AcoustX

TOOLS FOR SOUND ANALYSIS

D2 Acoustical Measurement System Quick Start Guide

Version 1.6

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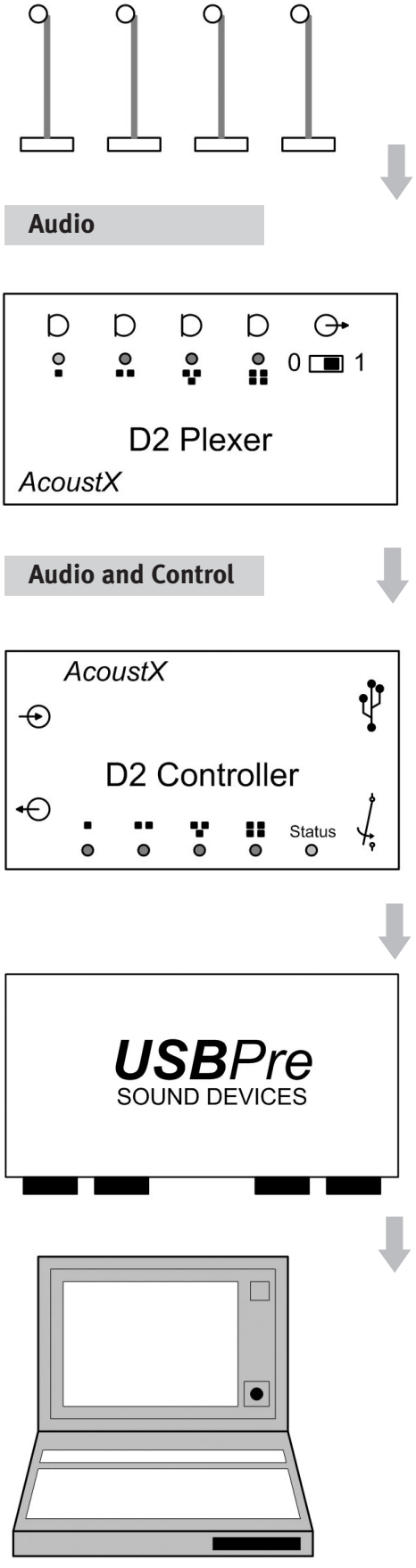
D2 Acoustical Measurement System: *Quick Start Guide*

Welcome to the **AcoustX D2 Acoustical Measurement System** and **win|RTA** software. This guide will provide you with an overview of setting up and connecting the hardware, and installing and running the software. The Quick Start Guide serves as basic reference for the D2 system, but is not intended as a detailed guide to operation of the system. More detailed reference information regarding system operation and the performance of acoustical tests is provided online and through separately offered training seminars. Contact AcoustX regarding availability of training seminars.

The *Quick Start Guide* is organized as follows:

D2 Acoustical Measurement System: *System Diagram*



Microphones

The D2 utilizes rugged, low diffraction, electret condenser microphones for accurate repeatable measurements. Each microphone is calibrated against a Bruel & Kjaer® 1/4 inch laboratory microphone and matched to a specific input (1, 2, 3, or 4) of the D2 Plexer. Microphones include an thin 40' cable for attachment to the D2 Plexer.

D2 Plexer

The D2 Plexer is a compact, 4-channel microphone preamp that provides remotely-controllable microphone selection. The selected microphone signal is relayed to the D2 Controller via a lightweight, 75' interconnect cable. Remote control is via win|RTA Software and the D2 Controller.

D2 Controller

The D2 Controller is a USB device that remotely controls microphone selection on the D2 Plexer, and that provides a relay closure to control pink noise for reverberation measurements. The audio signal from the selected Plexer channel is amplified and sent to the USBPre Digital Audio Interface.

USBPre Digital Audio Interface

The Sound Devices USBPre Digital Audio Interface is recognized throughout the industry for its quality and reliability. It is used to convert audio signals from the D2 Plexer to digital signals that are relayed to a remote computer via the Universal Serial Bus (USB).

