used to measure a signal from a transducer other than a microphone, such as an accelerometer.

Frequency Weighting/Detector

When calibration is performed, the instrument is automatically set to use C-Weight for the frequency weighting and Fast for the RMS detector averaging time. The use of C-Weighting permits the use of calibrators providing signals in the range 200 Hz to 1,250 Hz. The most commonly used calibrators provide signals at 1 kHz.

The Fast detector is used to minimize the amount of time it takes for the value of the measured level to stabilize.

When the calibration is completed, the frequency weighting and detector are reset to those which were active prior to the calibration.

Left click the **Calibrate** tab to open the Calibrate Page shown in FIGURE 3-64.

Model 831 Instrument Manager

Instrument Status Settings Manual Control Download **Calibrate** System

Microphone/Preamp

Class: 1 Preamp: PRM831

Calibration Data

Calibrator: LD CAL200, 114.0dB 1kHz - 114.0

Calibrator Level: 114.0 dB

Sensitivity: -26.02 dB re 1V/Pa

Certification Reminders

Last Certified on: 10/17/2006

Certification Interval: 1 Years

Certification Reminder: 15 Days

Calibrate Edit Calibrators Save to 831 View Cal History Close

FIGURE 3-64 Calibrate Page

Microphone/Preamplifier

The upper section of the Calibration Page displays the accuracy Class according the IEC and ANSI standards and the model number of the preamplifier. Since these values are read from the instrument, the data appear greyed out and are not accessible for user modification.

Calibrate

The upper section of the Calibration Page, shown in FIGURE 3-65, is used to perform the calibration..

The screenshot shows the 'Calibration Data' section of a software interface. On the left, there are two labels with arrows pointing to the input fields: 'Calibrator' points to the 'Calibrator' dropdown menu, and 'Calibrator Level' points to the 'Calibrator Level' text box. The 'Calibrator' dropdown is set to 'LD CAL200, 114.0dB 1kHz - 114.0'. The 'Calibrator Level' text box contains '114.0' and is followed by 'dB'. The 'Sensitivity' text box contains '-26.02' and is followed by 'dB re 1V/Pa'. On the right side of the section, there are four buttons: 'Calibrate', 'Edit Calibrators', 'Save to 831', and 'View Cal History'.

FIGURE 3-65 Calibration Section of Calibration Page

As mentioned at the beginning of the chapter, the calibration can be performed using either an acoustic calibrator or a voltage signal; usually the acoustic calibrator method is used. The instrument can have stored in its internal memory the specifications of four different calibrators. These data can be input either from the front panel of the instrument or using SLM Utility-G3, as described below.

Edit Calibrators

To edit the calibrator specifications, left click **Edit Calibrators** as shown in FIGURE 3-66.

This screenshot is identical to the one in FIGURE 3-65, showing the 'Calibration Data' section. The 'Edit Calibrators' button on the right is highlighted with a thick black oval, indicating it is the button to be clicked to edit the calibrator specifications.

FIGURE 3-66 Edit Calibrators

This will display a window listing all four possible calibrators, along with their output level and frequency values shown in FIGURE 3-67.

Calibrators		
Enter Calibrator Model - Serial number and calibrator level		
Manufacturer - Model - Serial Number	Level	Frequency
LD CAL250 - SN 1233	114.0	250.0
LD CAL250 - SN 1231	114.0	250.0
LD CAL250 - SN 1230	114.0	250.0
LD CAL1000 - SN 4812	114.0	1000.0

FIGURE 3-67 Calibrator Specifications Table

Any of these specifications can be edited directly from this table. When the calibrator(s) specifications have been entered as desired, left click **OK** to make changes and close this window.

Select Calibrator

To select the calibrator which is to be used for the calibration, left click the down arrow to the right of the Calibrator field, which will open a drop down menu listing all four calibrators as shown in FIGURE 3-68.

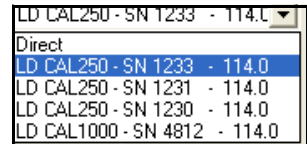


FIGURE 3-68 Calibrator Selection Menu

Highlight the desired calibrator with the cursor and left click to make a selection.

Perform Calibration

Left click **Calibrate**, as shown in FIGURE 3-69, to begin the calibration process.

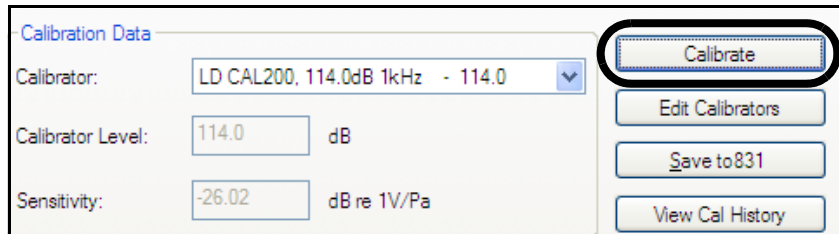


FIGURE 3-69 Initiate Calibration

A message, as shown in FIGURE 3-70, will be displayed to warn that data in the instrument will be lost when the calibration is performed.

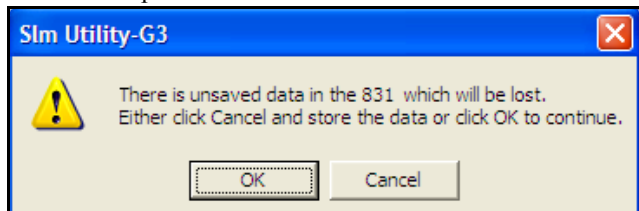


FIGURE 3-70 Unsaved Data Warning

Left click **OK** to continue with the calibration or left click **Cancel** to abort the calibration process.

When the calibration process is continued, the message shown in FIGURE 3-71 will appear to prompt the user to place the calibrator over the microphone and turn on the calibrator.

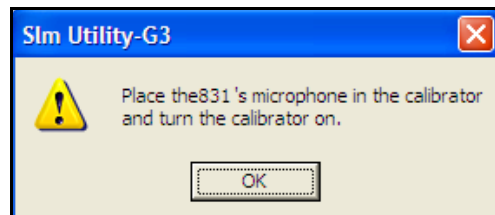
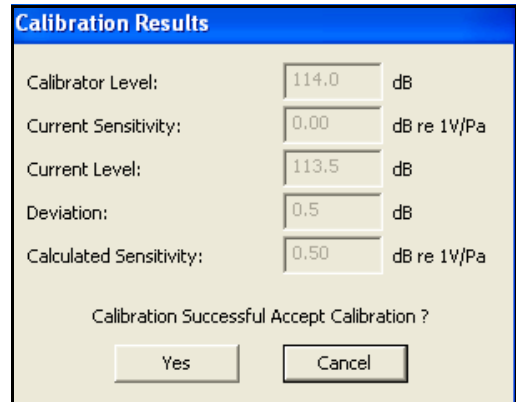


FIGURE 3-71 Turn On Calibrator Message

With the calibrator in place over the microphone and switched on, left click **OK** to continue

Satisfactory Calibration

The calibration will continue until the level measured by the instrument is within 0.5 dB of the calibration level, at which time the calibration will stop and the resulting data will be displayed as shown in FIGURE 3-72.



The screenshot shows a dialog box titled "Calibration Results" with a blue header. It contains five rows of data, each with a label, a text input field, and a unit. The data is as follows:

Label	Value	Unit
Calibrator Level:	114.0	dB
Current Sensitivity:	0.00	dB re 1V/Pa
Current Level:	113.5	dB
Deviation:	0.5	dB
Calculated Sensitivity:	0.50	dB re 1V/Pa

Below the data is a question: "Calibration Successful Accept Calibration ?". At the bottom are two buttons: "Yes" and "Cancel".

FIGURE 3-72 Calibration Results

Among the data presented are the Current Sensitivity, based on the previous calibration, and the Calculated Sensitivity, based on the results of the new calibration. If these results are satisfactory, left click **Yes** to accept the new calibration. This will update the Sensitivity value stored in the instrument. Otherwise, left click **Cancel** to keep the sensitivity of the instrument at the Current Sensitivity value.

Certification

It is standard practice to have a measuring instrument such as the instrument certified by the manufacturer at regular intervals. The interval is usually selected by the user according to the application for which it is used, although in some cases this might be based on a requirement established by a client for whom measurements are being performed. Many Larson Davis customers select to have certification performed annually.

To assist users in maintaining their certification schedule, certification reminders are provided on the Calibrate Page as shown in FIGURE 3-73.



Certification Reminders	
Last Certified on:	Certification Interval:
10/17/2006	1 Years
	Certification Reminder:
	15 Days

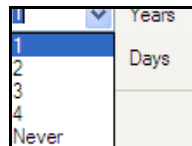
FIGURE 3-73 Certification Reminders

Last Certification Date

The date of the last certification is stored in the instrument as part of the certification process.

Certification Interval

The desired interval, in years, between certifications is set by the user by left clicking the down arrow to the right of the Cal. Interval data field, which will open the drop down menu shown in FIGURE 3-74.



1	Years
2	Days
3	
4	
Never	

FIGURE 3-74 Certification Interval Menu

The following choices are available:

- 1 Year
- 2 Years
- 3 Years
- 4 Years
- Never

Left click on the desired value to make a selection. This value is stored in the instrument.

Certification Reminder

The instrument can be set to provide an on-screen reminder when the date for a new certification is approaching. This message will appear at a user-selected number of days prior to the desired certification date. This number is set by left clicking the down arrow to the right of the Cert. Reminder data field, which will open the drop down menu shown in FIGURE 3-75.

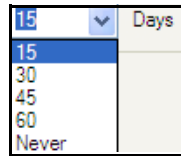


FIGURE 3-75 Certification Reminder Menu

The following choices are available:

- 15 Days**
- 30 Days**
- 45 Days**
- 60 Days**
- Never**

Left click on the desired value to make a selection. This value is stored in the instrument and used to determine when the the certification reminder should be displayed.

System Page

The System Page is used to set a number of parameters called Preferences, which are not associated with the measurements themselves. To display the System Page, left click the **System** tab. The System Page will open as shown in FIGURE 3-76.

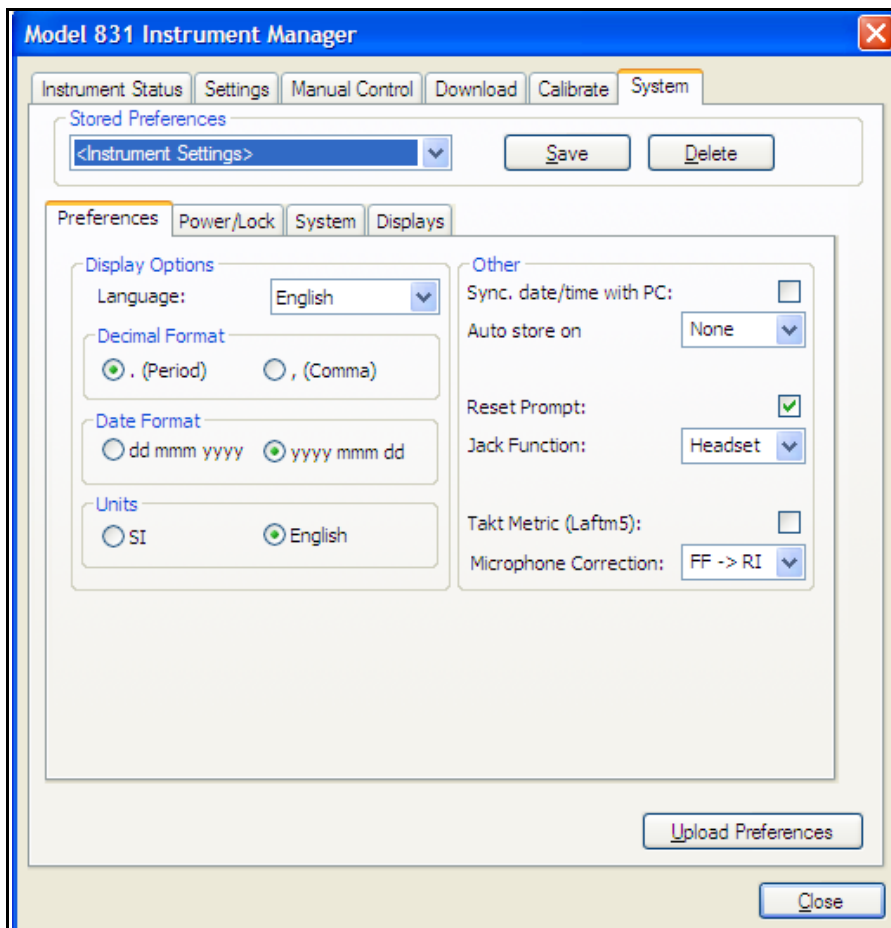


FIGURE 3-76 System Page

The parameters set from the Systems Page are distributed over four menu pages entitled as follows:

- **Preferences**
- **Power/Lock**

- System**

- Displays**

Each of these menus are described in the sections which follow.

