Resodyn™
ACOUSTIC MIXERS

Data Transfer and Firmware Utility, Differential to Absolute Vacuum System Conversion, and Fixture File Information

RAMTOOLS

For use with Resodyn LabRAM I and LabRAM II Series.

TABLE OF CONTENTS

Revision (Installation and Update Information)

Revision	Update/Description	Version/Date

1. Introduction

The LabRAM I and II series of Resodyn Acoustic Mixers store data in internal memory. In order for the user to transfer and view this stored data, a custom Windows Application, referred to as RAM Tools is required. RAM Tools synchronizes LabRAM I and II data with storage on a Windows PC. Additionally, the application can "flash" updated operating firmware to the LabRAM I and II. RAM Tools is a lightweight Windows application that can run on Windows 10, Windows 8, or Windows 7.

NOTE: Administrator login is required for RAM Tools installation and USB driver installation

The LabRAM II and PharmaRAM II can be equipped with an optional vacuum control system to optimize mixing operations. Resodyn Acoustic Mixers recently upgraded all vacuum control modules to use "absolute" measurement systems. The previous generation of vacuum control modules used "differential" measurement systems. Differential measurement systems use the ambient air pressure as the measurement reference, whereas absolute measurements systems use an internal reference that is at a very low pressure (high vacuum). The purpose of transferring to absolute measurement was to allow mixing recipe transference between locations with different ambient air pressures due to altitude variation.

Software re-configuration is required for older LabRAM II and PharmaRAM II systems (machines sold before July 15, 2019) to operate with the new absolute vacuum control modules. RAM Tools version 4.0.3 and newer is required along with firmware version 4.9.4 and newer.

The second generation of Resodyn Acoustic Mixer (RAM), which includes the LabRAM I, LabRAM II, LabRAM II H, and PharmaRAM II, can be fitted with a number of different mixing containers and fixtures to secure the aforementioned containers to the mixer mounting plate. In order for optimal operation, the RAM mixer needs to "know" what container and fixture will be used for a mixing operation before the mix starts. The information about the container and fixture are stored in what is referred to as a fixture file. These fixture files define:

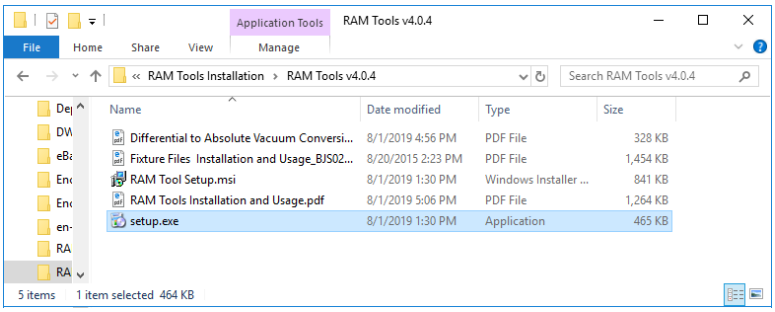
- Starting frequency
- Minimum/maximum frequency
- Maximum acceleration
- Maximum vacuum
- Minimum/maximum temperatures

The fixture file information is used to provide quick response to the desired operation set points, as well as provide supervisory operation with standard and custom fixtures. Fixture files are selected for a mixing operation by "linking" with what is referred to as a *Configuration* in the HMI software. The fixture file needs to be selected from the RAM's HMI screen before operation when a different fixture has been installed on the machine. The fixture file is the user's method of "informing" the RAM system with what fixture and vessel is attached to the payload plate.

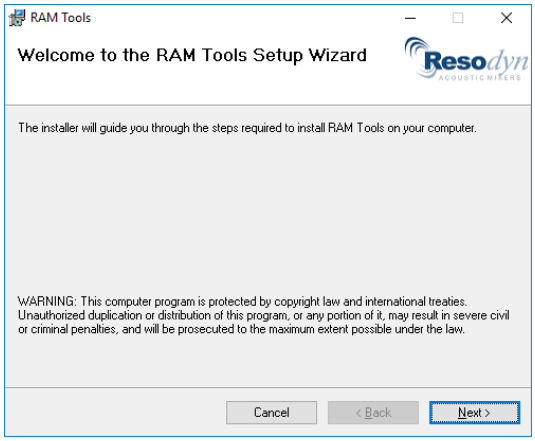
2. Data Transfer and Firmware Utility

2.1. RAM Tools Installation

1. Insert the installation media into the Windows PC.
2. Double-click “setup” or “setup.exe.”

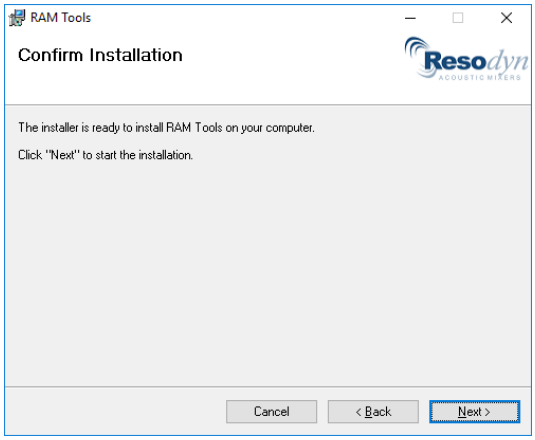


NOTE: The UAC dialog appears prompting for Administrator credentials. After credentials are provided, the RAM Tools installer will start, and the Setup Wizard dialog box appears.



3. Click Next>.

NOTE: The “Confirm Installation” dialog box appears.

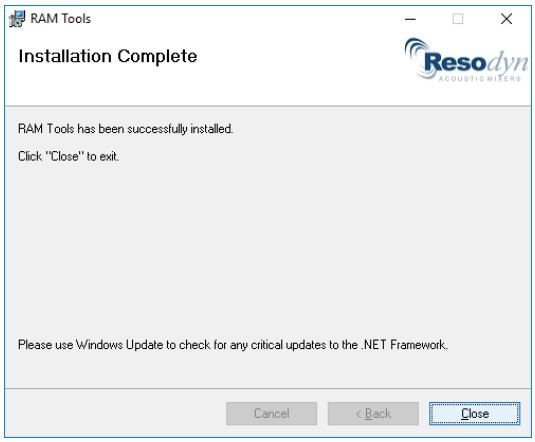


4. Click Next>.

NOTE: The installer will run, and Installation Complete dialog box appears.

5. Click Close.

NOTE: The RAM Tools application installation is now complete.



2.2. Driver Installation for USB Connection to PC

NOTE: In order to obtain the files from the LabRAM I and II, a USB driver must be installed on the Windows PC. Administrator login is required to accomplish this task.

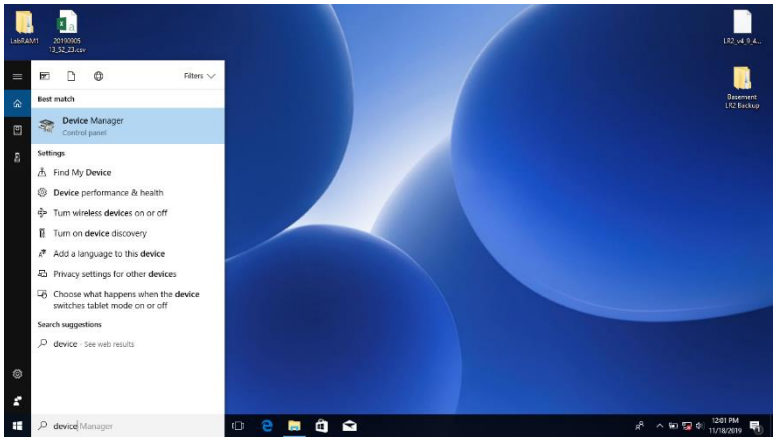
NOTE: A Mini USB cable is required to plug into the back of the LabRAM I and II, and a standard USB connection for the PC. The USB connector is highlighted in yellow on the image to the right.

1. Find the USB connection on the back of the LabRAM I or II.
2. Plug the USB cable into the LabRAM I or II and then into an available USB connector on a Windows PC.
3. Apply power to the LabRAM I or II.

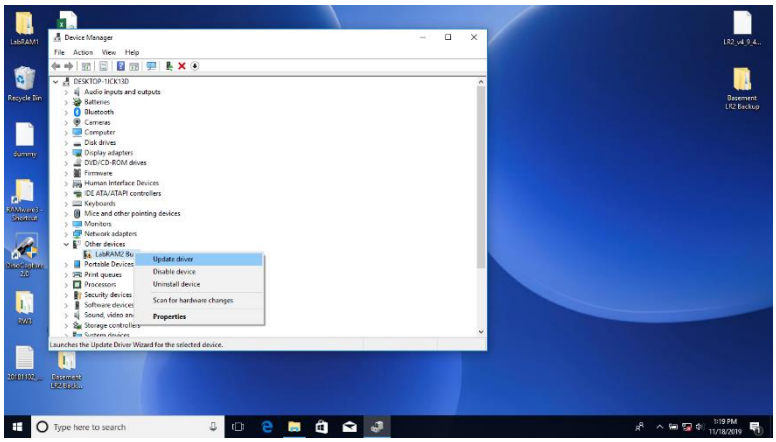
2.3. Windows 10, 64-bit Driver Installation

A driver folder named “v1.2.3.25 - LR1_and_LR2_USB_Driver_Windows10_x64” is included with the RAM Tools installation folder. This driver will only works for 64-bit (x64) Windows 10.