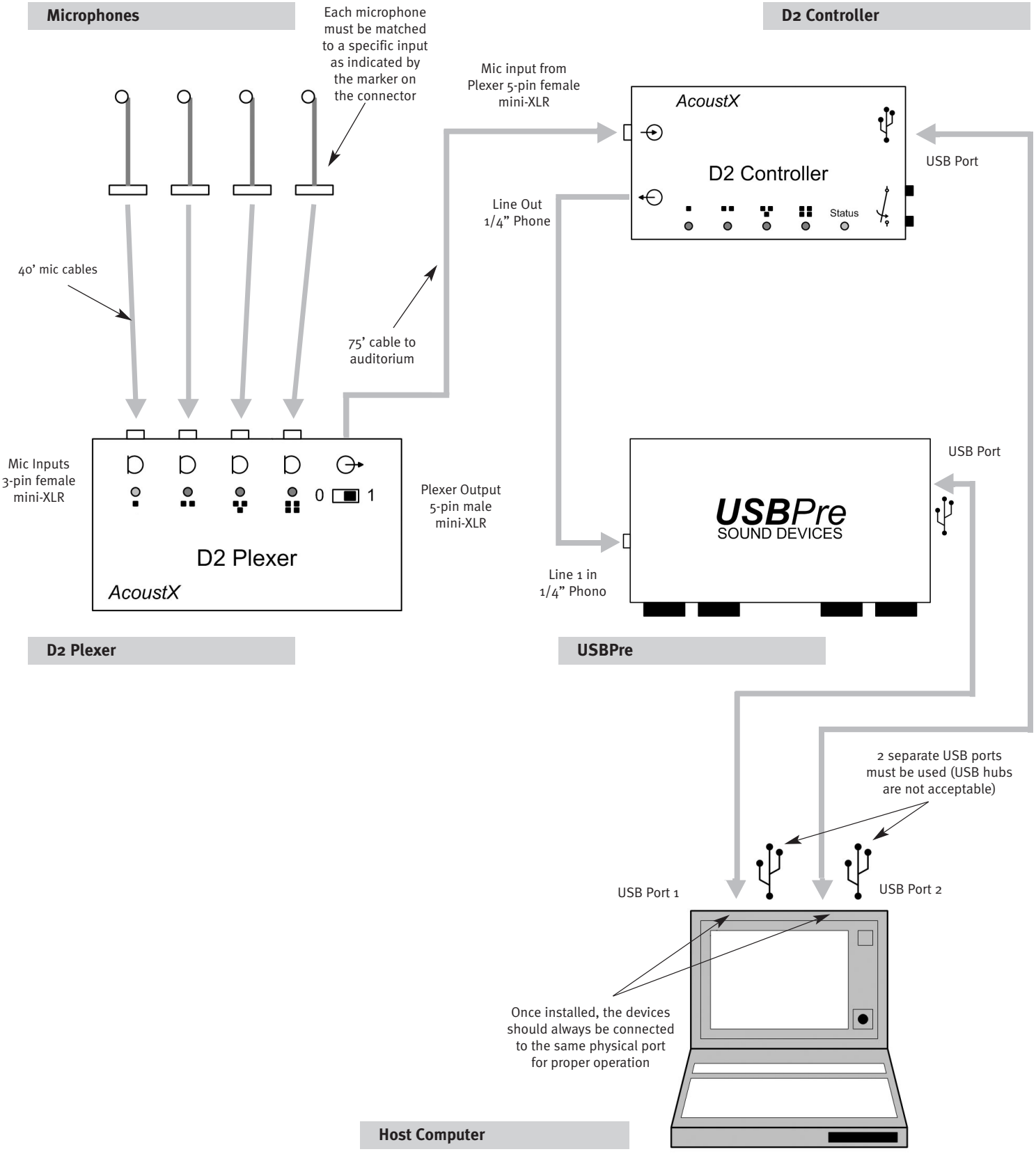
Host Computer with win|RTA Software

The **win|RTA** software provides high resolution audio measurements of frequency response (1/1, 1/3, 1/6, 1/12 octave), background noise (NC), and reverberation time (RT60). It includes the **Comprehensive Theatre Test**, which organizes all necessary tests in an easy-to-follow sequence. **win|RTA** requires a Microsoft® Windows XP computer with 2 USB ports (USB hubs are not acceptable).