Preferences Menu

Options

The Display Options portion of the Preferences Menu, shown FIGURE 3-76 "System Page", is used to set the Language and the Decimal and Date formats as described below.

Language

Left clicking the down arrow to the right of the Language field will open a drop-down menu listing the language options as shown in FIGURE 3-77.

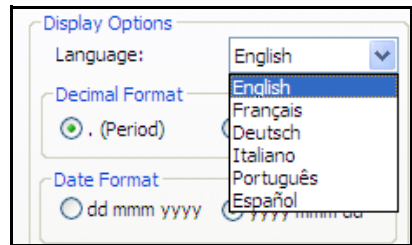


FIGURE 3-77 Language Selection Menu

Left click on the desired language to make the selection.

Decimal Format

A decimal can be represented by a period (.) or a comma (,). Left click on the radio button to the left of the desired format to make a selection.

Date Format

The date can be represented in one of two formats:

- dd mmm yy**

- yyyy mmm dd**

Left click on the radio button to the left of the desired format to make a selection.

Other Options

Synchronize date/time with PC

Left click to place a check mark in the check box associated with the text “Synch. data/time with PC” to synchronize the date/time of the instrument with the PC every time it is connected.

Automatically Store Data on Stop

This option is provided to minimize the possibility that measured data be lost by forgetting to store it prior to beginning a subsequent measurement. Left click the down arrow to the right of the data field entitled “Auto store on stop:” to open a drop-down menu listing the options as shown in FIGURE 3-78.

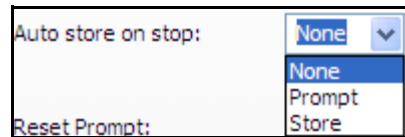


FIGURE 3-78 Auto Store on Stop Menu

The options are as follows:

- None:** No automatic storage of data
- Prompt:** Upon stopping a measurement, a prompt is displayed asking whether or not the data is to be stored. If the response is Yes, the user will be prompted for a file name to assign to the stored file..
- Store:** Upon stopping a measurement, the data is automatically stored. There will be no prompts for a files name; the default name will automatically be used along with an indexed numeric designator.

Reset Prompt

The user can choose whether or not a warning prompt is displayed on the instrument screen when the Reset button is pressed, prior to the reset being performed.

If this option is selected by placing a check mark in the checkbox, the message “Are You Sure?” will be displayed on the screen prompting the user to select Yes to continue with the reset or No to abort the reset operation.

If this option is not activated, the reset will be performed immediately without a prompt.

Jack Function

The AC/DC output, Voice Recorder connector on the right side of the base of the instrument can perform either of the following functions:

- Provide AC and DC analog output signals proportional to measured acoustic parameters
- Provide a connection to a microphone-equipped headset for the recording and playback of voice recordings.

Or it can be set to Off.

Left click the down arrow to the right of the data field entitled “Jack Function” to open a drop-down menu listing the options as shown in FIGURE 3-79.

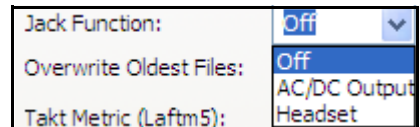


FIGURE 3-79 Jack Function Menu

Left click on the desired functionality to make a choice.

Takt Metric (Laftm5)

Place a check in the check box to set the Model 831 to measure and display the parameter LAFTM5, called for by some German standard.

Microphone Correction

When using a free-field microphone for measurements in a random incidence sound field, the user may wish to add a random incidence correction to the sound level measurement. Left click the down arrow to the right of the data field entitled “Microphone Correction:” to open a drop-down menu listing the options as shown in FIGURE 3-78 .

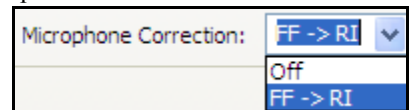


FIGURE 3-80 Microphone Correction Menu

Left click on **FF ->RI** to utilize the correction or **Off** to have no correction.

Power/Lock Menu

The Power/Lock Menu is used for setting the lock preference and also defining the power management options. Left click the tab entitled **Power/Lock** to display the Power/Lock Menu as shown in FIGURE 3-81.

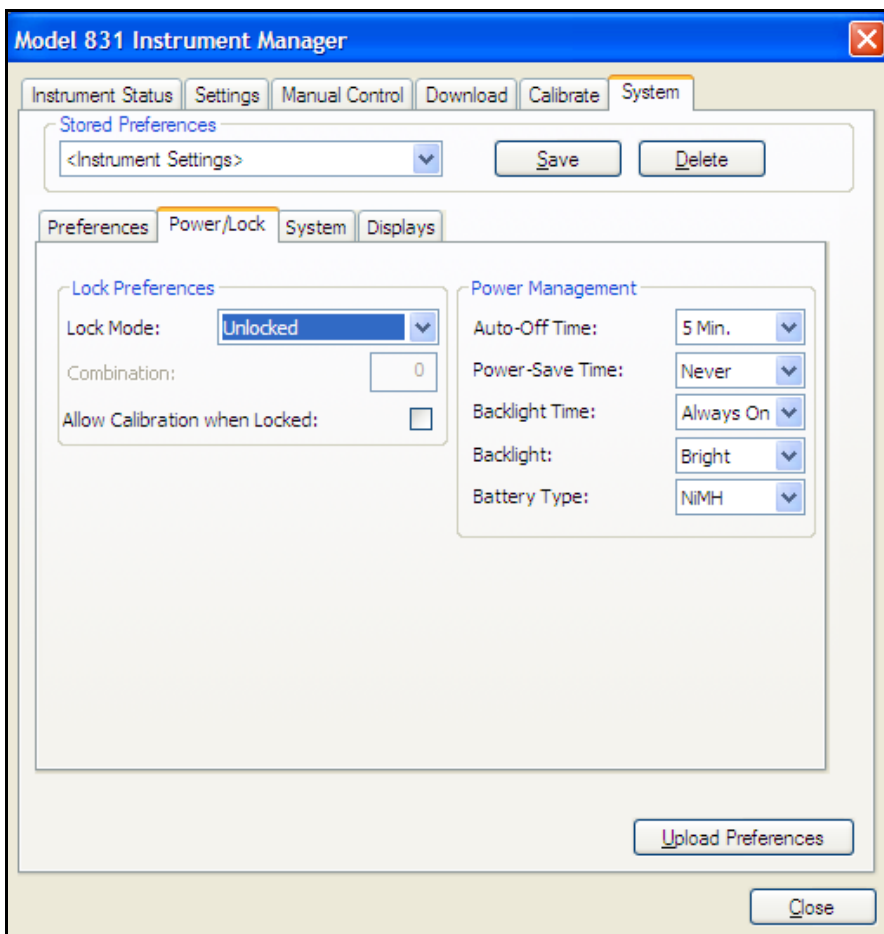


FIGURE 3-81 System Page: Power/Lock Menu

Lock Preferences

See the instrument's user manual for a detailed presentation of the locking features of the instrument.

There are four options available for the lock mode.

- Unlocked:**
- Locked with Auto Store:**
- Locked with Manual Store:**
- Fully Locked:**

Left click the down arrow to the right of the “Lock Mode:” ext field to open a menu listing the options as shown inFIGURE 3-82.

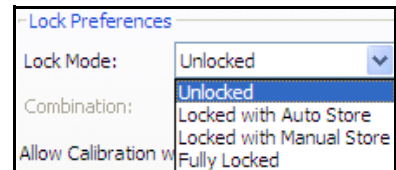


FIGURE 3-82 Lock Mode Menu

Left click on the desired option to make a selection.

Allow Calibration When Locked

The lock function may or may not permit the operator to manually calibrate the instrument, depending on how this function is set. Checking the check box to the left of the text “Allow calibration when locked:” will permit the user to perform a calibration.

Power Management

There are five parameters which the user can set to define the power management of the instrument as follows:

- Auto-Off Timer**
- Power-Save Timer:**
- Backlight Timer**
- Backlight Display Mode**
- Battery Type**

Each of these is set using a drop-down menu listing the options, which is opened by left clicking the down arrow to the right of the text field bearing the parameter name. Left

click the desired option to make the selection. The available options for each of these are shown in the figures below.

Auto-Off Time:	5 Min.	▼
Power-Save Time:	5 Min.	
	10 Min.	
Backlight Time:	30 Min.	
	60 Min.	
Backlight:	Never	

FIGURE 3-83 Auto-Off Timer

Power-Save Time:	Never	▼
Backlight Time:	5 Min.	
	10 Min.	
Backlight:	30 Min.	
	60 Min.	
Battery Type:	Never	

FIGURE 3-84 Power-Save Options

Backlight Time:	Always On	▼
Backlight:	5 sec	
	10 sec	
Battery Type:	30 sec	
	60 sec	
	Always On	

FIGURE 3-85 Backlight Timer Options

Backlight:	Bright	▼
Battery Type:	Off	
	Dim	
	Bright	

FIGURE 3-86 Backlight Options

Battery Type:	NiMH	▼
	Alkaline	
	NiMH	

FIGURE 3-87 Battery Type

System Menu

The System Menu of the System Page identifies the firmware options loaded into the instrument and provides a key to implement the upload of new firmware which may contain additional options or updated versions of the same firmware. It also permits the user to input up to three lines of instrument identification text. It is also used to select to store data to USB memory.

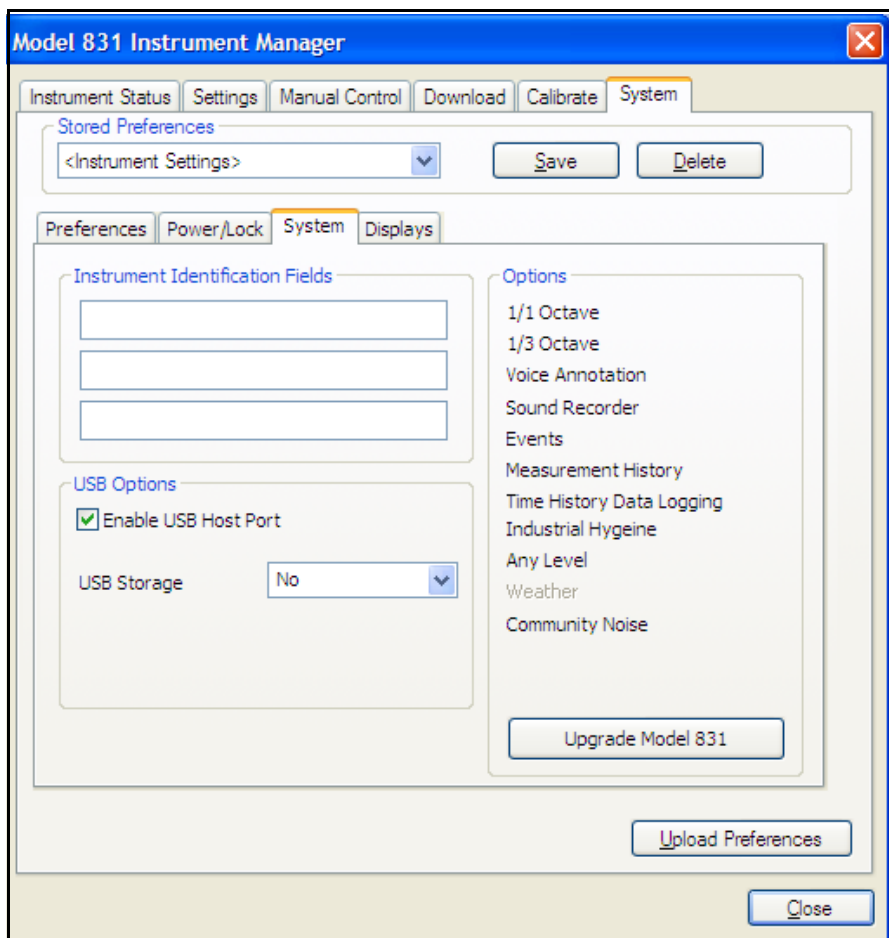


FIGURE 3-88 System Page; System Menu

Options

Enable USB Port

Place a check in the check box to enable the USB Port.