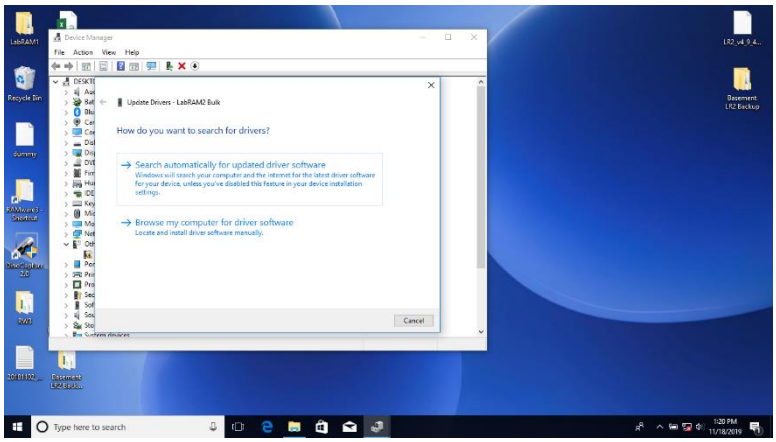
1. Type Device Manager in the search bar and select it above.



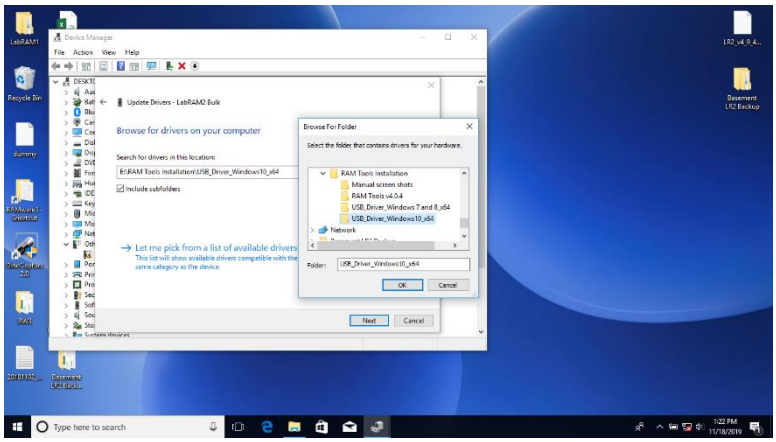
2. Under Other devices, find the LabRAM1 Bulk, LabRAM2 Bulk, or LabRAM2H Bulk.
3. Right click on it and select Update driver.

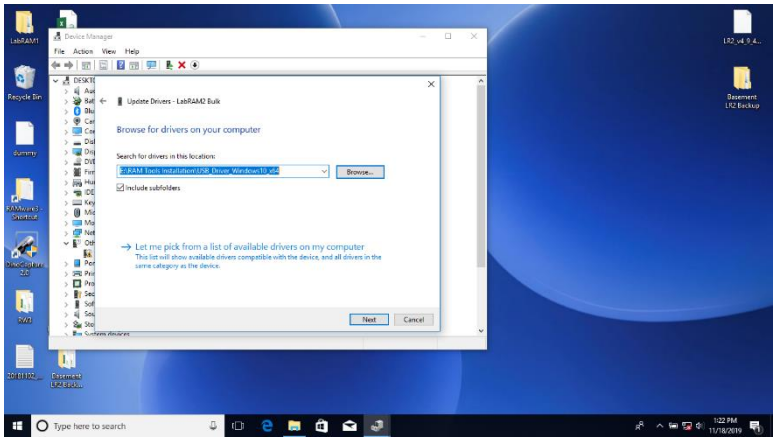


4. Select →Browse my computer for driver software.

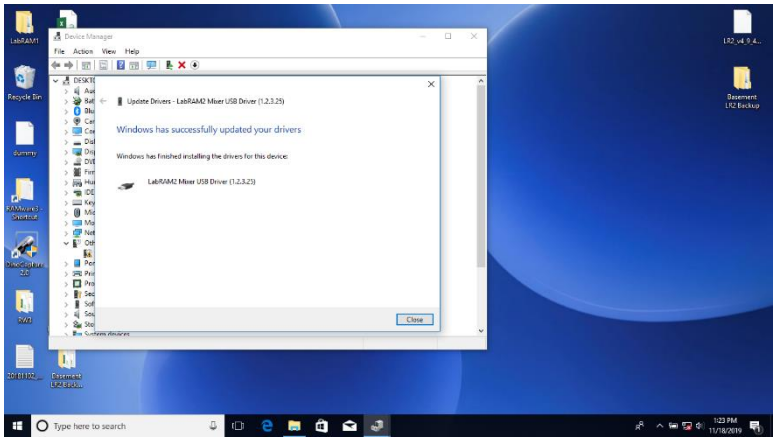


5. Navigate to the location where you saved the driver package (downloaded from the Installation Media) and select folder.
6. Click Next.





NOTE: The screen to the right will appear if the driver installation was successful.



2.4. Windows 8 Driver Installation

NOTE: Step 1 dictates which driver is selected.

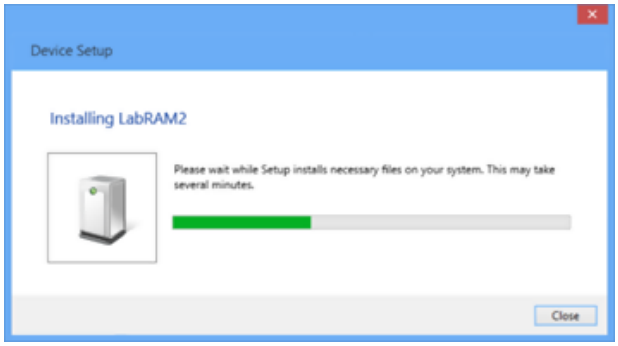
1. Identify whether your PC is 32-bit (x86) or 64-bit:
   a. Swipe in from the right edge of the screen and tap Search.
   b. Type “system” in the search box, and then tap or click Settings.

NOTE: If the PC is running a 64-bit version of Windows 8, “64-bit Operating System” is displayed in the “System type” field under the “System” heading. If the PC is running a 32-bit version of Windows 8,”32-bit Operating System” is displayed in the “System type” field under the “System” heading.

1. Turn power on to the LabRAM I and II.

   NOTE: At this point the Window PC will try to find a suitable driver for the LabRAM I and II.

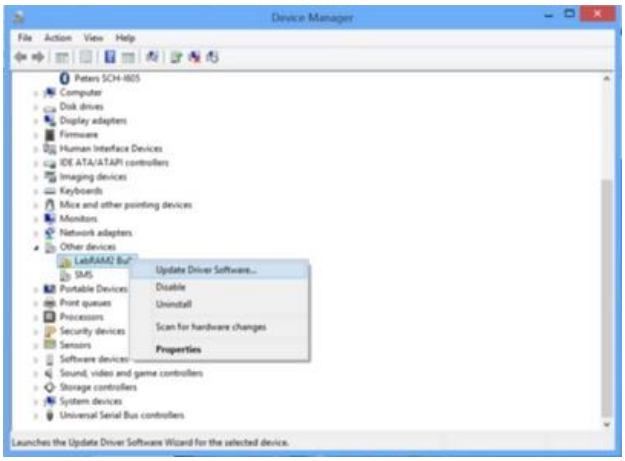
2. Press Close to close/cancel any attempts by the operating system to find a suitable driver.



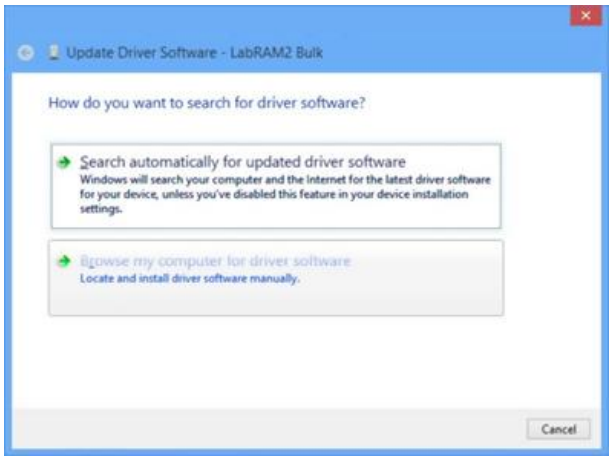
3. Right click on the Start button Window icon and select Device Manager.

NOTE: “LabRAM2 Bulk” icon should be located under “Other Devices.”