D2 Acoustical Measurement System: *Connection Diagram*

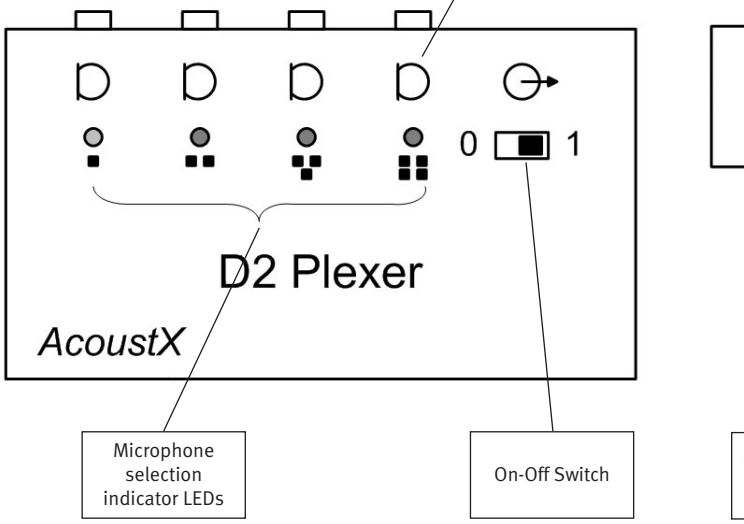
Equipment in Auditorium

Equipment in Projection Booth

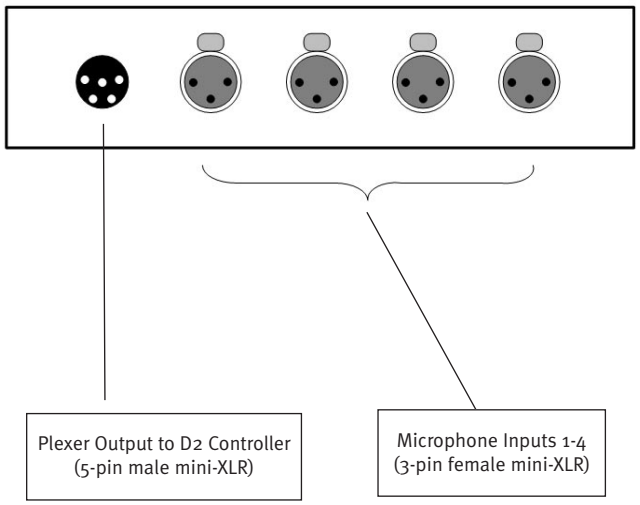


D2 Acoustical Measurement System: *D2 Plexer Panel Diagrams*

Top Panel View

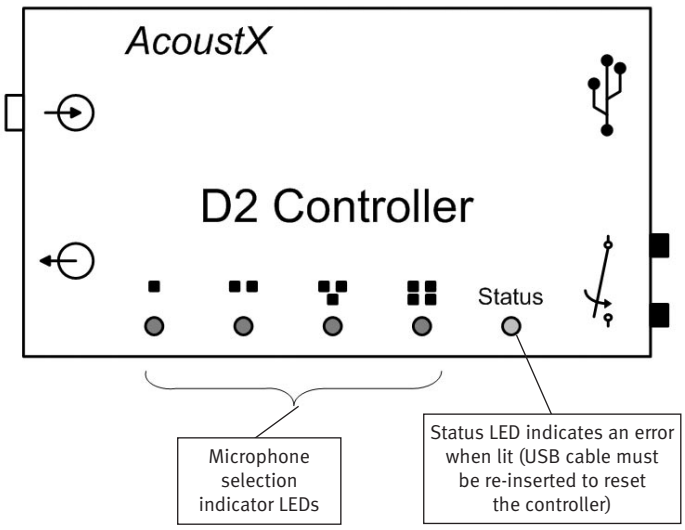


Rear Panel View

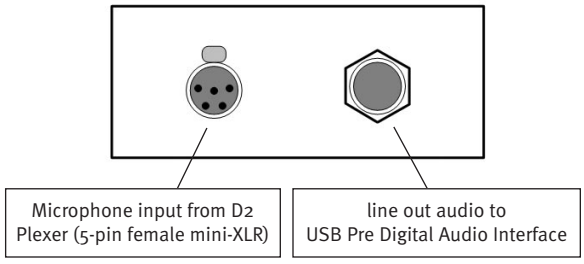


D2 Acoustical Measurement System: *D2 Controller Panel Diagrams*

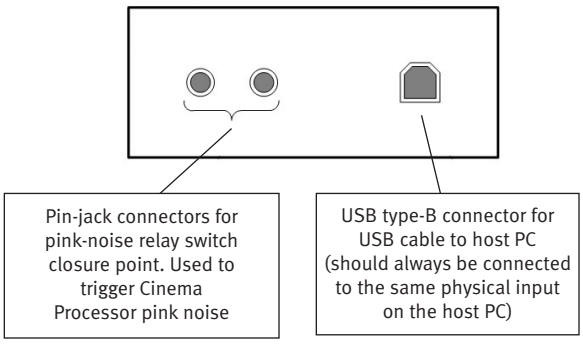
Top Panel View



Left Panel View



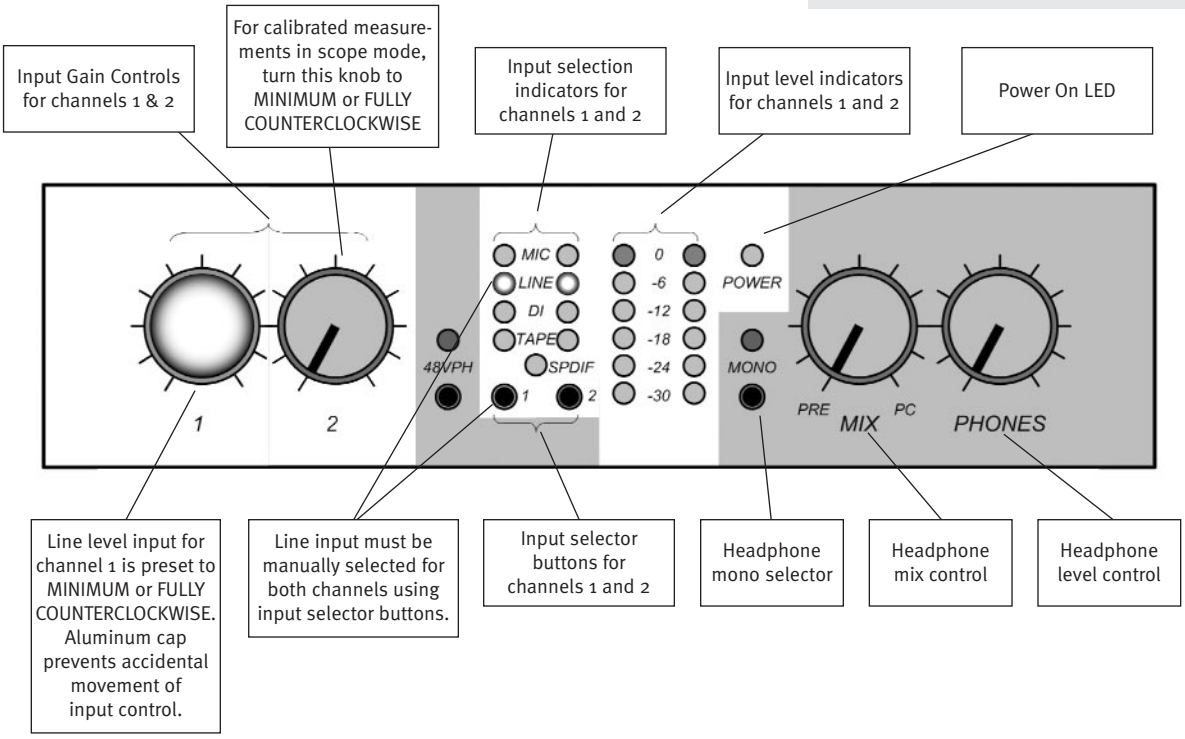
Right Panel View



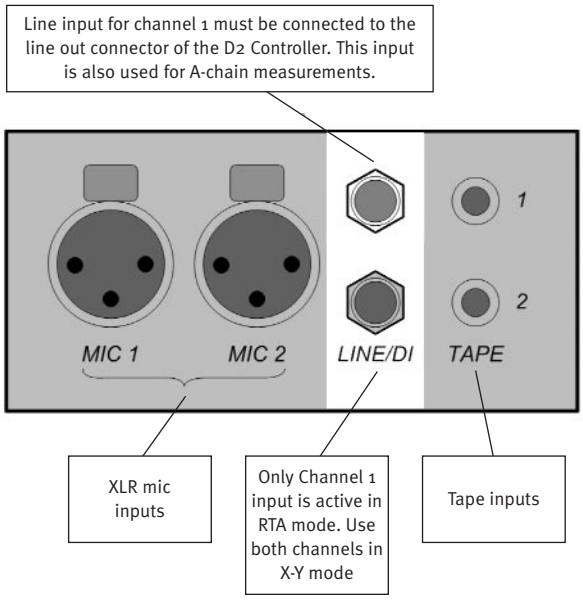
D2 Acoustical Measurement System: *USBPre Panel Diagrams*

Front Panel

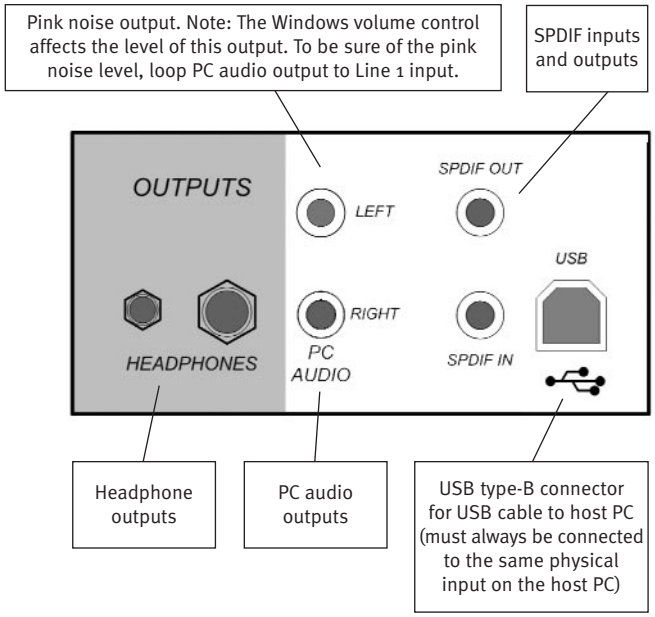
NOTE: Grayed-out areas of the drawings represent controls and inputs/outputs that are not used by the D2 Acoustical Measurement System



Input (Left) Panel



Output (Right) Panel



D2 Acoustical Measurement System: *Installation and Startup*

1. Install the **USBPre Digital Audio Interface** first. Please refer to the documentation accompanying the USBPre Digital Audio Interface for complete installation and operating instructions. Select "Preferred Installation" after inserting the USBPre software CD. Refer to the connection diagram on page 4, and to the USBPre panel diagrams on page 6 for information on proper connection of the device. (Note: The USBPre device must be connected directly to a USB input on the computer instead of through a hub).

2. Connect the D2 Controller as shown in the connection diagram on page 4. The Controller must be connected directly to a USB port on the computer, instead of through an external hub. When the Controller is connected, the computer should prompt for drivers for the device. The necessary drivers are found on the **win|RTA** CD.

3. Insert the **win|RTA** software CD into an available drive on the host computer. Open the CD and double click on "Setup". Follow the instructions and prompts of the installation procedure to install the **win|RTA** operating software onto a disk drive of the host computer. A short-cut icon for the **win|RTA** software will be placed on the desktop of the host computer during the installation procedure.