USB Storage

Data can be stored either to the internal memory of the instrument or to a memory device on the USB port. Left click the down arrow to the right of the “Lock Mode:” ext field to open a menu listing the options as shown in FIGURE 3-89.

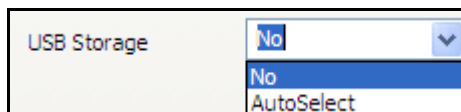


FIGURE 3-89 USB Storage Menu

Selecting **No** will cause all data to be stored to internal memory. Selecting **AutoSelect** will cause data to be stored to a USB memory device if present, or to internal memory if not present.

Left click on the desired option to make a selection.

Firmware Options

Firmware options presently loaded into the instrument are identified by text fields appearing in the portion of the menu labeled “Options”.

Firmware Upgrade

When upgraded firmware is available, or new options have been purchased, the user will be supplied with a file to be placed on the PC. When the instrument is connected to the computer, the firmware upgrade process is initiated by left clicking on the key labeled **Upload Firmware**.

Instrument Identification

Text for instrument identification purposes is entered directly into the three fields provided using the computer keyboard.

Displays Menu

The Displays Menu of the System Page functions the same as the Displays tab page of the System Properties Menu, accessed from the Control Panel of the Model 831.

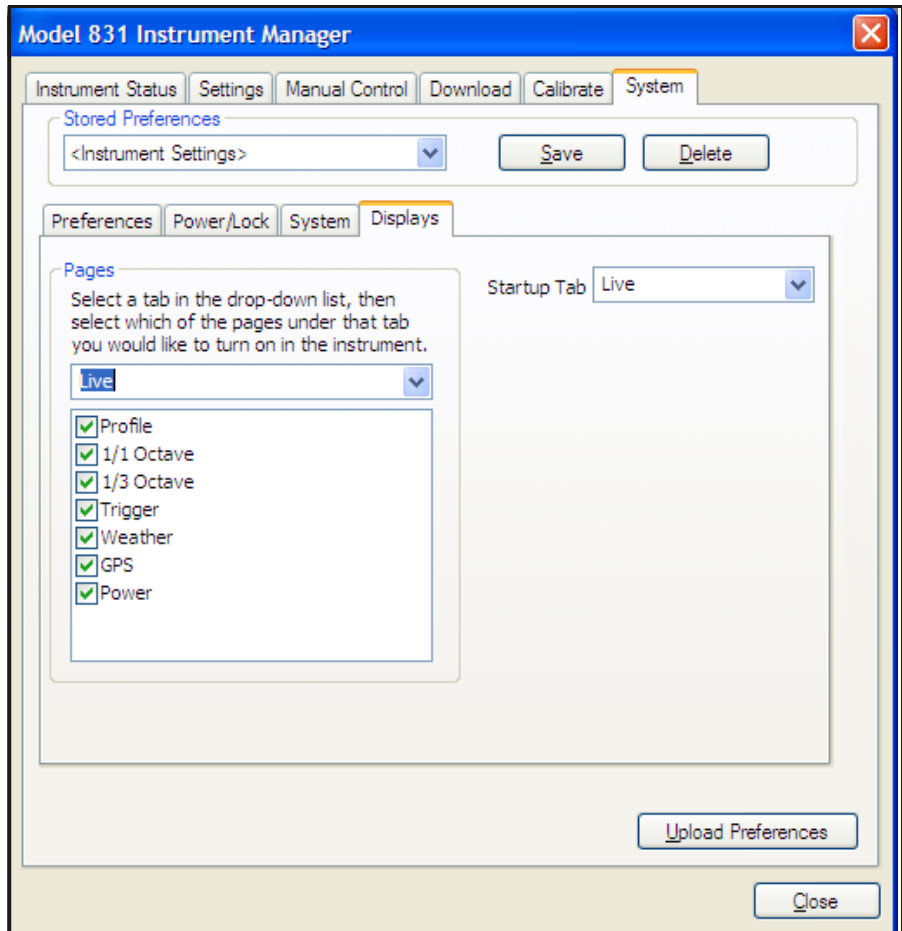


FIGURE 3-90 System Page; Displays Menu

Saving Preferences

To save a set of Preferences, press **Save** as shown in FIGURE 3-91.

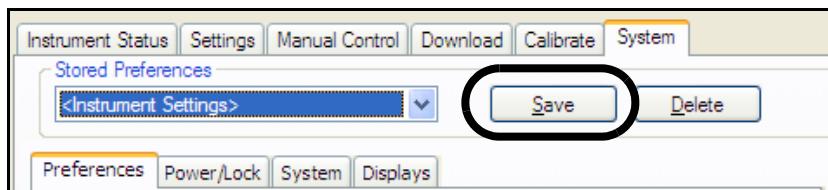


FIGURE 3-91 Save Preferences

This will bring up the Save Configuration Menu shown in FIGURE 3-30.

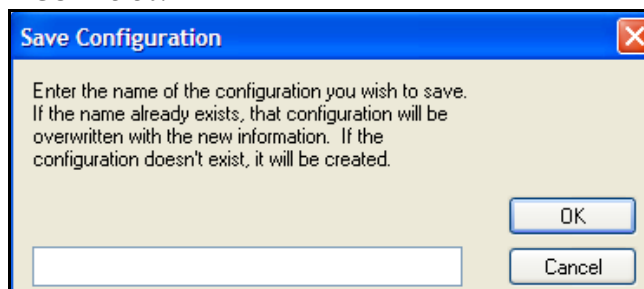


FIGURE 3-92 Save Configuration Menu

Enter a name for this set of Preferences using the keyboard and left click **OK**.

Recalling Preferences

To recall a previously stored set of Preferences, left click the down arrow to the right of the “Stored Preferences” field to open a list of stored Preferences, as shown in FIGURE 3-93, and left click the name of the desired setup to make a selection.

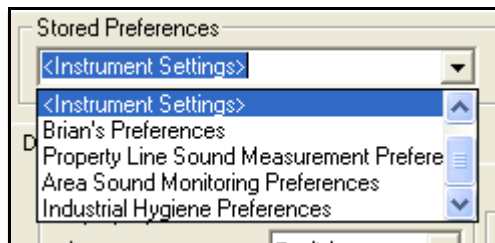


FIGURE 3-93 Recall a Set of Preferences Menu

The Preferences, Power/Lock, System and Display Menus will now display the parameters corresponding to this recalled set of Preferences.

Deleting Preferences

To delete a stored set of Preferences, recall it as described in the preceding section "Recalling Preferences" on page 3-66 and then delete it by left clicking **Delete** as shown in FIGURE 3-94.

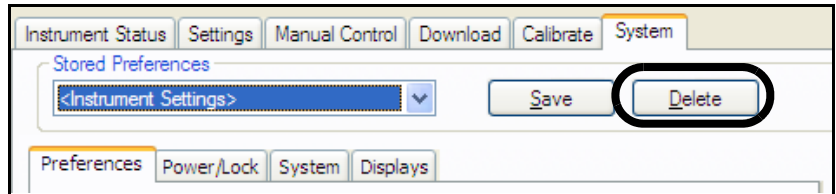


FIGURE 3-94 Delete a Set of Preferences

Transferring Preferences to the Instrument

To transfer the preferences defined in the System Page to the instrument, left click **Upload** as shown in.FIGURE 3-95

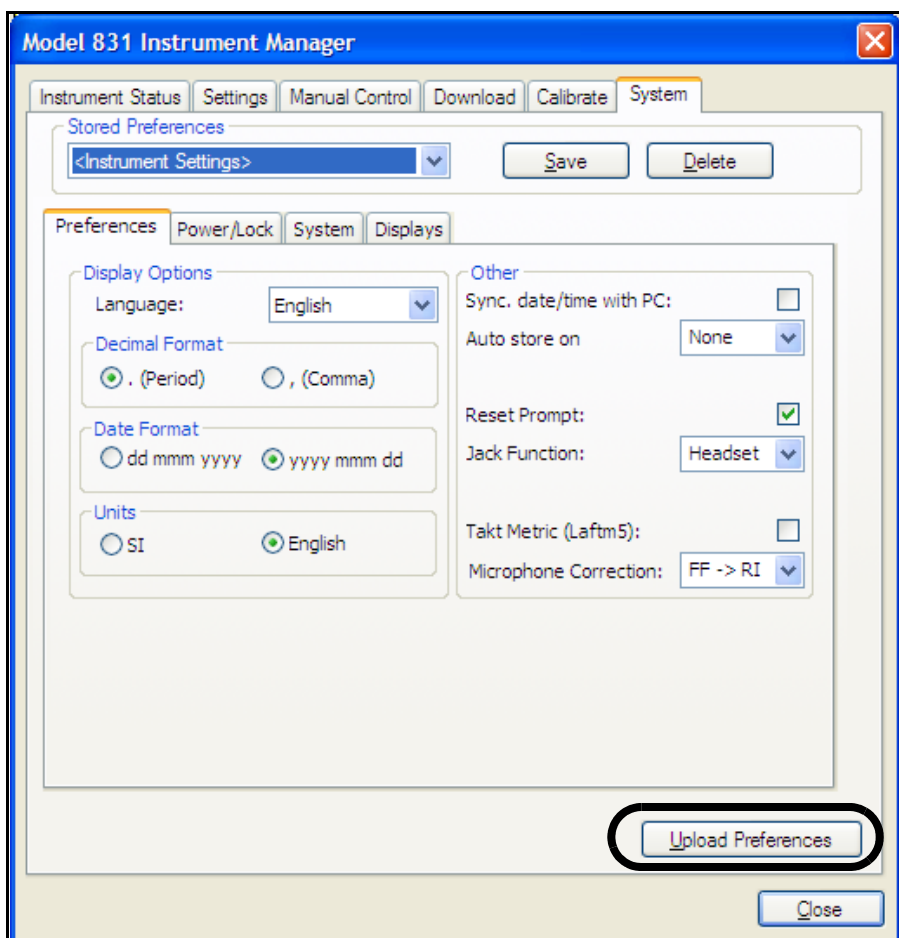


FIGURE 3-95 Upload Preferences

Importing Data From USB Memory

A detailed description of downloading data from the internal memory of the instrument using the Instrument Manager was presented in the section "Download Page" on page 3-42. However, when using the Model 831, data can also be saved to a USB memory device.

One way to transfer data from the USB memory device is to use the and then download the files using the Instrument Manager Download Page.

Another method is to connect the USB memory device to the computer and import the data using the SLM Utility-G3 software. With the memory device connected to the USB port, left click **File** as shown in FIGURE 3-96.

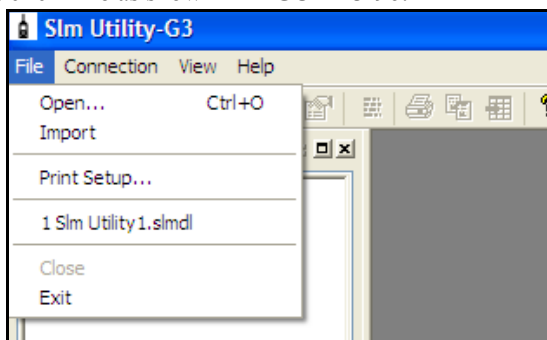


FIGURE 3-96 File Menu

Left click **Import** to open the File Dialog Menu shown in FIGURE 3-97.

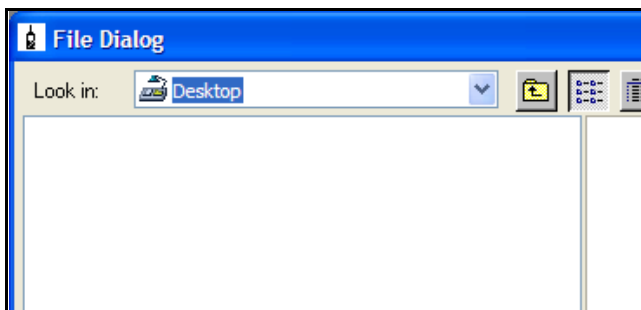


FIGURE 3-97 File Dialog Menu

Left click the down arrow in the “Look in:” window to open the menu shown in FIGURE 3-98.