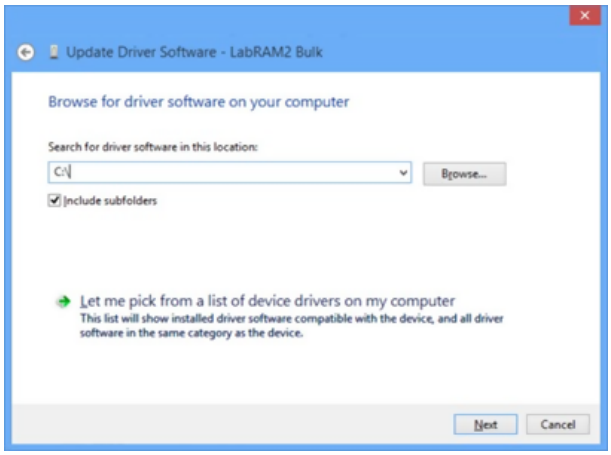
4. Right click on “LabRAM2 Bulk.”
5. Select “Update Driver Software.”



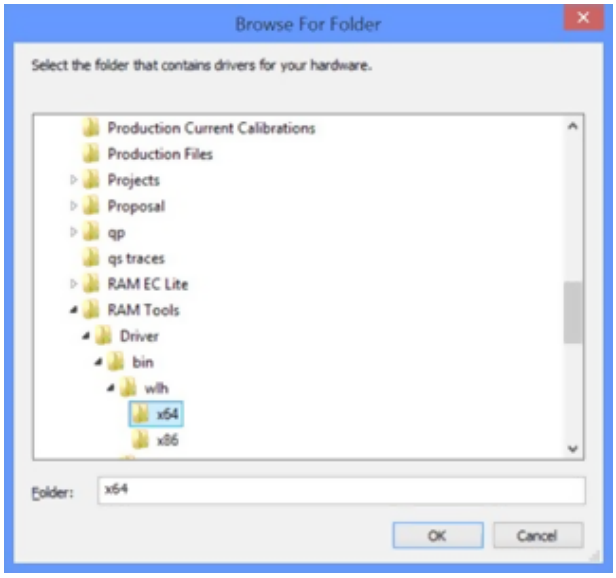
6. Select “→Browse my computer for driver software.”



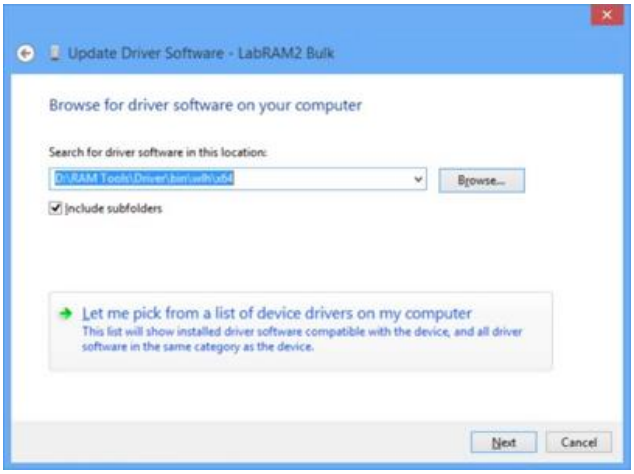
7. Browse to the “Driver” folder on the installation disk.
8. For 64-bit versions of Windows 8, select the Driver\bin\wlh\x64 folder.
9. For 32-bit versions of Windows 8, select the Drivers\bin\wlh\x84 folder.



10. Click OK.



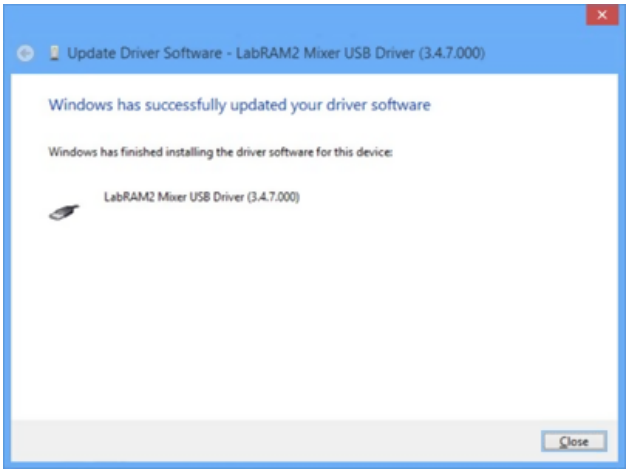
11. Click Next.



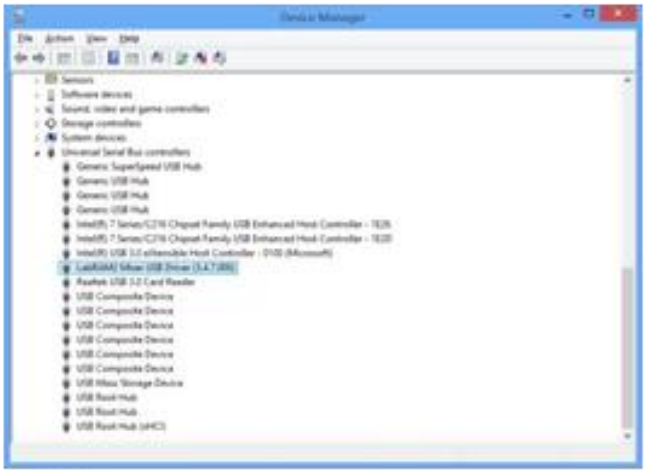
12. In the Windows Security dialog box that appears, select “Install.”

NOTE: When the driver installation is complete/successful, the dialog box to the right displays.

13. Close this dialog.



NOTE: Driver installation is complete. “LabRAM2 Mixer USB Driver ….” should now be visible under “Universal Serial Bus controllers” group in the Device Manager.



2.5. Windows 7 Driver Installation

NOTE: Step 1 (See 2.4 – Windows 8 Driver Installation) dictates which driver is selected.

1. identify whether your PC is 32-bit (x86) or 64-bit (x64):
   a. Click Start .
   b. Type system in the Start Search box.
   c. Click System in the Programs list.

NOTE: For a 64-bit version operating system, “64-bit Operating System” appears for the “System type” under System. For a 32-bit version operating system, “32-bit Operating System” appears for the “System type” under System.

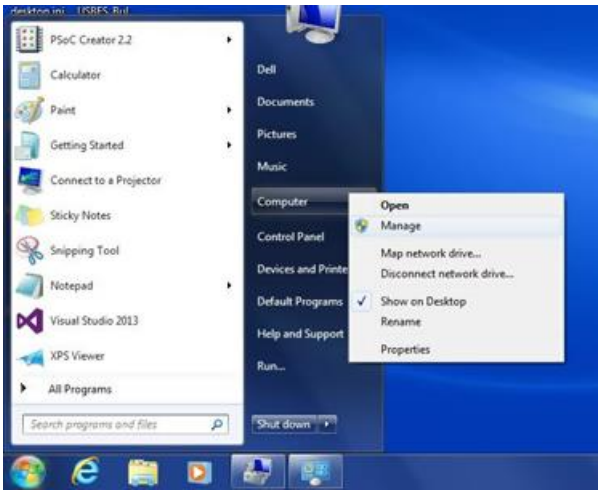
2. Turn power on to the LabRAM I and II.

NOTE: At this point the Window PC will try to find a suitable driver for the LabRAM I and II.

3. Close/cancel any attempts by the operating system to find a suitable driver.
4. Click Start in the task bar.

5. Right click on Computer and select “Manage.”
6. Supply administrator credentials or click yes on the UAC dialog box that appears.

   NOTE: From this point forward, the installation process for Windows 7 is identical to that explained in the section 0 (Windows 8). Please follow steps 4 through 13 in that section to complete driver installation



2.6. RAM Tools

1. Launch RAM Tools from the Resodyn Acoustic Mixers group.

   NOTE: The application uses a simple tab format layout, showing four tabs: “Log File Sync”, “Firmware”, “Fixtures”, and “Miscellaneous”.

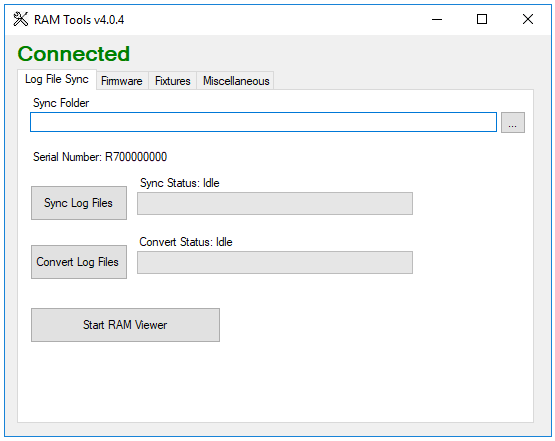
   The “Log File Sync” tab is used to copy files from the LabRAM I and II, convert them and then view them in RAM Viewer.