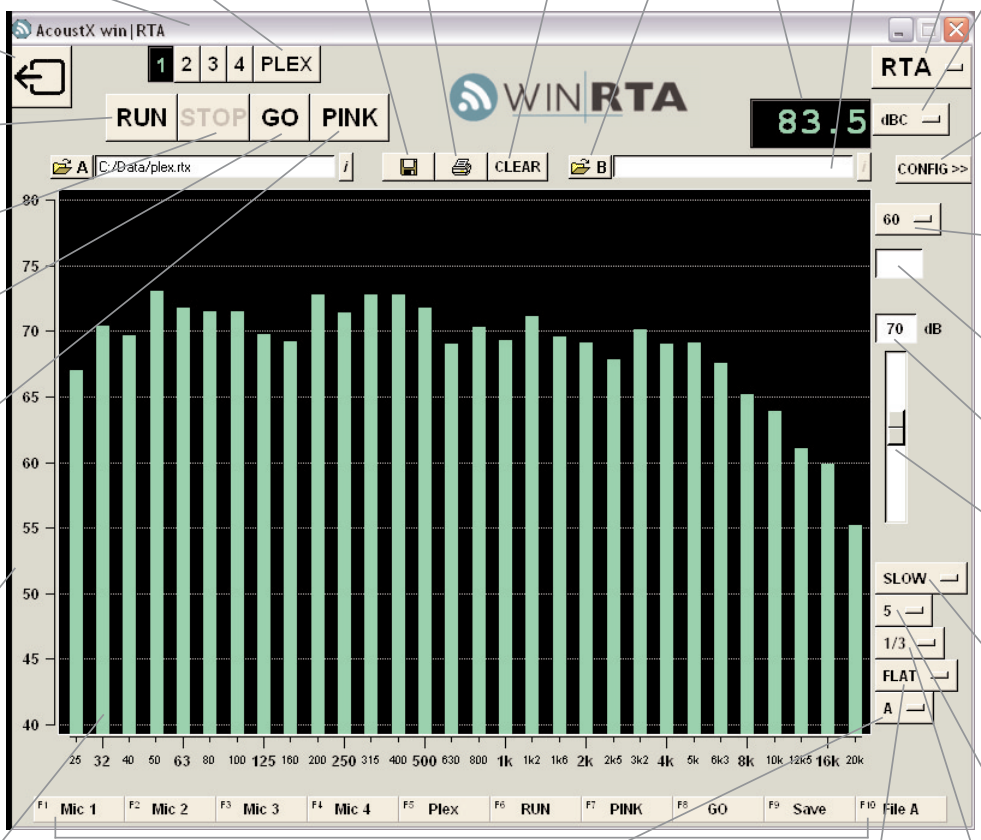
4. Connect the remaining components of the D2 Acoustical Measurement System (D2 Plexer and microphones) as shown in the connection diagram on pages 4 and the panel diagrams on pages 5-6.

5. Install the 9V alkaline battery in the Plexer by opening battery cover on the back panel. If you want to use a rechargeable battery, a NiMH battery with 9V battery with 250 mAh or greater rating is recommended.

6. Double-click the short-cut icon placed on the desktop in step (3) to start the **win|RTA** software. Note that a default configuration (preferences) file will be created the first time the program is executed. The user should customize this information as appropriate to the location or facility where the software is installed (see the "CONFIG" button on the **win|RTA** software screen diagram on page 8).

7. After installation,enable microphone calibration by selecting mic cal numbers in the config menu. (see the "CONFIG" diagram on page 9) The mic serial numbers are assigned with Mic 1 as the lowest serial number through Mic 4 as the highest serial number. Then click on "Mic Cal " in the Config menu. Finally, click "Save Configuration" to store the configuration.

D2 Acoustical Measurement System: *Main Software Screen*



Saves the current measurement (shift-click to export as text)

Selects test to display as file B (right bar when A and B selected)

Displays information for file B

Selects analyzer function (RTA, NC, REV, CTT, X-Y)

Selects single mic input mode for mics 1-4

Selects mic plex input mode

Prints the screen

Clears the screen

Current SPL reading

Selects SPL window units/weighting (dBA, dBC, Flat, mV, dBu, dBFS)

Exits the program

Turns on analyzer

Opens the win|RTA software configuration screen

Stops all processes

Select length of timed average (20, 30, 60 seconds)

Starts the selected test

Time remaining in average

Turns pink noise ON or OFF

Reference line

Moves reference line up or down

Vertical scale decibel reference values

Selects screen response (Fast, Slow, S5, S10)

selects vertical resolution (1, 2, 5, 10)

Horizontal scale frequency reference values. The number of displayed values depends on the frequency resolution setting (1/1, 1/3, 1/6, 1/12)

Selects file view mode (A, B, A-B, B-A, A&B)

Selects screen offset (Flat, X, User)

Selects frequency resolution (1/1, 1/3, 1/6, 1/12)

User definable Function Key shortcuts. Shift key enables new row of function keys. Click on F-key number to display function choices.