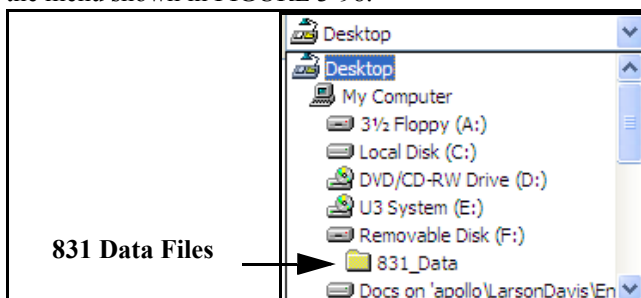


FIGURE 3-98 File Dialog Browser

The 831 data files will be located in the Removable Disk, in the folder **831_Data**. Left click that folder to display the 831 data files, as shown in FIGURE 3-99.

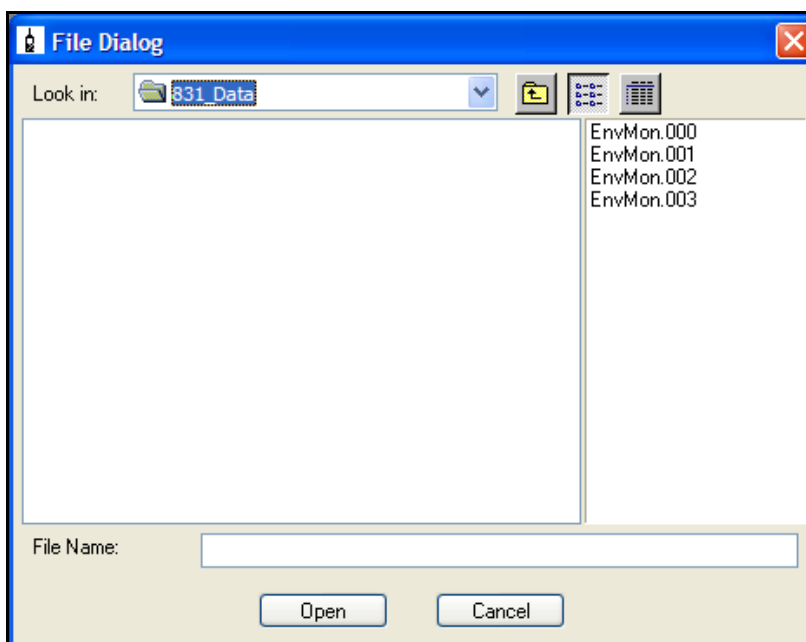


FIGURE 3-99 File Dialog Menu with 831 Data Files

Left click each of the files you wish to import, which will highlight them in blue as shown in FIGURE 3-100.

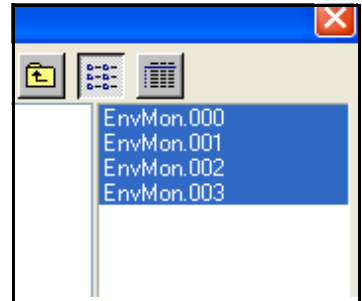


FIGURE 3-100 Files to Import

Left click OPEN at the bottom of the screen to implement the import operation. The data will now appear on the screen as shown in FIGURE 3-101.

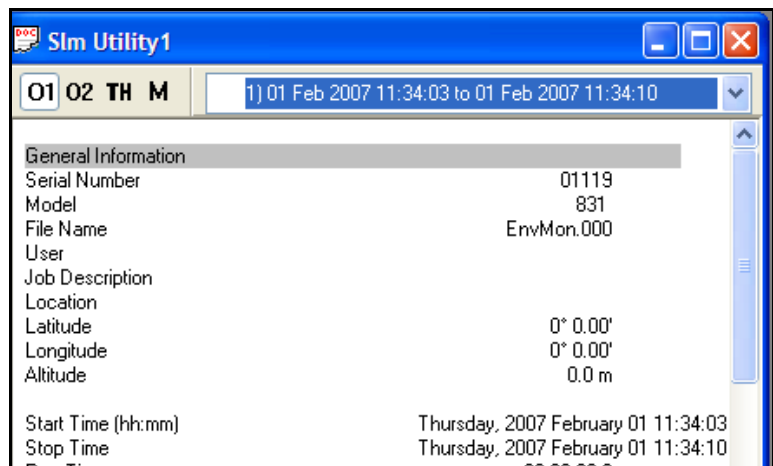


FIGURE 3-101 Display of Imported Data

See Chapter "Data Display" on page 4-1 for a detailed description of the information displayed for each data file.

Data Display

A download of data from the instrument provides general instrument information, calibration information, instrument setup information, notes and measurement information, which includes overall, dose and statistics data for each file downloaded from the instrument. These data are presented on-screen as a series of Measurement Summaries, one for each file.

The Measurement Log not only documents significant keypad related activities which took place during the measurement, but also presents voice annotation file which can be played back via the computer sound card.

Measurement Summary

At the conclusion of a download, the Measurement Summary will appear as shown in FIGURE 4-1

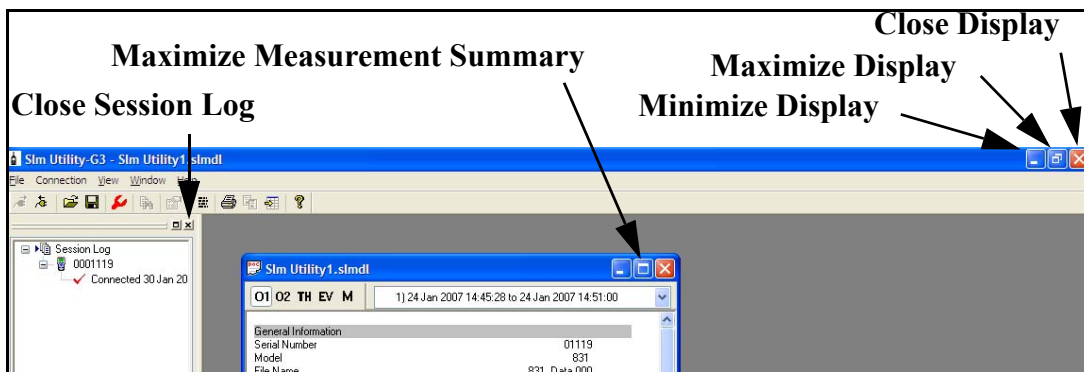


FIGURE 4-1 Measurement Summary

To obtain a larger view of the measurement data, perform one or both of the following actions.

- Close the Session Log:** Either left click the red **Close** box in the upper right corner of the Session Log window, or left click **View** in the Menu Bar and deselect **Session Log** by left clicking it.

•**Maximize the Measurement Summary:** Left click the open rectangle in the upper right of the Measurement Summary Window.

***Note:** There can be a slight rounding difference between values measured and displayed on the instrument and those downloaded and displayed on the computer. This difference will in all cases be less than 0.1 dB.*

The Measurement Summary window presents a summary of complete information from the first measurement file. The summary presents General Information, User-defined Notes, Overall Data, Statistics Data, Dose Data, Instrument Settings, 1/1 Octave Frequency Spectra, 1/3 Octave and Frequency Spectra. Similar reports are available for all the other files as well.

For a description of displaying the Measurement Summary for files other than the first downloaded, See “Displaying Other Data Files” on page 4-11.

Header Information

The header of the Measurement Summary is shown in FIGURE 4-2

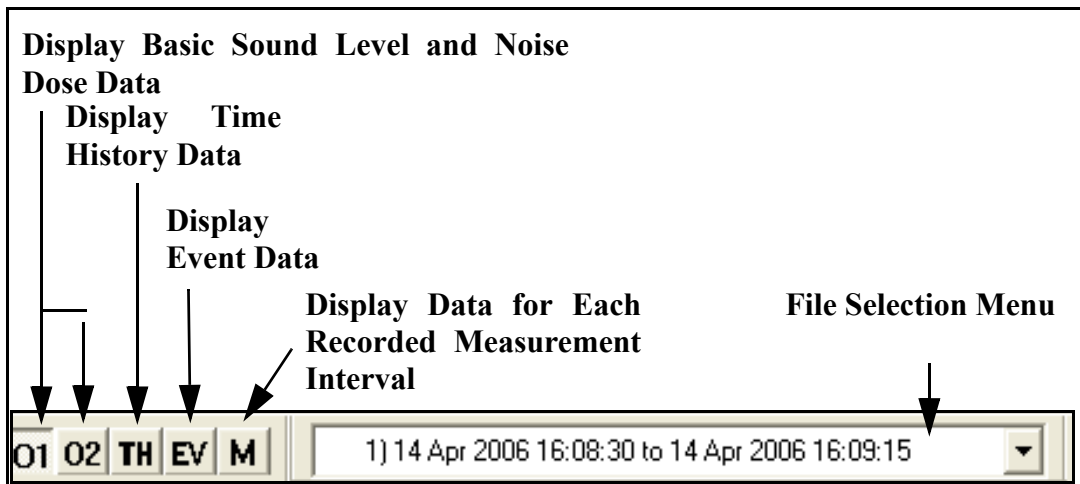


FIGURE 4-2 Measurement Summary: Header

The File Selection Menu is used to select a specific file for display, as described in the section "Displaying Other Data Files" on page 4-11.

The buttons indicated by the note “Select Dose to be Reported” are used to select whether Dose 1, Dose 2 or both

are to appear in the Measurement Summary, as described in the section "Display of Dose Data" on page 4-6.

Basic Sound Level and Noise Dose Data

General Information

The General Information section displays the file name, information concerning the instrument from which it was downloaded (i.e. serial number and model number), user information (User, Job Description and Location), start and stops times of the measurement, and calibration information. as shown in.FIGURE 4-3.

General Information	
Serial Number	01119
Model	831
File Name	831_Data.000
User	
Job Description	
Location	
Latitude	0° 0.00'
Longitude	0° 0.00'
Altitude	0.0 m
Start Time (hh:mm)	Wednesday, 2007 January 24 14:45:28
Stop Time	Wednesday, 2007 January 24 14:51:00
Run Time	00:05:11.8
Pause	00:00:00.0
Pre Calibration	None
Post Calibration	None
Calibration Deviation	---

FIGURE 4-3 Measurement Summary: General Information

Notes

The Notes section reports user-defined notes which were entered as part of the download process as described in the section "Add General Record Information" on page 3-40.

Note

FIGURE 4-4 Measurement Summary: Notes

Overall Data

The Overall Data section reports the overall sound measurement data and sound exposure data measured during the runtime, with date and time for the max and min data associated with the measurement reported in FIGURE 4-3 "Measurement Summary: General Information" on page 4-3.

Overall Data			
LAeq:		78.1	dB
LASmax:	(24 Jan 2007 14:45:37)	97.6	dB
LZpeak (max):	(24 Jan 2007 14:45:37)	105.3	dB
LASmin:	(24 Jan 2007 14:46:38)	38.7	dB
LCeq:		78.3	dB
LAeq:		78.1	dB
LCeq - LAeq:		0.2	dB
Ldn		76.1	dB
LDay 7:00-22:00		78.1	dB
LNight 22:00-7:00		---	dB
Lden		75.1	dB
LDay 07:00-19:00		78.1	dB
LEvening 19:00-23:00		---	dB
LNight 23:00-07:00		---	dB
LAE:		103.1	dB
AE:		2.252	iPa ² hr
AE8:		208.0	iPa ² hr
AE40:		1.0398	Pa ² hr
SEA		---	dBZ
LAFtm5		85.8	dB
# Overloads		0	
Overload Dur.		0.0	sec
# OBA Overloads		0	
OBA Overload Dur.		0.0	sec

FIGURE 4-5 Measurement Summary: Overall Data

Statistics

This section reports statistical data measured during the runtime, which is reported in FIGURE 4-3 "Measurement Summary: General Information" on page 4-3.