   The “Firmware” tab is used to update the operation firmware of the LabRAM I and II.

   The “Fixtures” tab is used to view and upload fixture files to the LabRAM I and II.

   The “Miscellaneous” tab is used to modify the configuration of the LabRAM I and II.

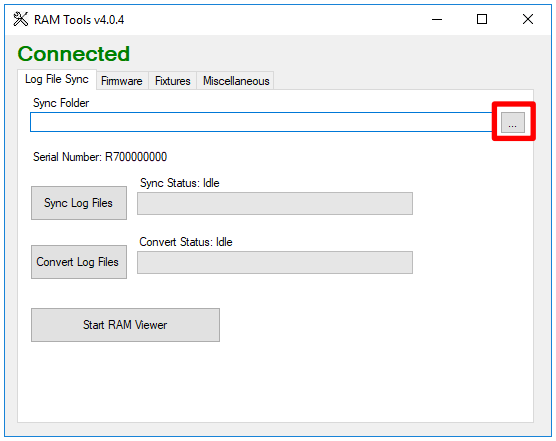
   At the top of the window, the Connected/Disconnected message indicates connection status to the machine.



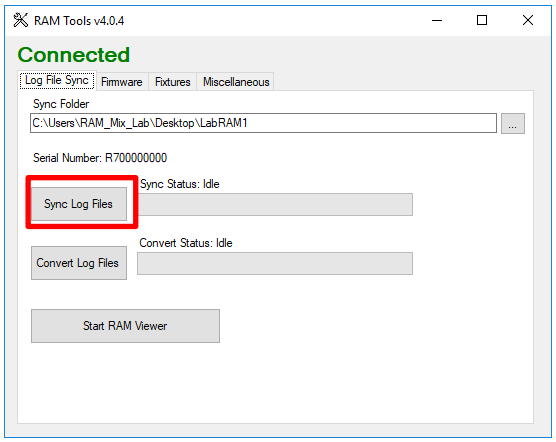
To perform any activities with RAM Tools, verify the message is green and says “**Connected**” as shown to the right.

2.7. RAM Tools – File Synchronization, Conversion, and RAM Viewer

1. Select a destination directory on the Windows PC to store the log files by clicking the "…" button to the right of the "Sync Folder" textbox.

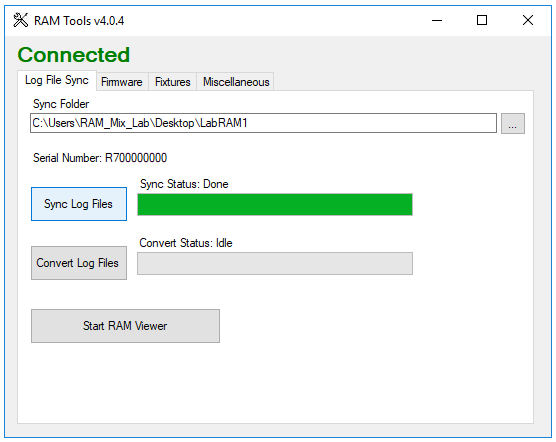


2. Click the "Sync Log Files" button to begin the synchronization process.

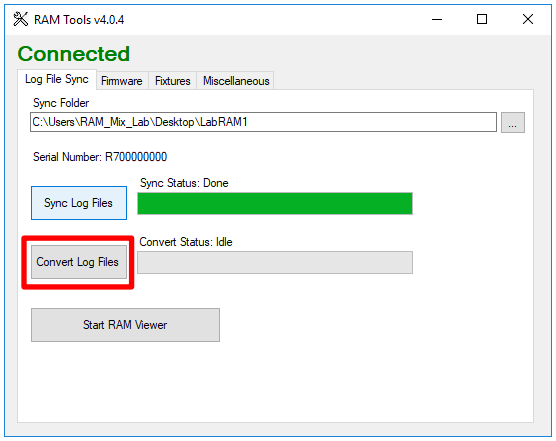


NOTE: All new/updated files on the LabRAM I and II will be copied to the destination folder in a sub-folder called "Raw Log Files." Depending on file size, synchronization can take several minutes.

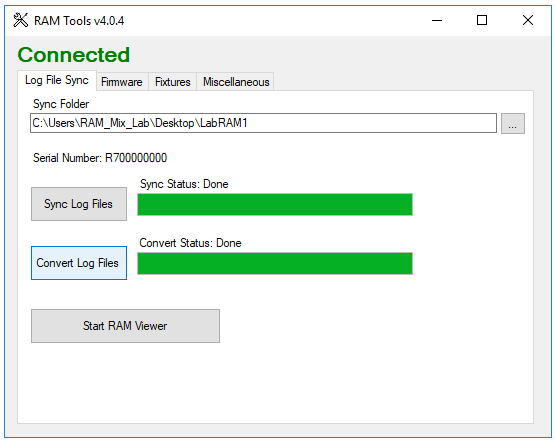
When the process is complete, the message above the progress bar will read "Sync Status: Done" (see image to the right). Note that these files are not in a format that is compatible with RAM Viewer and must be converted.



3. To convert the raw log files into a RAM Viewer compatible format, click the “Convert Log Files” button.



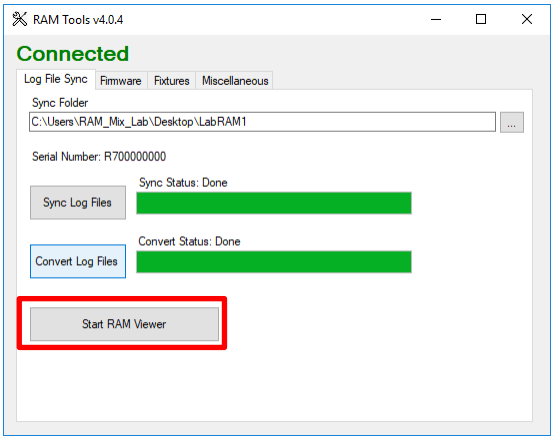
NOTE: Again, only files that need to be updated will be created/modified. This process may also take several minutes depending on file sizes. When the conversion process is complete, the message above the progress bar will read “Sync Status: Done.”



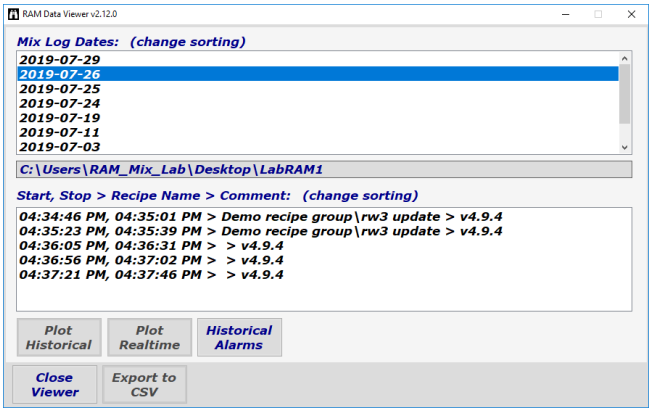
2.8. RAM Viewer

1. To view the data in RAM Viewer, click the “Start RAM Viewer” button.

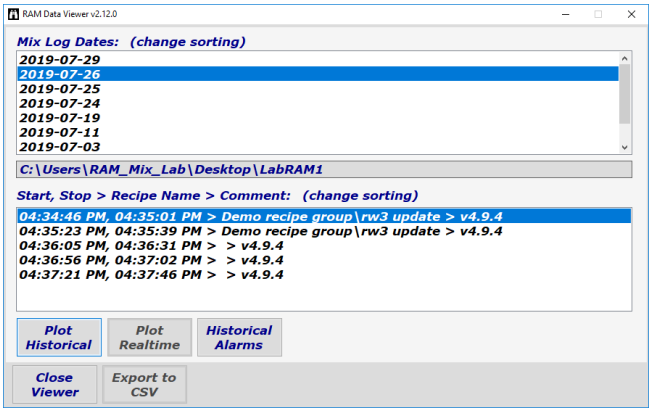
   NOTE: If this button is disabled and reads “PLEASE INSTALL RAM VIEWER,” then RAM Viewer has not yet been installed on your computer and, therefore, cannot yet be used.



2. If installed, RAM Viewer will start and will be pointed to the directory where the converted files are located. At this point, RAM Viewer can be operated normally. To access, download, and save the file of interest, select the date of the batch file.

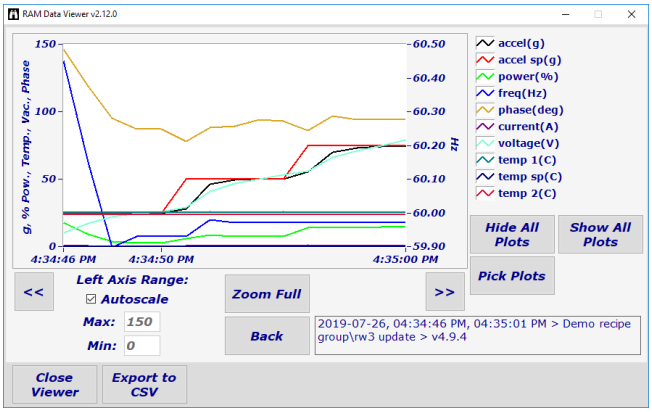


NOTE: The available batch files appear in the lower window.