Statistics		
L5.0	72.6	dBA
L10.0	54.4	dBA
L33.3	44.3	dBA
L50.0	42.6	dBA
L66.6	41.2	dBA
L90.0	39.4	dBA
Event Counts / Duration(SPL Trigger 75.0 dB	2 / 15.3 s	
Event Counts / Duration(SPL Trigger 115.0 d	0 / 0.0 s	
Event Counts / Duration(Lpeak Trigger 135.0	0 / 0.0 s	
Event Counts / Duration(Lpeak 2 Trigger 137	0 / 0.0 s	
Event Counts / Duration(Lpeak 3 Trigger 140	0 / 0.0 s	

FIGURE 4-6 Measurement Summary: Statistics

1/1, 1/3 Octave Frequency Spectra

1/1 Spectra																
Freq. (H:	8.0	16.0	31.5	63.0	125	250	500	1000	2000	4000	8000	16K				
LZeq:	62.2	59.9	51.1	49.9	46.4	45.8	46.0	78.3	50.2	42.7	42.6	43.7				
LZSmax	81.4	78.4	72.7	73.4	69.0	64.4	68.4	97.7	69.9	61.1	57.0	46.9				
LZSmin:	52.7	46.7	43.2	34.5	29.3	41.7	32.6	37.1	33.8	36.2	39.8	43.3				
1/3 Spectra																
Freq. (H:	6.3	8.0	10.0	12.5	16.0	20.0	25.0	31.5	40.0	50.0	63.0	80.0				
LZeq:	57.9	58.2	53.8	53.9	54.7	56.6	48.5	45.2	43.1	47.6	43.3	39.3				
LZSmax	77.1	76.4	73.1	72.6	75.0	71.9	70.0	66.8	64.9	71.2	66.1	62.1				
LZSmin:	47.6	46.2	39.2	43.0	45.2	40.6	38.7	37.2	32.1	30.7	28.2	23.1				
Freq. (H:	100	125	160	200	250	315	400	500	630	800	1000	1250				
LZeq:	42.3	40.6	41.8	42.6	40.3	38.7	36.8	37.0	43.2	65.7	78.0	44.1				
LZSmax	65.9	63.1	63.1	60.1	57.9	56.2	53.5	49.8	66.3	89.0	97.7	64.7				
LZSmin:	26.1	27.7	30.3	37.8	33.5	32.6	29.5	30.8	30.0	34.9	28.7	27.9				
Freq. (H:	1600	2000	2500	3150	4000	5000	6300	8000	10K	12.5K	16K	20K				
LZeq:	41.8	49.1	38.9	40.6	35.5	36.6	39.0	37.7	36.9	37.9	38.7	40.2				
LZSmax	61.6	68.9	56.9	59.7	52.4	54.4	54.7	53.4	45.2	43.7	41.7	42.3				
LZSmin:	28.2	27.7	28.8	30.4	31.3	31.5	33.5	34.9	36.0	37.2	38.1	39.9				

FIGURE 4-7 Measurement Summary: 1/1, 1/3 Octave Spectra

Dose

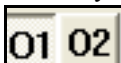
The Dose section reports the measurement results related to noise dose.

Dose		
Name	OSHA-1	
Dose:	0.0	%
Projected Dose:	3.0	%
TWA (Projected):	64.7	dBA
TWA (8)	32.1	dBA
Lep (8)	58.5	dBA

FIGURE 4-8 Measurement Summary: Dose Data

Display of Dose Data

The LxT and the Model 831 (with 831-IH enabled) can measure two separate noise doses using setup parameters which were selected independently. Dose related data is reported in both the Dose and Settings sections of the Measurement Summary. The user can select to report data related to Dose 1, Dose 2 or both by making a selection from the buttons on the left of the file selection field at the top of the screen, as shown in FIGURE 4-1 "Measurement Summary" on page 4-1. This is shown enlarged below.



When data for both doses are displayed, left clicking either one will cause that dose data to not be displayed.

Settings

Note that the displayed parameters associated with noise dose represent dose 1, dose 2 or both, as described in section "Display of Dose Data" on page 4-6.

This section reports the setting of the instrument which define the measurements which were made during the time period reported in FIGURE 4-3 "Measurement Summary: General Information" on page 4-3.

Settings		
Exchange Rate:	5	
Threshold:	90	dB(A)
Criterion Level:	90	dB(A)
Criterion Duration:	8	hours
RMS Weight:	A Weighting	
Peak Weight:	Z Weighting	
Detector:	Slow	
Preamp:	PRM831	
Integration Method:	Linear	
OBA Range:	Normal	
OBA Bandwidth:	1/1 and 1/3	
OBA Freq. Weighting:	Z Weighting	
Gain:	0	
Under Range Limit	25.8	dB
Under Range Peak	76.0	dB
Noise Floor	15.8	dB
Overload	143.4	dB

FIGURE 4-9 Measurement Summary: Settings

Advanced Sound Measurements

To measure these data, the Model 831 must be loaded with optional firmware packages as indicated below.

Time History Data (831-LOG or LxT-LOG Firmware Required)

The Time History Icon will only appear when the downloaded file contains time history data.

Left click the Time History icon, shown below, to display time history data.



The data will appear as shown in FIGURE 4-10.

General Information								
Serial Number			01119					
Model			831					
File Name			831_Data.000					
No OBA data will be displayed. Use Export to view the OBA data.								
Record #	Date	Time	LAeq	LApeak	LASma	LAfma	Ovrl	Ov
1	07/01/	14:45:2	Run	Key				
2	07/01/	14:45:2	39.3	52.1	39.3	39.6	No	No
3	07/01/	14:45:2	39.1	52.1	39.3	39.5	No	No
4	07/01/	14:45:2	39.2	52.1	39.3	39.5	No	No
5	07/01/	14:45:2	39.7	52.1	39.4	40.2	No	No
6	07/01/	14:45:3	39.2	52.1	39.4	39.7	No	No
7	07/01/	14:45:3	39.0	52.1	39.3	39.4	No	No
8	07/01/	14:45:3	39.6	52.1	39.4	39.8	No	No
9	07/01/	14:45:3	39.2	52.1	39.4	39.8	No	No
10	07/01/	14:45:3	38.9	52.1	39.3	39.4	No	No

FIGURE 4-10 Time History Data

1/1, 1/3 Octave Spectra

As indicated by the note on the display, 1/1 and/or 1/3 octave spectral data will not appear. It is necessary to export the data to a text file or spreadsheet to display these data, as described in Chapter 5 "Export Data" on page 5-1.

LAFTM5 Data

If the interval time for the time history measurement was less than five seconds, no data for LAFTM5 will be calculated nor will it appear on the time history display.

Noise Event Data (831-ELA Firmware Required)

The Noise Event Icon will only appear when the downloaded file contains noise event data.

Left click the Event icon, shown below, to display event data.



The event data will appear as shown in FIGURE 4-11.

General Information	
Serial Number	01119
Model	831
File Name	831_Data.000

NOTE: Only five metrics can be displayed on screen.
To view spectra and other metrics use the export feature.

Record #	Date	Time	Duration	L _{Aeq}	L _A max	Time	L _Z peak	Trig. Lev
1	07/01/2	14:45:3	00:00:0	91.4	97.6	14:45:3	105.3	75.0
2	07/01/2	14:45:5	00:00:0	91.5	97.6	14:46:0	105.2	75.0

FIGURE 4-11 Noise Event Data

Measurement History (831-ELA Firmware Required)

The Measurement History Icon will only appear when the downloaded file contains measurement history data.

Left click the Measurement History icon, shown below, to display measurement history data.



The measurement history data will appear as shown in FIGURE 4-12.

General Information								
Serial Number	01119							
Model	831							
File Name	831_Data.000							
Measurement Records:	6							
Measurement Time Period:	60	Sec						
NOTE: Only five metrics can be displayed on screen. To view spectra and other metrics use the export feature.								
Record #	Date	Time	Duration	L _{Aeq}	L _A E	L _A S _{max}	L _A S _{min}	L _Z peak
1	07/01/2	14:45:2	00:01:0	85.3	103.1	97.6	39.1	105.3
2	07/01/2	14:46:2	00:01:0	47.3	65.1	62.2	38.7	83.5
3	07/01/2	14:47:2	00:01:0	46.8	64.6	61.7	39.9	91.9
4	07/01/2	14:48:2	00:01:0	46.2	64.0	59.5	40.5	88.0
5	07/01/2	14:49:2	00:01:0	43.7	61.5	50.2	40.2	79.6
6	07/01/2	14:50:2	00:00:1	45.5	56.2	48.9	42.3	80.8

FIGURE 4-12 Measurement Data

Displaying Other Data Files

At the conclusion of a data download, the Measurement Summary for the first file downloaded is displayed, regardless of the number of files downloaded. Any other file from the download can be similarly displayed as follows.

- Step 1** Left Mouse click the top of the Data File window to open a drop-down menu listing all the files in the downloaded file with the register numbers from which each was downloaded.

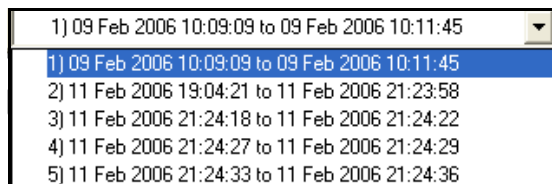


FIGURE 4-13 List Files

- Step 2** Use the mouse pointer to highlight the desired file to be displayed .

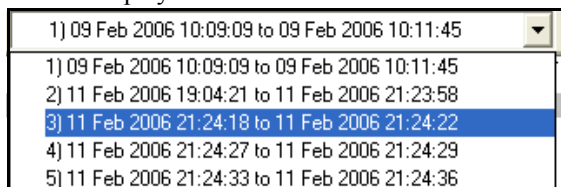


FIGURE 4-14 Select File to Display

Printing the Measurement Summary

The displayed Measurement Summary can be printed to the default printer by clicking the **Print** icon on the toolbar as shown in FIGURE 4-15



FIGURE 4-15 Toolbar: Print Icon

or alternatively left clicking **File/Print** and left click on **Print** as shown in FIGURE 4-16.

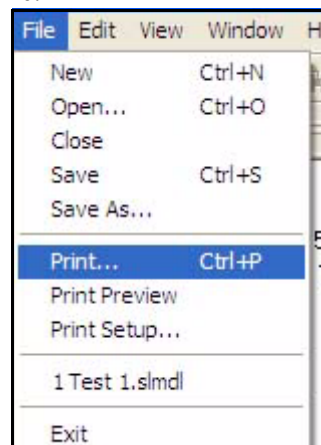


FIGURE 4-16 File/Print Menu

Complete the Print Document dialog box and press the **Print** button.

Saving Files to Folders

Files can be stored to folders in your PC as follows:

Step 1 Display the file to be saved.

Step 2 Click **File** and left click **Save As** shown in FIGURE 4-17.

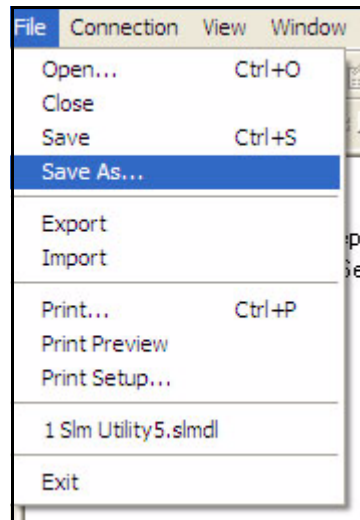


FIGURE 4-17 File/Save As Menu

This will open the Save As dialog box shown in FIGURE 4-18.

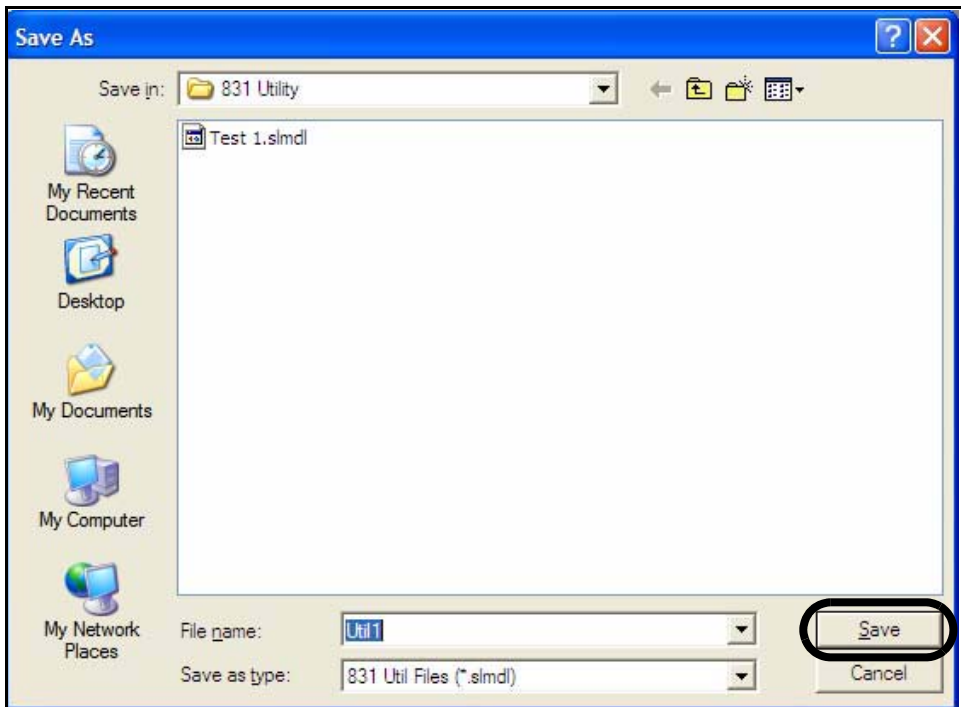


FIGURE 4-18 Save As Dialog Box

Step 3 Use the down arrow key in the “Save in:” window at the upper left to identify the folder into which to save the file, type a file name into the “File name” field and left click **Save** as shown in FIGURE 4-18.

Opening Saved Files

Click **File/Open** and left click **Open** as shown in FIGURE 4-19.

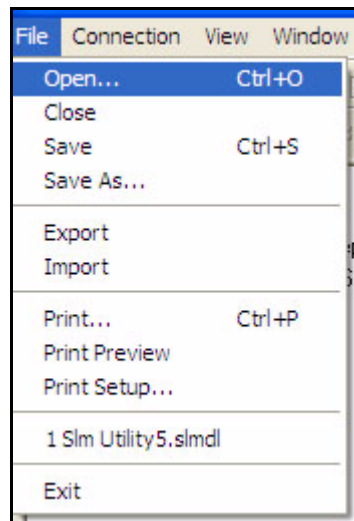


FIGURE 4-19 File/Open Menu

This will open the browser window shown in FIGURE 4-20.

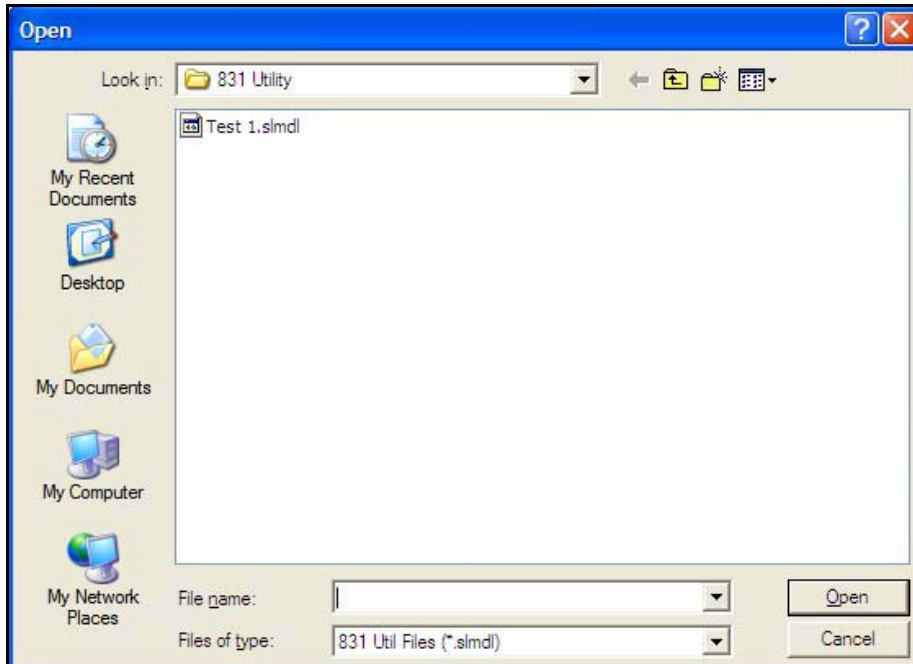


FIGURE 4-20 Browser Window

*If the file sought has been used recently, click **File** and see if the name of that file appears in the numbered list near the bottom of the window. If so, clicking it will open it.*

Use the browser to select the desired file and press **Open** to make the selection.

Importing Files From USB

Note that importing is the only way to retrieve files stored on a USB thumb drive.

Click **File/** and left click **Import** as shown in FIGURE 4-21.

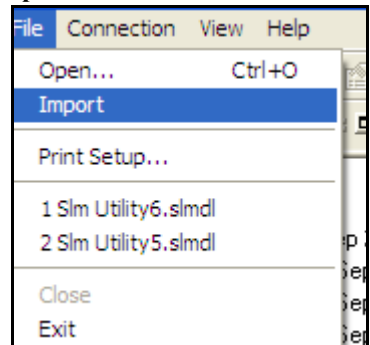


FIGURE 4-21 File/Import Menu

This will open the menu shown in FIGURE 4-22, which is used to locate the desired file from the USB port.

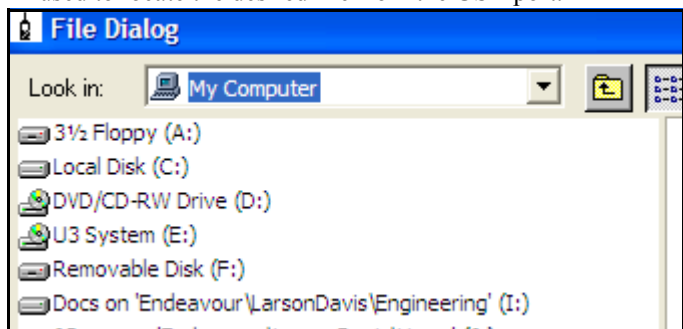


FIGURE 4-22 Identifying USB Port

Click **Removable Disk** to open the menu shown in FIGURE 4-23.

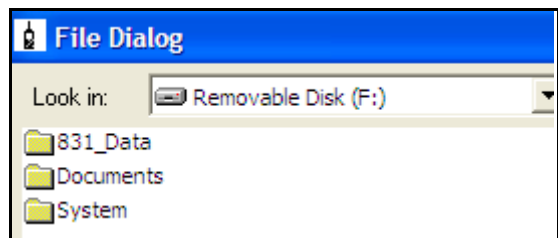


FIGURE 4-23 Locating 831 Data Files

Click **831_Data** to open the menu shown in FIGURE 4-24, listing the available files.

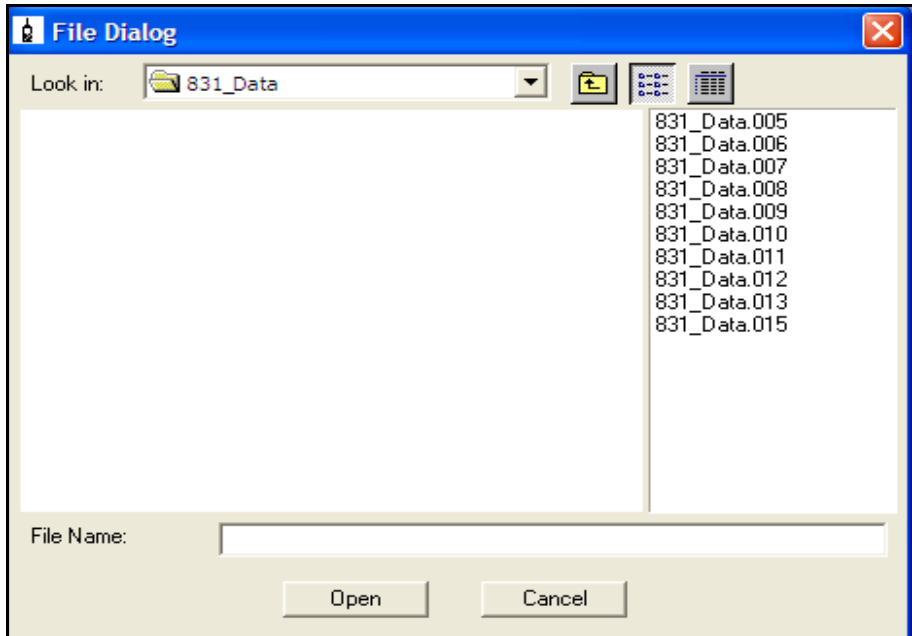


FIGURE 4-24 Select File to Import

Click the desired file and click **Open** to complete the import process.

Closing the Measurement Summary

To close the Measurement Summary, left click the red Close box in the upper right corner

Measurement Log

The Measurement Log is similar to the Session Log, except that it logs actions initiated from the instrument keypad while the Session Log logs actions initiated from the SLM Utility-G3 Software Manual Control Page.

The Measurement Log records the date and time of significant instrument keypad initiated actions which occurred during the measurement interval, such as:

- Run
- Pause
- Resume

•Stop

It also indicates voice annotations made during the measurement interval.

To display the Measurement Log, left click the Measurement Log icon on the SLM Utility-G3 Toolbar as shown in FIGURE 4-25,



FIGURE 4-25 Toolbar: Measurement Log Icon

This will open the Measurement Log shown in FIGURE 4-26.

Measurement Log			
	Record Type	Cause	Date
	Voice Annotation	Key	09/14/06 09:41:
	Run	Key	09/14/06 09:41:
	Audio Recording		09/14/06 09:41:
	Audio Recording		09/14/06 09:41:
	Audio Recording		09/14/06 09:42:
	Stop	Key	09/14/06 09:42:

FIGURE 4-26 Measurement Log

Voice Annotation and Audio Recording

Playback

Each voice annotation or audio recording is indicated separately, with the date and time of creation. To playback a voice annotation, for example, left click the speaker icon shown in FIGURE 4-27.



FIGURE 4-27 Play Voice Annotation

The speaker icon will stay highlighted until the recording has finished playing.

Amplify Sound Record

When playing back low level voice annotations and sound recordings, if you wish to amplify the output level left click the "Amplify sound record" check box to put a check in the box. Left click a second time to remove the check and cancel the amplification during playback.

Saving as Wave Files

To save a voice annotation or audio recording as a wave file, right click on the desired file to open the pop-up menu shown in Figure 4-28



FIGURE 4-28 Save a Voice Annotation as a Wave File.

Left click **Save** to open the menu shown in Figure 4-29.



FIGURE 4-29 Save Voice Annotation Menu

Use the “Save in” field to define the path to the folder into which the wave file is to be saved, put a name for the wave file into the “File name” field and left click **Save** to complete the operation.

Close Measurement Log

To close the Measurement Log, left click **OK** at the bottom of the Measurement Log display.

Export Data

SLM Utility-G3 measurement files can be exported as text files or as comma-delimited files or, if using Excel™ (2000 or later), as an Excel Workbook for further processing and reporting.

Exporting Measurement Files

Begin by displaying the measurement file you wish to export.

Overall Data			
LAeq:		78.1	dB
LASmax:	(24 Jan 2007 14:45:37)	97.6	dB
LZpeak (max):	(24 Jan 2007 14:45:37)	105.3	dB
LASmin:	(24 Jan 2007 14:46:38)	38.7	dB
LCeq:		78.3	dB
LAeq:		78.1	dB
LCeq - LAeq:		0.2	dB
Ldn		76.1	dB
LDay 7:00-22:00		78.1	dB
LNight 22:00-7:00		---	dB
Lden		75.1	dB
LDay 07:00-19:00		78.1	dB
LEvening 19:00-23:00		---	dB
LNight 23:00-07:00		---	dB
LAE:		103.1	dB
AE:		2.252	µPa·hr
AE8:		208.0	µPa·hr
AE40:		1.0398	Pa·hr
SEA		---	dBZ

FIGURE 5-1 Measurement Summary

Click the **Export Data** icon on the SLM Utility-G3 toolbar.



FIGURE 5-2 SLM Utility-G3 Toolbar: Export Data Icon

This will open the Export Data Menu shown in FIGURE 5-3.