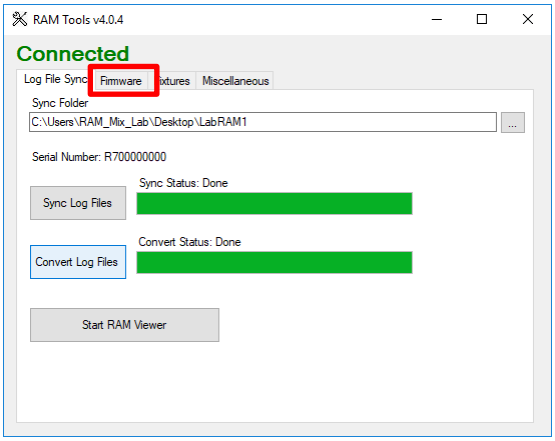
NOTE: The “Plot Historical” button will activate to allow a graphic view of the data.

The “Export to CSV” button will also be activated. Clicking this button opens the “Save As” dialog box. The selected file can then be saved to the preferred location.

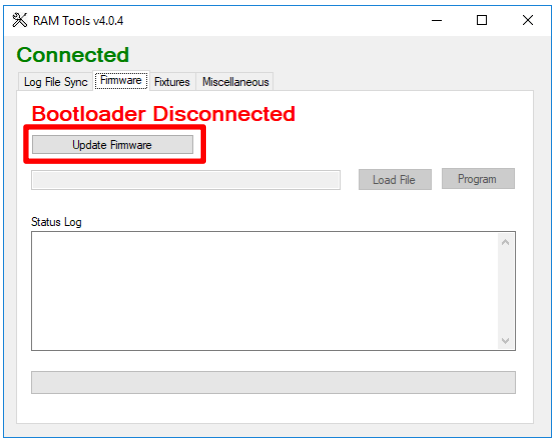


2.9. RAM Tools – Firmware Update

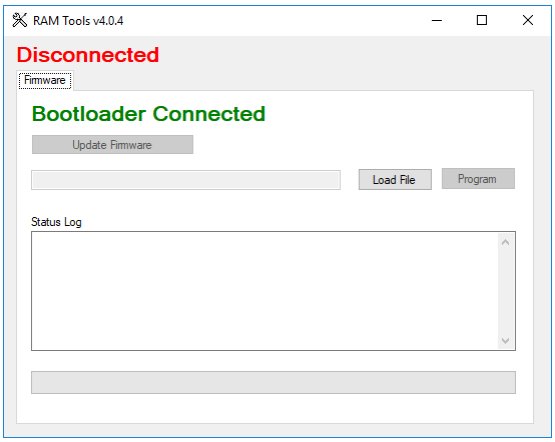
NOTE: RAM Tools is also used to update firmware on the LabRAM I and II series of mixers. Resodyn Acoustic Mixers will need to provide a file with a *.cyacd file extension to execute a firmware update. In RAM Tools, click on the “Firmware” tab.



1. To begin the firmware update, click the “Update Firmware” button.

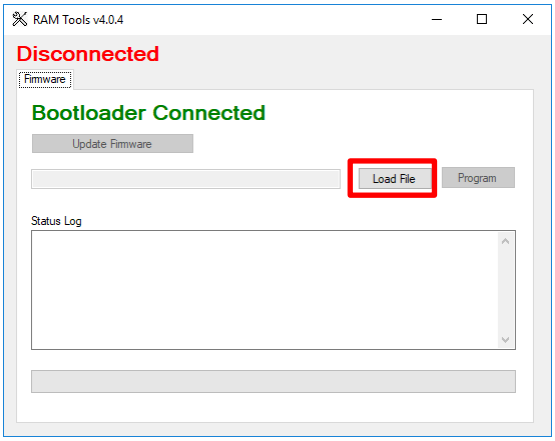


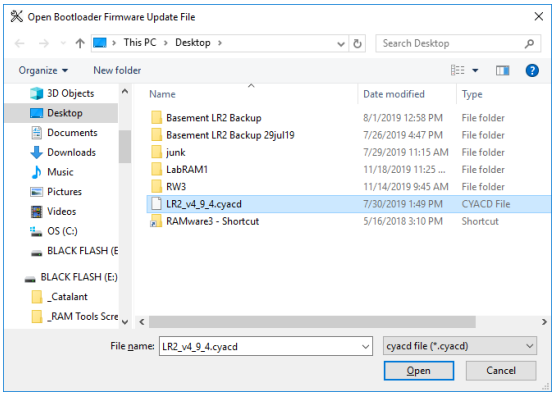
NOTE: The top connection message changes to the color red and reads “**Disconnected.**” The connection message in the “Firmware” tab changes from red to green and reads “**Bootloader Connected**.”

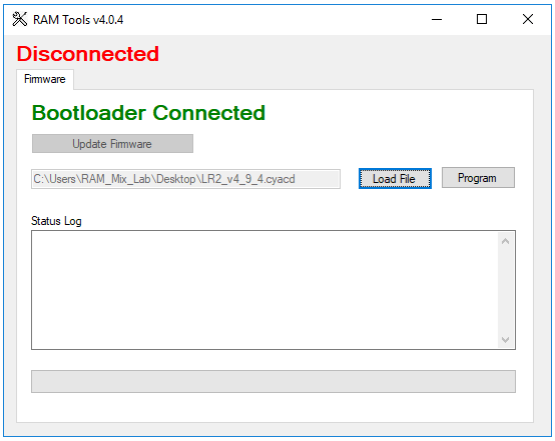


2. Click the “Load File” button and browse to the *.cyacd provided by Resodyn Acoustic Mixers.

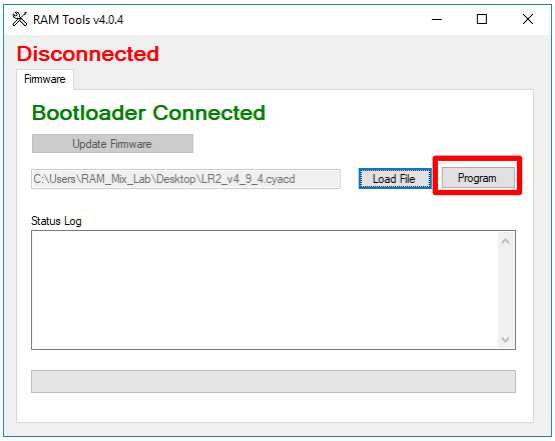
NOTE: The file path appears in the text box.





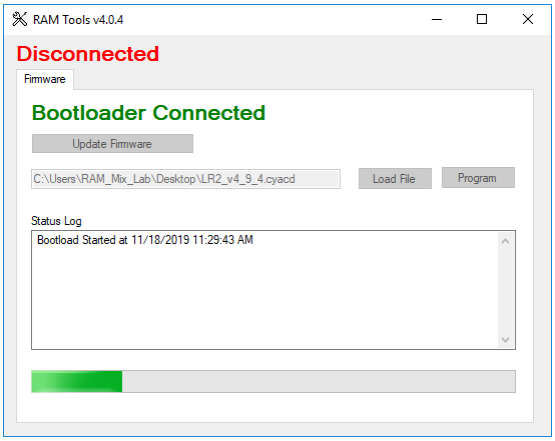


3. Click “Program” to flash the new firmware to the LabRAM I and II.

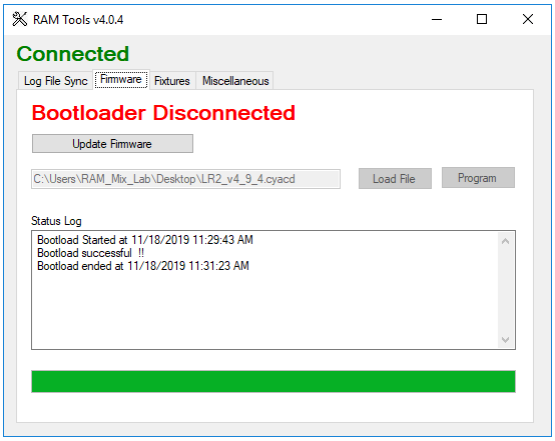


NOTE: The mix chamber light will turn off (if applicable) and the HMI screen displays “HMI Comms Failure” in the status bar. This is the correct behavior.

NOTE: Status messages are displayed in the “Status Log” text field. The progress bar gradually fills with the color green while updating. This process takes approximately one minute.