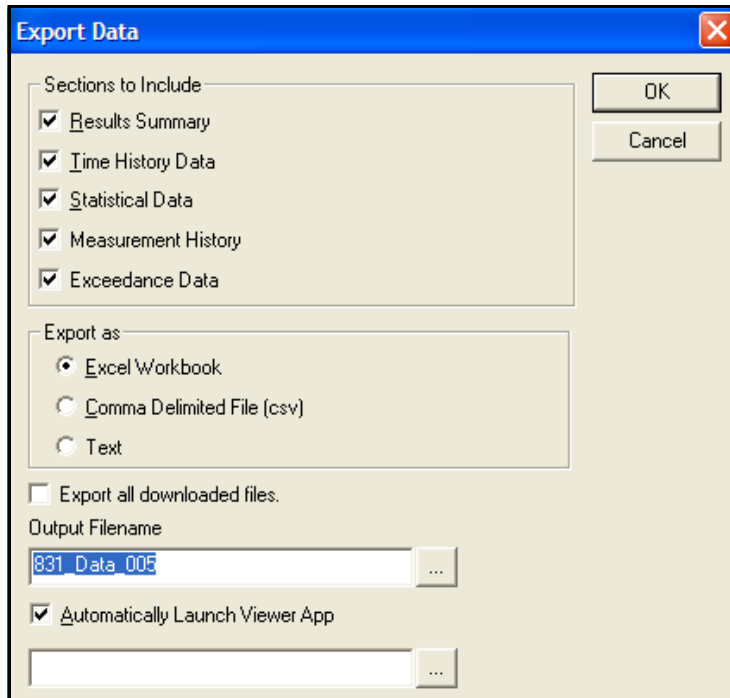


FIGURE 5-3 Export Data Menu

Select Data to Export

The export can include the following types of data:

- Result Summary**
- Time History Data**
- Statistical Data**
- Measurement History - Ln Table**

- Exceedance Data**

Select any or all by left clicking to check the check box associated with each type of data.

Select Export File Type

Text files are typically used to export data to word processing programs. Comma-delimited files are used to export data to spreadsheet programs.

The data may be exported in one of the three following types:

- Excel Workbook (2000 or later)**

- Comma Delimited File (csv)**

- Text File**

Left click to select the file type, which places a check in the check box for that type of file.

Define Output File

Output a Single File

Left click the browse button to the right of the Output Filename field to bring up a standard Windows file tree as shown in FIGURE 5-4.

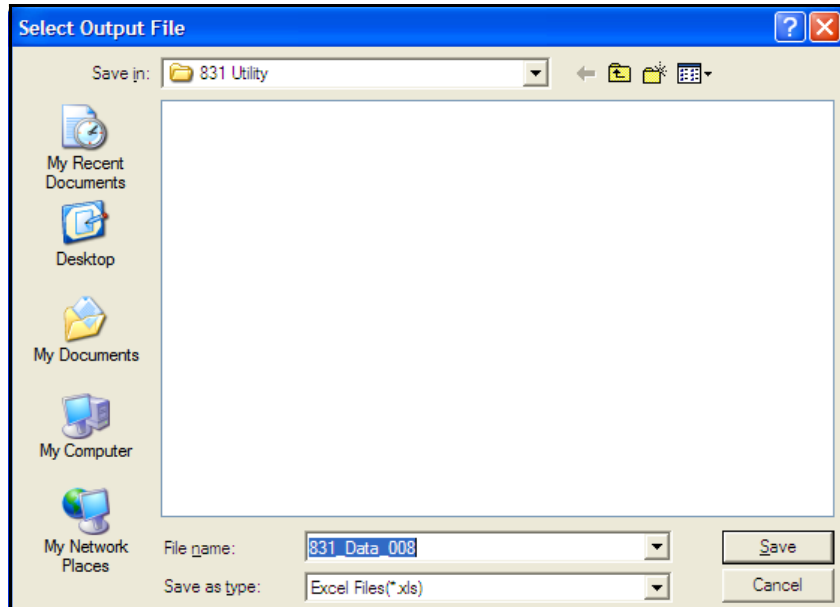


FIGURE 5-4 Browser Window

Use this to define the path to the file folder into which the output file is to be saved and type a file name for the exported data file into the “File name” field.

Press **Open** to close this window and return to the Export Data Menu with the path to the exported file in the “Output Filename” field as shown in .FIGURE 5-5.

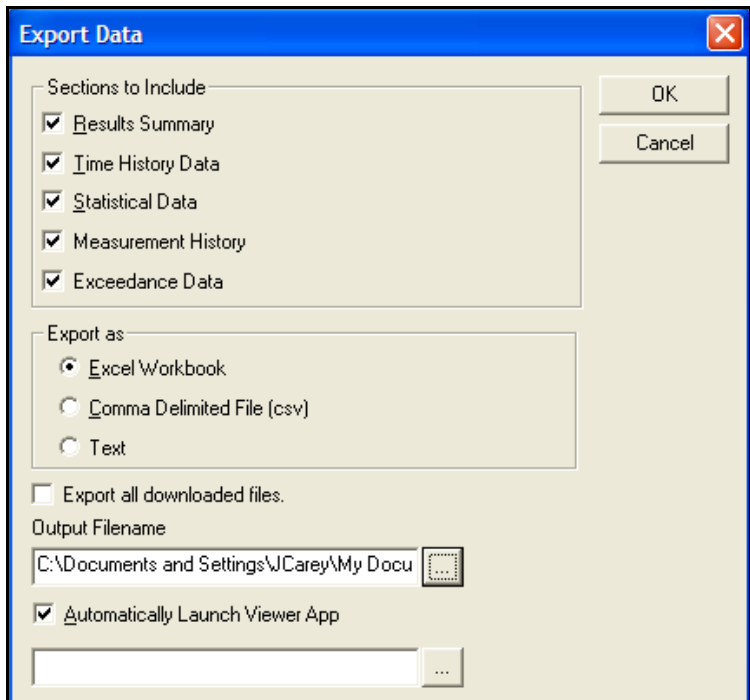


FIGURE 5-5 Export File Menu with Output File Path Defined

Output All Files

Placing a check in the “Export all downloaded files” check box will export all downloaded files to separate files at the same time. These will be stored to the file name defined in section “Output a Single File” above with _001, _002, etc. appended sequentially to that file name.

Export the File

Press **OK** in the upper right corner to implement the export of the file.

In many instances, the user wants to examine the exported file, and possibly use it immediately for further processing. For this reason, the option to automatically launch the viewer application is provided in the Export File Menu. This feature is described in the following section.

Automatically Launch Viewer Application

In order to have a viewer appropriate for the selected file type (text or comma-delimited) open automatically as part of the export, left click the check box to the left of the “Automatically Launch Viewer App” prior to implementing the export operations. which will make active the field beneath the check box. as shown in FIGURE 5-6.

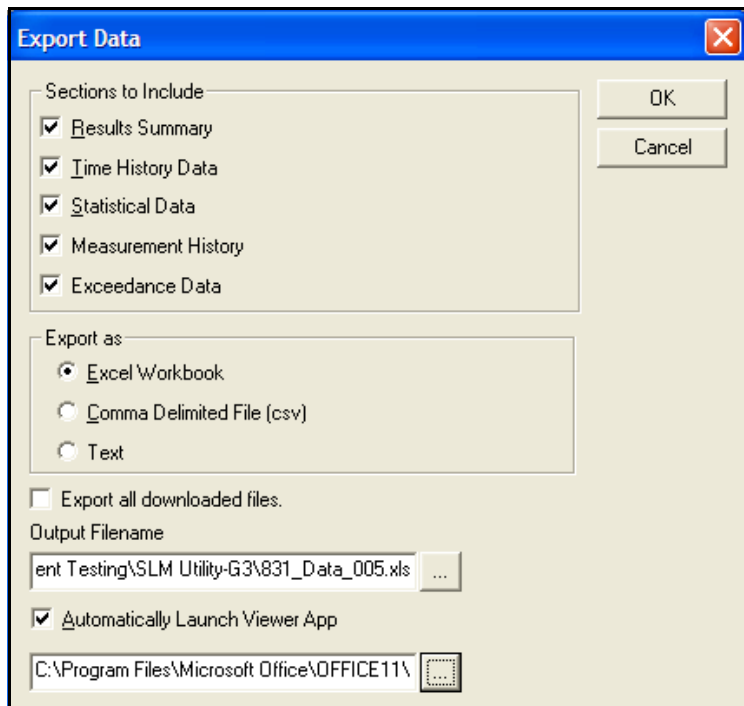


FIGURE 5-6 Export File Menu With Automatic Launch of Viewer Application

Left click the browse button to the right of the field beneath the “Automatically Launch Viewer App” to bring up a standard Windows file tree as shown in FIGURE 5-4 "Browser Window". Use this window to define the path to the appropriate application program. In this case, we are exporting the file in comma-delimited format and the path has been defined to lead to the file to open Microsoft Excel. If this field is left blank, the Microsoft OS will use the default application to display the data.

Excel Workbook

When the data is exported to an Excel Workbook, they appear on separate sheets, as shown in FIGURE 5-7.

64	Statistics		
65	L5.0		90.2 dB
66	L10.0		81.5 dB
67	L33.3		68.4 dB
68	L50.0		62.3 dB
69	L66.6		55.8 dB
70	L90.0		43.6 dB
71			
Ready Summary / OBA / Ovr. Spectral Ln / Statistics / Session Log / Time History /			

FIGURE 5-7 Excel Workbook Sheets

There may be less or more sheet tabs than can be seen in FIGURE 5-7, depending on the options and meter settings. The available sheets are listed below.

- Summary
- 1/1 and 1/3 Octave Band Spectra
- Overall Spectral Ln
- Statistics
- Session Log
- Time History
- Measurement History'

- Measurement History Spectral Ln**

- Event History**

- Event Time History**

Use the left and right arrow keys at the far left to scroll through the available sheets.

Summary Data Display

1	Summary		
2	File Name	831_Data.000	
3	Serial Number	01119	
4	Model	831	
5	User		
6	Location		
7	Job Description		
8	Note		
9	Latitude	0°	0.00'
10	Longitude	0°	0.00'
11	Altitude	0.0 m	
12	Start	2007-1-24	14:45:28
13	Stop	2007-1-24	14:51:00
14	Run Time	0:05:11.8	
15	Pause	0:00:00.0	
16			
17	Pre Calibration	None	
18	Post Calibration	None	
19	Calibration Deviation	---	
20			
21	Overall Settings		
22	RMS Weight	A Weighting	
23	Peak Weight	Z Weighting	
24	Detector	Slow	
25	Preamp	PRM831	
26	Integration Method	Linear	
27	OBA Range	Normal	
28	OBA Bandwidth	1/1 and 1/3	
29	OBA Freq. Weighting	Z Weighting	
30	Gain	0.0	
31			
32	Under Range Limit	25.8 dB	
33	Under Range Peak	76.0 dB	
34	Noise Floor	15.8 dB	
35	Overload	143.4 dB	

FIGURE 5-8 Excel Workbook Summary Data

Overall Frequency Spectra Display

	A	B	C	D	E	F	G	H
1	1/1 Octave							
2	Frequency	8	16	31.5	63	125	250	500
3	Overall 1/1	62.2	59.9	51.1	49.9	46.4	45.8	46.0
4	Max 1/1 S	81.4	78.4	72.7	73.4	69.0	64.4	68.4
5	Min 1/1 Sp	52.7	46.7	43.2	34.5	29.3	41.7	32.6
6								
7								
8	1/3 Octave							
9	Frequency	6.3	8	10	12.5	16	20	25
10	Overall 1/3	57.9	58.2	53.8	53.9	54.7	56.6	48.5
11	Max 1/3 S	77.1	76.4	73.1	72.6	75.0	71.9	70.0
12	Min 1/3 Sp	47.6	46.2	39.2	43.0	45.2	40.6	38.7
13								
14	L5.0	60.8	63.8	57.6	56.7	55.9	59.4	48.1
15	L10.0	59.2	60.3	55.4	54.9	54.7	59.1	47.0
16	L33.3	55.8	54.8	51.2	52.1	52.6	58.1	45.4
17	L50.0	54.2	53.4	49.2	50.8	51.7	57.4	44.7
18	L66.6	52.9	52.2	47.4	49.7	50.4	48.0	44.1
19	L90.0	50.8	50.0	45.1	48.0	48.1	44.2	42.8
20								

Summary OBA Ovrl Spectral Dist Stat

FIGURE 5-9 Excel Workbook Spectra Display

Overall Spectral Ln Display

	A	B	C	D	E	F	G	Formula Bar
237	47.4	0	1	35	17	15	14	17
238	47.5	0	3	35	16	17	20	15
239	47.6	2	1	28	18	19	9	12
240	47.7	1	0	32	20	28	12	9
241	47.8	1	1	36	22	17	21	10
242	47.9	0	5	31	22	25	15	11
243	48.0	0	2	30	22	20	15	10
244	48.1	2	5	25	13	23	17	10
245	48.2	0	5	33	34	23	12	10
246	48.3	3	4	29	42	26	13	6