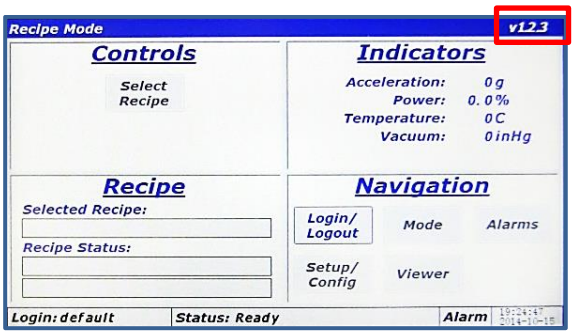
NOTE: When complete, a “Bootload ended at…” message displays in the “Status Log” textbox and the top connection message changes back to a green-colored “**Connected**” and the lower message changes to “**Bootloader Disconnected**”.



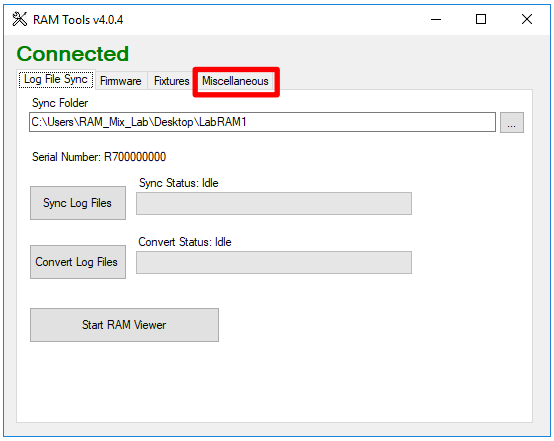
3. Differential to Absolute Vacuum System Conversion

3.1. Procedure

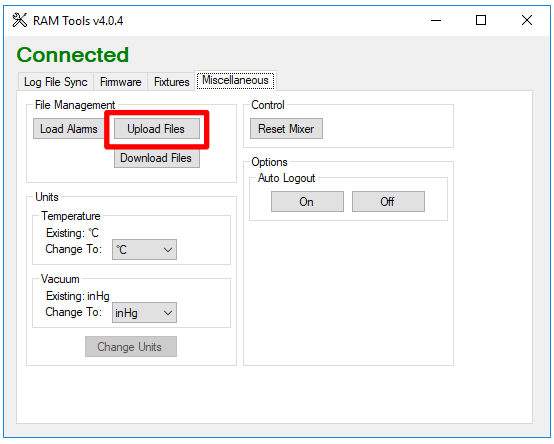
1. Power up the LabRAM II or PharmaRAM II (delivered before July 15, 2019) and check the firmware version. This is the number at the top-right corner of the LabRAM II or PharmaRAM II LCD screen. Firmware v4.9.4 or higher is required for differential to absolute vacuum system conversion. If the firmware version is lower than v4.9.4, then the firmware will need to be upgraded, per the RAM **Tools – Firmware Update** section.



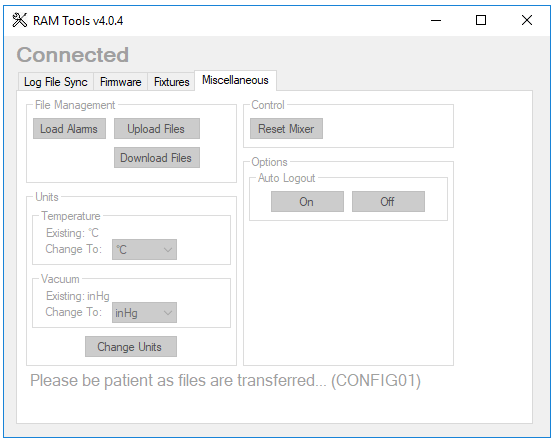
2. After verifying firmware version (or updating firmware), click on the Miscellaneous tab.



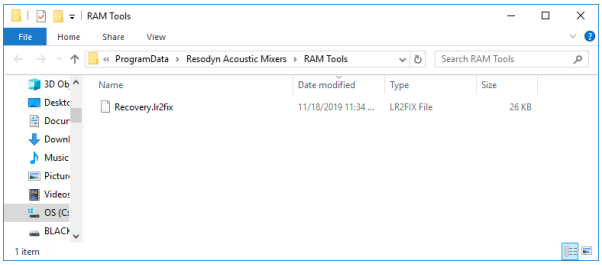
3. Backup the existing configuration by clicking on the Upload Files button.



4. The backup procedure typically takes less than one minute. Status is indicated at the bottom of the application window.

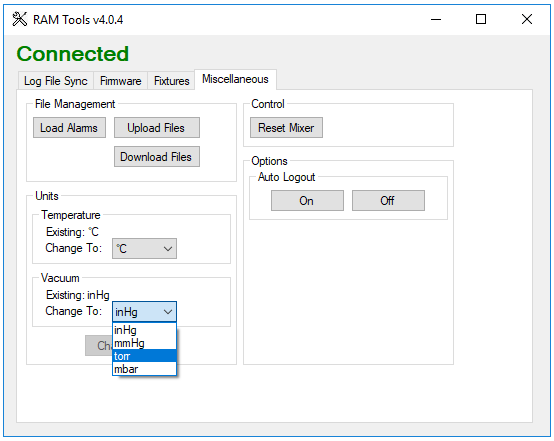


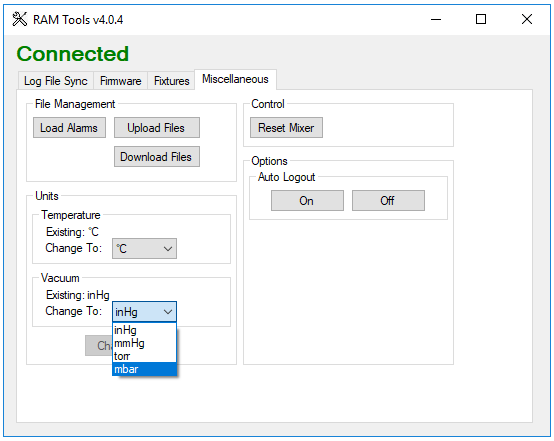
5. When the backup procedure is complete, a File Explorer window will be displayed with the backup file (Recovery.lr2fix). Copy this file to a safe place.



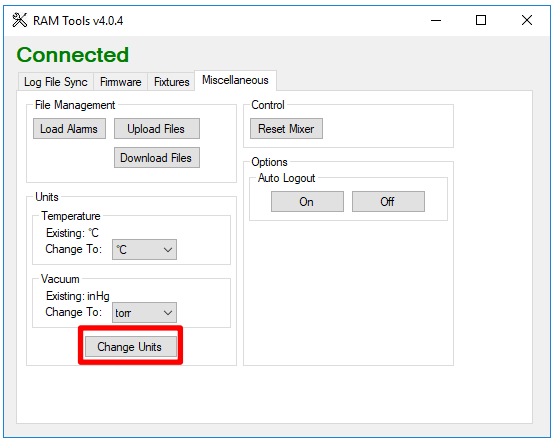
6. Select the absolute vacuum units that are preferred.

NOTE: The options are torr or mbar.

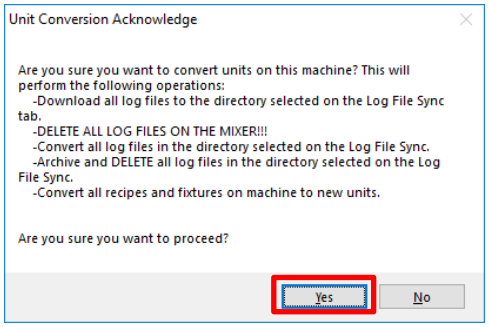




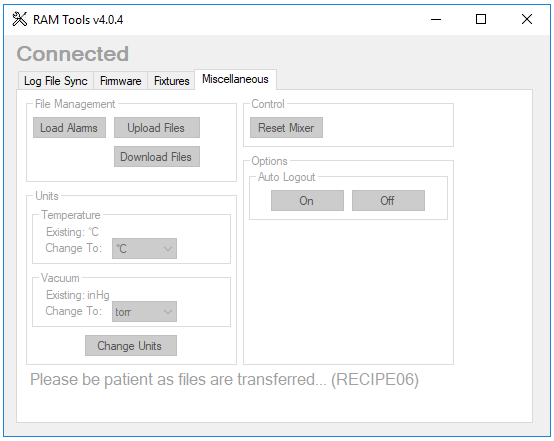
7. Click the Change Units button.



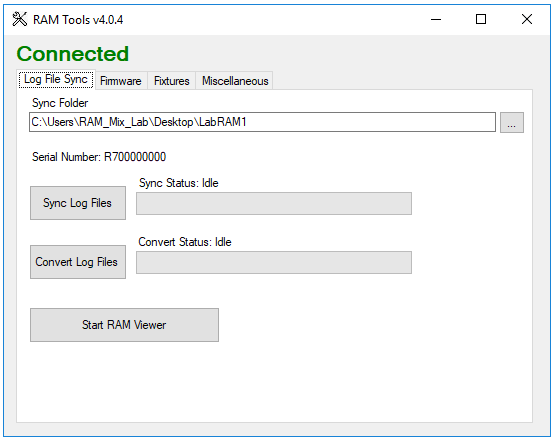
8. A window appears prompting for acknowledgment before beginning the process. Click Yes to continue the conversion.



NOTE: The conversion process takes several minutes. Status is indicated at the bottom of the application window.



NOTE: Upon completion of the unit update, the LabRAM II or PharmaRAM II will be rebooted and RAM Tools will switch back to the first tab.



4. Fixture File Installation and Usage Guide

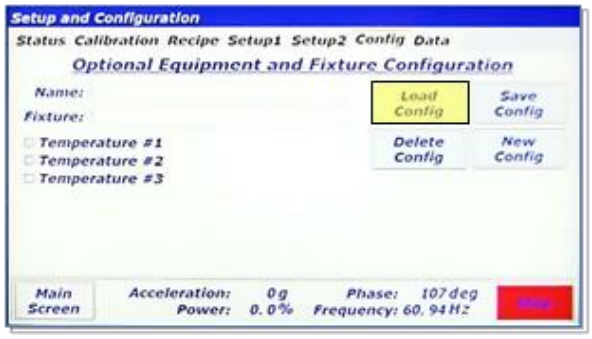
4.1. Configurations

Configurations serve two purposes for the LabRAM I and II series of Resodyn Acoustic Mixers: To set operational limits and to switch optional features on and off. The fixture file is used to set the operational limits (e.g., temperature sensors that can be turned on and off). By disabling the temperature measurements, RTDs can be unplugged from the system and not cause erroneous alarms or clutter the time history trends in the Viewer screen.

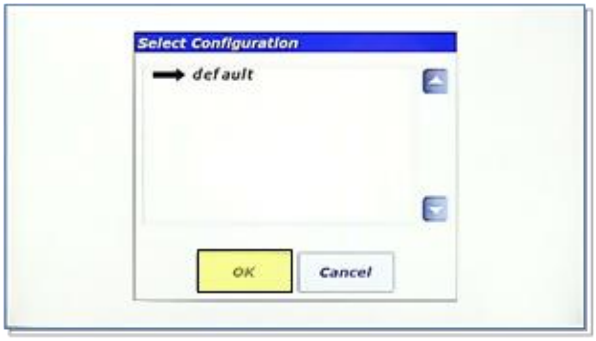
4.2. Editing a Configuration

The following section shows how to modify the configuration provided with the LabRAM I and II systems called “default.” This sequence assumes that the temperature measurement option is equipped, and that temperature #1 was not used initially.

1. Under the Config tab, touch the Load Config button.

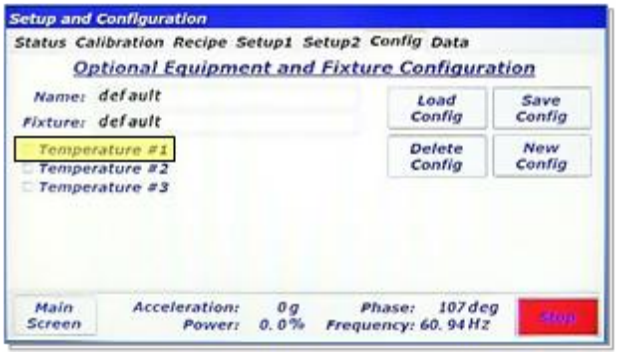


2. In the “Select Configuration” dialog box, select “default” by touching its line.
3. Touch OK.



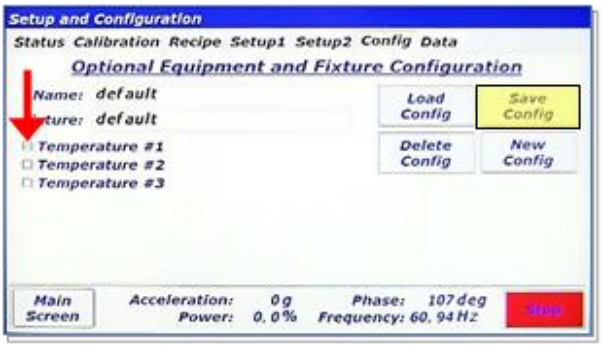
NOTE: The “default” configuration is now loaded. Notice that all of the temperature checkboxes are unchecked. This means that, in its current state, no temperature alarming would be active and all temperatures would read “0.”

4. Turn on Temperature #1 by touching it.

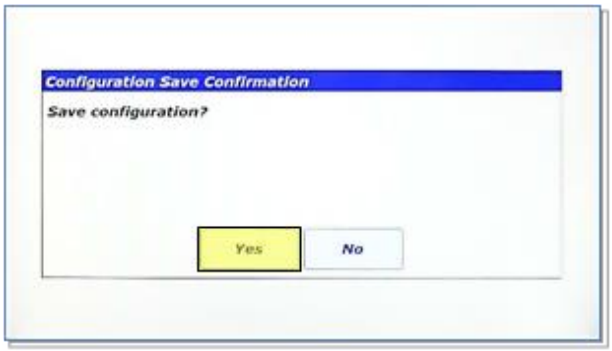


NOTE: Temperature #1 is now checked. The default configuration cannot be deleted, but can be modified.

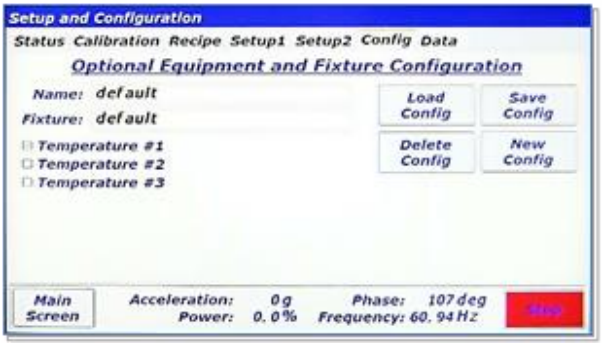
5. Touch the Save Config button to commit changes.



6. Touch Yes on the “Configuration Save Confirmation” dialog box.



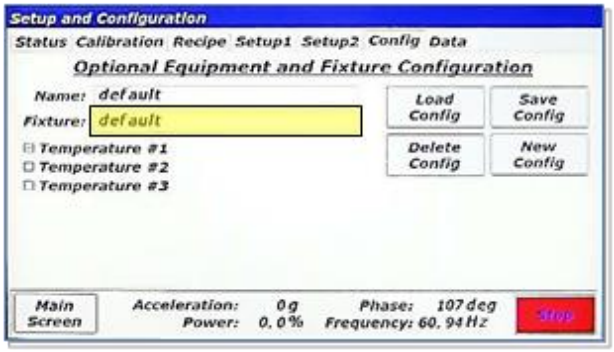
NOTE: Now that temperature #1 is checked and the default configuration saved, Temperature Channel #1 will be monitored and displayed. Additionally, all fixture and user temperature alarm limits will be activated.



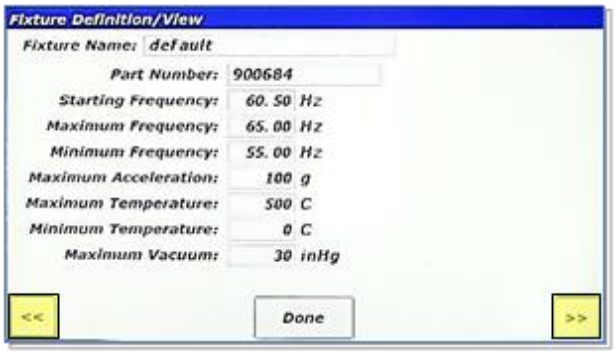
4.3. Linking a Fixture File to a Configuration

The following procedure describes how to assign a fixture file to a configuration.

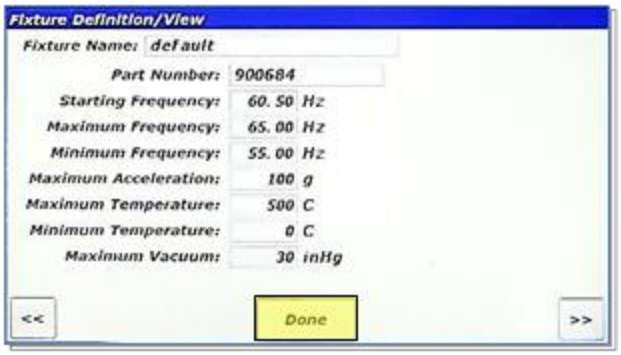
1. From the Config tab with a configuration loaded (default configuration shown), touch the “Fixture:” text box.