OBA Ovrl Spectral Dist Statistics Ses

FIGURE 5-10 Excel Workbook Overall Spectral Ln Display

Statistics Display

	A	B	C	D	E	F	G	H
1	Statistics							
2	Level (dB)	Count	Percent					
3	Under	0	0.00%					
4	38.7	24	0.09%					
5	38.8	51	0.18%					
6	38.9	84	0.30%					
7	39.0	432	1.54%					
8	39.1	570	2.03%					
9	39.2	832	2.97%					
10	39.3	534	1.90%					
11	39.4	480	1.71%					
12	39.5	362	1.29%					
13	39.6	203	0.72%					
14	39.7	113	0.40%					
15	39.8	120	0.43%					
16	39.9	60	0.21%					
17	40.0	86	0.31%					
18	40.1	225	0.80%					
19	40.2	335	1.19%					

FIGURE 5-11 Excel Workbook Statistics Display

Session Log Display

	A	B	C	D	E	F	G	H
1	Record #	Date	Time	Record Type	Cause	TH Record		
2	1	01/24/2007	14:45:28	Run	Key	1		
3	2	01/24/2007	14:45:28	Audio Recor	IO	1		
4	3	01/24/2007	14:45:35	Audio Recor	Key	15		
5	4	01/24/2007	14:45:59	Audio Recor	Key	63		
6	5	01/24/2007	14:46:28	Audio Recor	IO	121		
7	6	01/24/2007	14:47:28	Audio Recor	IO	241		
8	7	01/24/2007	14:48:28	Audio Recor	IO	361		
9	8	01/24/2007	14:49:28	Audio Recor	IO	481		
10	9	01/24/2007	14:50:28	Audio Recor	IO	601		
11	10	01/24/2007	14:50:40	Stop	Key	626		

FIGURE 5-12 Excel Workbook Session Log Display

Time History Display

The Time History display includes the following data types as a function of time:

- Sound Level Data
- 1/1 and/or 1/3 Octave Data
- Overload Information
- Markers

Sound Level Data

1	Record #	Record Type	Date	Time	LAeq	LApk (max)	LASmax	LASmin	Leq 6.3
2	1		01/01/1970	00:00:00	40.6	52.1	40.8	40.8	34.2
3	2		08/14/2006	16:09:15	41.0	52.1	40.8	40.8	35.1
4	3	Run	08/14/2006	16:09:15	0.0	0.0	0.0	0.0	0.0
5	4		08/14/2006	16:09:15	40.3	52.1	40.8	40.7	41.5
6	5		08/14/2006	16:09:15	40.3	52.1	40.7	40.7	43.8
7	6		08/14/2006	16:09:15	40.0	52.1	40.7	40.5	46.5
8	7		08/14/2006	16:09:16	40.5	52.1	40.6	40.5	49.4
9	8		08/14/2006	16:09:16	40.5	52.1	40.5	40.5	50.9
10	9		08/14/2006	16:09:16	40.4	52.1	40.6	40.5	50.3

Summary / OBA / Ovrl. Spectral Ln / Statistics / Session Log / Time History / M

FIGURE 5-13 Time History: Sound Level Data

1/1, 1/3 Octave Spectra Data

1	8.0	10.0	12.5	16.0	20.0	25.0	31.5	40.0	50.0	63.0
2	52.5	41.7	48.8	48.8	54.8	47.4	39.8	40.0	38.4	48.2
3	48.2	47.7	48.8	52.1	51.8	44.6	45.3	34.2	37.7	46.9
4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	51.0	47.4	50.0	51.9	55.0	47.9	40.1	38.8	34.6	48.3
6	53.6	46.0	51.1	49.3	55.7	49.6	43.5	40.6	39.0	49.3
7	53.8	50.4	48.0	54.3	55.8	46.7	41.7	38.8	34.6	48.6
8	49.9	49.4	51.6	49.4	58.5	51.6	42.7	39.5	34.9	49.3
9	48.1	49.5	48.5	44.4	58.1	51.4	44.0	42.3	37.2	48.7
10	49.5	44.5	52.4	46.0	56.3	49.7	42.3	42.3	32.9	48.0

Summary / OBA / Ovrl. Spectral Ln / Statistics / Session Log / Time History / M

FIGURE 5-14 Time History: 1/1, 1/3 Octave Spectral Data

Overload Information

EY	EZ
Ovrl.	OBA Ovrl.
No	No
No	No
No	No
No	No
No	No
No	No
No	No
No	No
No	No

FIGURE 5-15 Time History: Overload Information

Marker Information

When a time history file which has had markers inserted during the measurement is exported, the names of the markers will appear in the spreadsheet for each time sample the markers were enabled, as shown in FIGURE 5-16.

6	5		03/21/2006	16:16:10	41.2	52.2	Yes	No	
7	6		03/21/2006	16:16:11	40.4	52.2	Yes	No	
8	7		03/21/2006	16:16:12	55.5	64.8	Yes	No	
9	8		03/21/2006	16:16:13	63.8	73.4	Yes	No	Truck
10	9		03/21/2006	16:16:14	56.0	68.5	Yes	No	Truck
11	10		03/21/2006	16:16:15	48.2	59.2	Yes	No	Truck
12	11		03/21/2006	16:16:16	38.5	52.2	Yes	No	Truck
13	12		03/21/2006	16:16:17	40.4	52.2	Yes	No	Truck
14	13		03/21/2006	16:16:18	38.5	52.2	Yes	No	
15	14		03/21/2006	16:16:19	38.1	52.2	Yes	No	
16	15		03/21/2006	16:16:20	39.3	52.2	Yes	No	

FIGURE 5-16 Time History Display: Marker Information

There are four columns for markers available, so when up to four different markers have been enabled during one or more time intervals, their names will be displayed.

Measurement History Display

1	LASmin	Time	LASmax	Time	LZpk (max)	Time	SPL 1 Count	Duration	SPL 2 Count
2	40.4	16:09:17	74.2	16:09:36	98.7	16:09:32	0	0.0	
3	40.7	16:09:47	99.5	16:09:56	106.0	16:09:57	3	16.6	
4	41.3	16:10:26	65.6	16:10:15	87.4	16:10:30	0	0.0	
5	41.6	16:10:50	50.3	16:10:45	75.0	16:10:50	0	0.0	
6									

Navigation: Statistics / Session Log / Time History / **Measurement History** / M. Spect. Ln

FIGURE 5-17 Excel Workbook Measurement History Display

Measurement History Spectral Ln Display

1	Measurement Ln	6.3	8.0	10.0	12.5	16.0	20.0	25.0
2	1	5.0	67.7	68.4	67.3	70.2	68.4	69.3
3		10.0	63.7	65.8	64.2	68.1	63.9	66.2
4		33.3	54.9	55.4	52.7	54.4	56.6	57.6
5		50.0	51.2	52.2	50.0	50.8	54.3	55.6
6		66.6	48.9	49.6	47.6	48.6	52.3	53.5
7		90.0	41.9	43.9	41.1	42.8	46.5	49.4
8	2	5.0	59.7	62.3	57.6	58.9	58.9	59.6

Navigation: Statistics / Session Log / Time History / **Measurement History** / **M. Spect. Ln**

FIGURE 5-18 Excel Workbook Measurement History Spectral Ln Display

Event History Display

1	Record #	Date	Time	Duration	LASeq	Max SPL	Time	LZpk (max)	Trig. Level	Overload
2	1	08/14/2006	16:09:49	00:00:02.1	87.9	79.5	16:09:50	90.8	75.0	No
3	2	08/14/2006	16:09:55	00:00:07.2	103.0	99.5	16:09:56	106.0	75.0	No
4	3	08/14/2006	16:10:07	00:00:05.4	99.2	95.2	16:10:08	104.3	75.0	No
5										

Navigation: Time History / Measurement History / M. Spect. Ln / **Event History** / Event TH

FIGURE 5-19 Excel Workbook Event History Display

Event Time History Display

1	Event	Record #	Time	LAeq	6.3	8.0	10.0	12.5	1
2	Event 1	1	-0.5	41.2	53.8	52.3	48.7	48.9	
3		2	-0.4	40.8	51.6	51.6	42.2	50.8	
4		3	-0.3	43.5	50.2	48.6	43.1	51.2	
5		4	-0.2	51.5	50.9	45.7	48.6	49.9	
6		5	-0.1	83.6	52.5	44.8	50.6	46.6	
7		6	0.0	89.5	53.0	48.0	50.4	42.9	
8		7	0.1	91.9	53.8	49.7	48.9	41.1	
9		8	0.2	90.8	54.1	52.3	47.2	46.5	
10		9	0.3	88.5	54.2	52.8	44.9	51.4	
11		10	0.4	89.0	53.8	51.0	43.3	53.6	
12		11	0.5	90.1	53.2	47.2	41.8	54.1	

FIGURE 5-20 Excel Workbook Event Time History Display

Note that the values of Time listed are the elapsed time of the event with respect to the time 0 corresponding to the start of the event. Negative values represent data measured during the pre-trigger time period.

LIMITED PRODUCT WARRANTY

PCB PIEZOTRONICS, INC.

- A. **Total Customer Satisfaction.** PCB Piezotronics, Inc. ("PCB") guarantees Total Customer Satisfaction. If, at any time you are not completely satisfied with any PCB product, PCB will repair, replace or exchange it at no charge, except as otherwise provided in this Limited Warranty. The employees of PCB strive to provide superior, unmatched customer service. Should you find yourself dissatisfied with any PCB product for any reason, consult a PCB Application engineer or local representative/ distributor to discuss your situation. If there are any questions regarding power, intended application, or general usage, please consult with your local sales contact or distributor.
- B. **Purchase Price Refund/Limited Warranty.** PCB warrants to the original purchaser (the "Buyer") that, unless otherwise expressly specified in writing by PCB, all PCB products or repairs shall be free of defects in material and workmanship for a period of one (1) year from date of original purchase. In furtherance of PCB's commitment to Total Customer Satisfaction, PCB will refund 100% of the customer's purchase price for any PCB product or repair with which you are not completely satisfied. The option of a refund may be selected in lieu of the repair, replacement or exchange of the product.
- C. **Shipping Charges.** PCB will pay all shipping charges in connection with the fulfillment by PCB of its obligations under this Limited Warranty (i) at any time with respect to a defective product and (ii) during the first year only, if the product is not defective.
- D. **Products Manufactured by Others.** This Limited Warranty does not cover any products manufactured by others. Such products are subject to the warranty, if any, of their respective manufacturers, and to be repaired only by a respective authorized service person for such products. PCB shall have no obligation to undertake repairs of products manufactured by others.
- E. **No Special, Incidental or Consequential Damages.** **PCB's sole obligations under this limited warranty are set forth above in paragraphs A, B and C. In no event shall PCB be liable to the buyer or any other person for any indirect, special, incidental or consequential losses or damages connected with the use of the product under this limited warranty. Such damages for which PCB shall not be responsible include, but are not limited to, lost time and convenience, loss of use of the product, the cost of a product rental, costs of gasoline, telephone, travel or lodging, the loss of personal or commercial property, and the loss of revenue.**
- F. **No Liability in excess of Purchase Price.** **In no event shall PCB's obligations under this limited warranty exceed the purchase price of the product plus any shipping charges that PCB may be obligated to pay pursuant to paragraph C above.**

G. No Extension of Statute of Limitations. Any repairs performed under this limited warranty shall not in any way extend the statutes of limitations for claims under this limited warranty.

H. Waiver of other Warranties. The express warranties set forth in this limited warranty are in lieu of and exclude any and all other warranties, express or implied, including, but not limited to, the implied warranties or merchantability and fitness for a particular purpose.

I. Procedure for Warranty Performance. If the product fails to perform to PCB's specifications, the Buyer must provide PCB with the applicable model and serial numbers, the date of purchase, and the nature of the problem.

J. Authority to Alter This Limited Warranty. No agent, representative, or distributor of PCB has any authority to alter the terms of this Limited Warranty in any way. This Limited Warranty may be altered only in writing by an authorized officer of PCB.

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