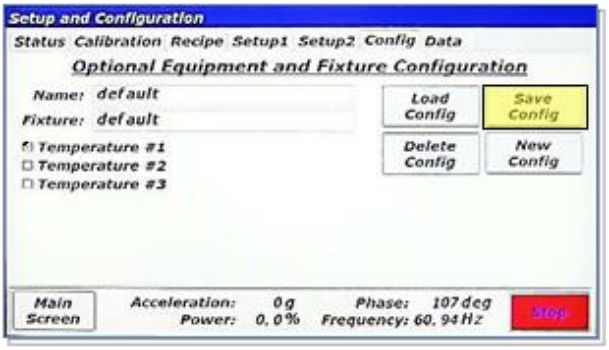
NOTE: The “Fixture Definition/View” screen appears. The parameters for the selected fixture are displayed. When new fixtures are ordered from Resodyn Acoustic Mixers, fixture files will need to be installed on the mixer using the procedure described later in this document. If the system has more than one fixture defined, the “<<” and “>>” buttons scroll through all of the fixture files.



2. Touch Done when the correct fixture is visible.



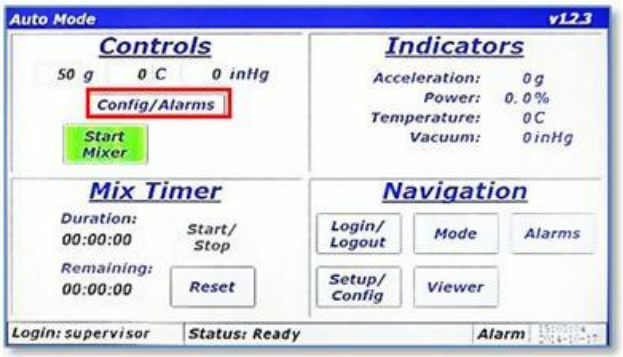
3. Touch the Save Config button to commit changes.



4.4. Setting Active Configuration in Auto Mode

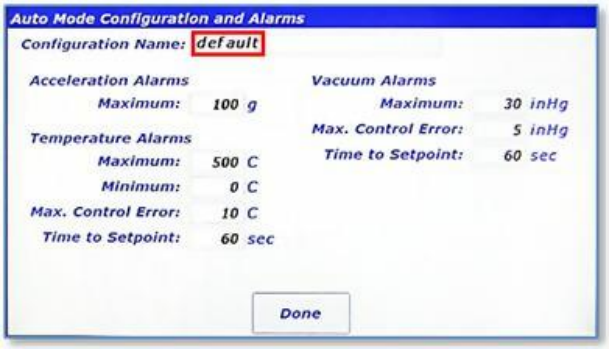
In order for a Configuration (and fixture) to be used by the LabRAM I and II systems, it has to be selected. This section shows how to select a Configuration in Auto Mode.

1. To select a Configuration, touch the Config/Alarms button above the green-colored Start Mixer button.



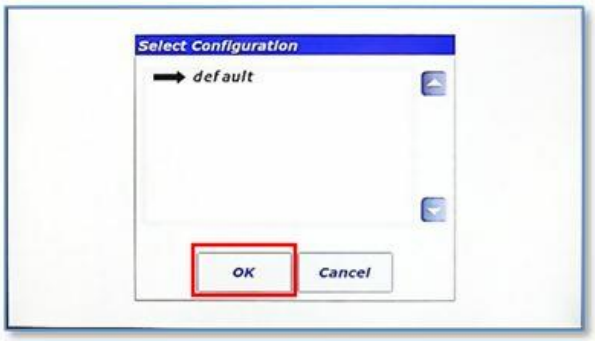
NOTE: The “Auto Mode Configuration and Alarms” screen is displayed.

2. Select the Configuration for Auto Mode by touching the “Configuration Name:” text box.



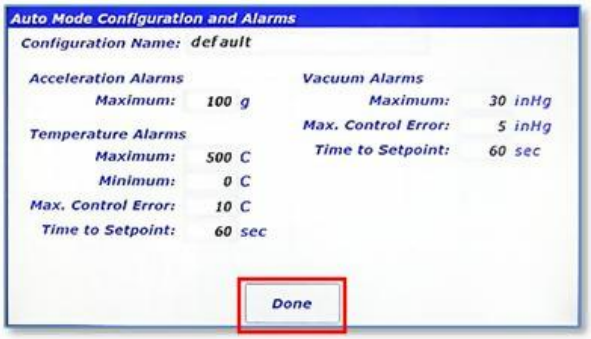
NOTE: The “Select Configuration” dialog box appears, and the Configuration can be selected from the list (only one configuration is defined in the image).

3. Touch OK after the configuration has been selected.



The “Auto Mode Configuration and Alarms” screen displays again.

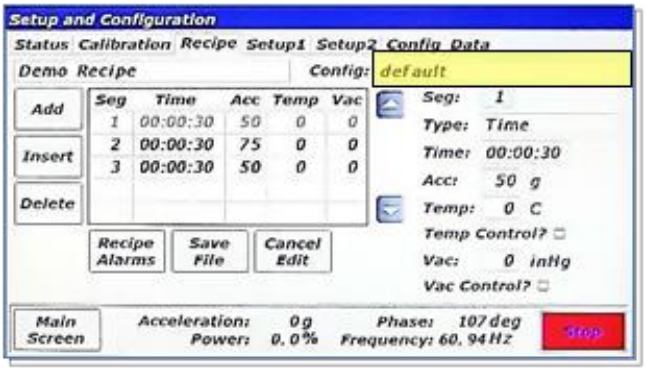
4. To close the dialog touch Done.



4.5. Setting Active Configuration in Recipe Mode

When using the LabRAM I and II systems in recipe mode, the configuration (and fixture file) is assigned while defining the recipe. This section shows where to select a Configuration while defining a recipe.

NOTE: The recipe-mode Configuration is selected from the recipe editing screen shown to the right. Refer to RAM systems manual for instructions on how to navigate to this screen.

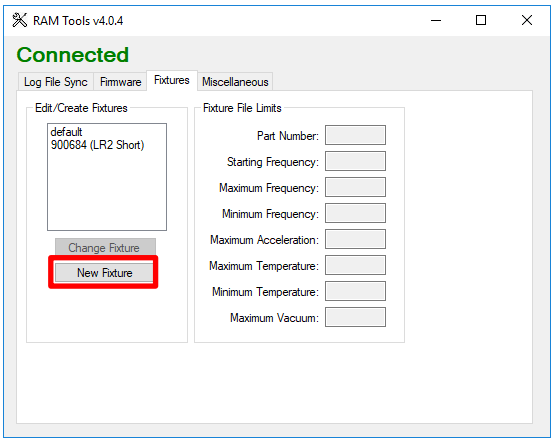


4.6. Fixture Files

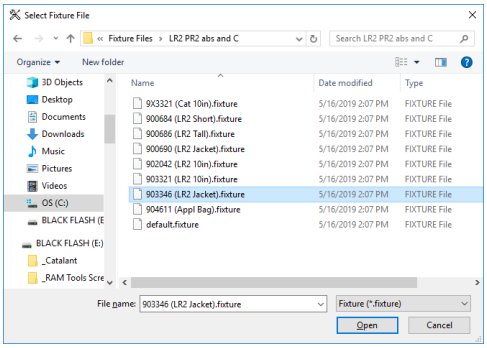
For optimum performance, the correct fixture files that correspond to the factory fixture need to be used. For each fixture purchased, fixture files are preinstalled on the second generation mixers at the factory. However, customers will need to download fixture files to the RAM systems for fixtures purchased after the initial RAM system purchase. Resodyn Acoustic Mixers will provide the fixture files via email, and the file is uploaded to the RAM system using RAM Tools (version 2.5.0 or later).

4.7. Downloading Fixture Files

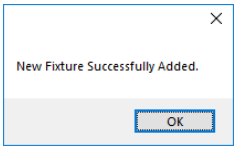
1. In RAM Tools, go to the Fixtures tab. Click on the “New Fixture” button.



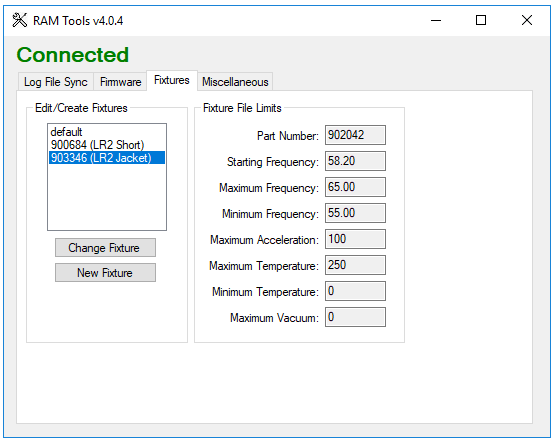
2. Navigate to the folder location where the fixture file was saved.
3. Select the fixture file and click Open.



4. The “New Fixture Successfully Added.” message box will appear if the operation was successful.



5. The newly created fixture file will now be listed in the Edit/Create Fixtures text box.



RAM 5 *Continuous*

RAM 55

*Omni***RAM** *Continuous*

RAM 5

RAM 5H

*Omni***RAM**

*Lab***RAM II** *Lab***RAM I**

*Lab***RAM II H**

Resodyn ACOUSTIC MIXERS