SPECIAL KEYS AND FUNCTIONS

- ESC key kills all processes
- PgUp/PgDn or mouse wheel moves reference line
- Shift shows new row of function keys
- Shift-click on Save button to export a test as text (.TXT)
- Click and drag mouse on display to zoom view in RTA mode
- Shift-click on display to un-zoom
- Right-click displays edit menu when in comment field

CTT MODE KEYS

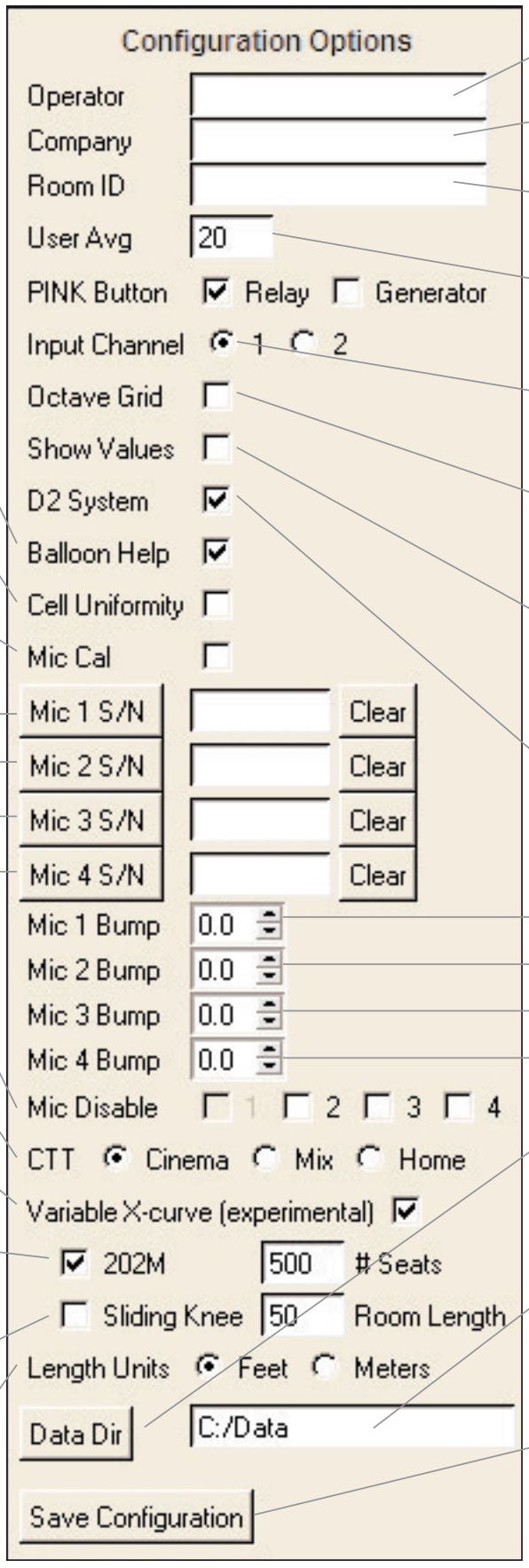
- Up/Down arrow moves among menu selections
- Left/Right arrow moves in or out of current menu
- Alt-Left Arrow moves up one level when in a data entry field
- Return executes selected test
- Shift-click on Home CTT Coverage test button to rename
- Tab or Enter completes button edit, ESC leaves unchanged

X-Y

- Shift-click-drag moves both channel gains together

D2 Acoustical Measurement System: *Main Software Screen Config*

After installation, enable microphone calibration by selecting mic cal numbers in the config menu. Mic serial numbers are typically assigned with Mic 1 as the lowest serial number through Mic 4 as the highest serial number ((Microphone calibration files correspond to the microphone serial numbers). Then click on "Mic Cal" in the config menu. Finally, click Save to store the configuration.



Technician name

Theatre name

Auditorium number

Set user-defined averaging time

Select input channel for audio interface

Show marker at each octave

Display bar values when mouse is moved over each bar

Uncheck when using win|RTA without other D2 components

Enable balloon help

Set Display for Cat. No. 566 Test Film

Activate microphone calibration files

Mic Cal – You must select this checkbox to enable mic calibration

Select calibration file for each microphone

Mic S/N 1-4 – click on each button to assign microphone calibration files

Adjust the gain of each microphone

Remove a mic from the plex cycle

Select CTT mode

Enable variable X-curve

Adjust X-curve according to SMPTE 202M

Adjust X-curve break point based on room length

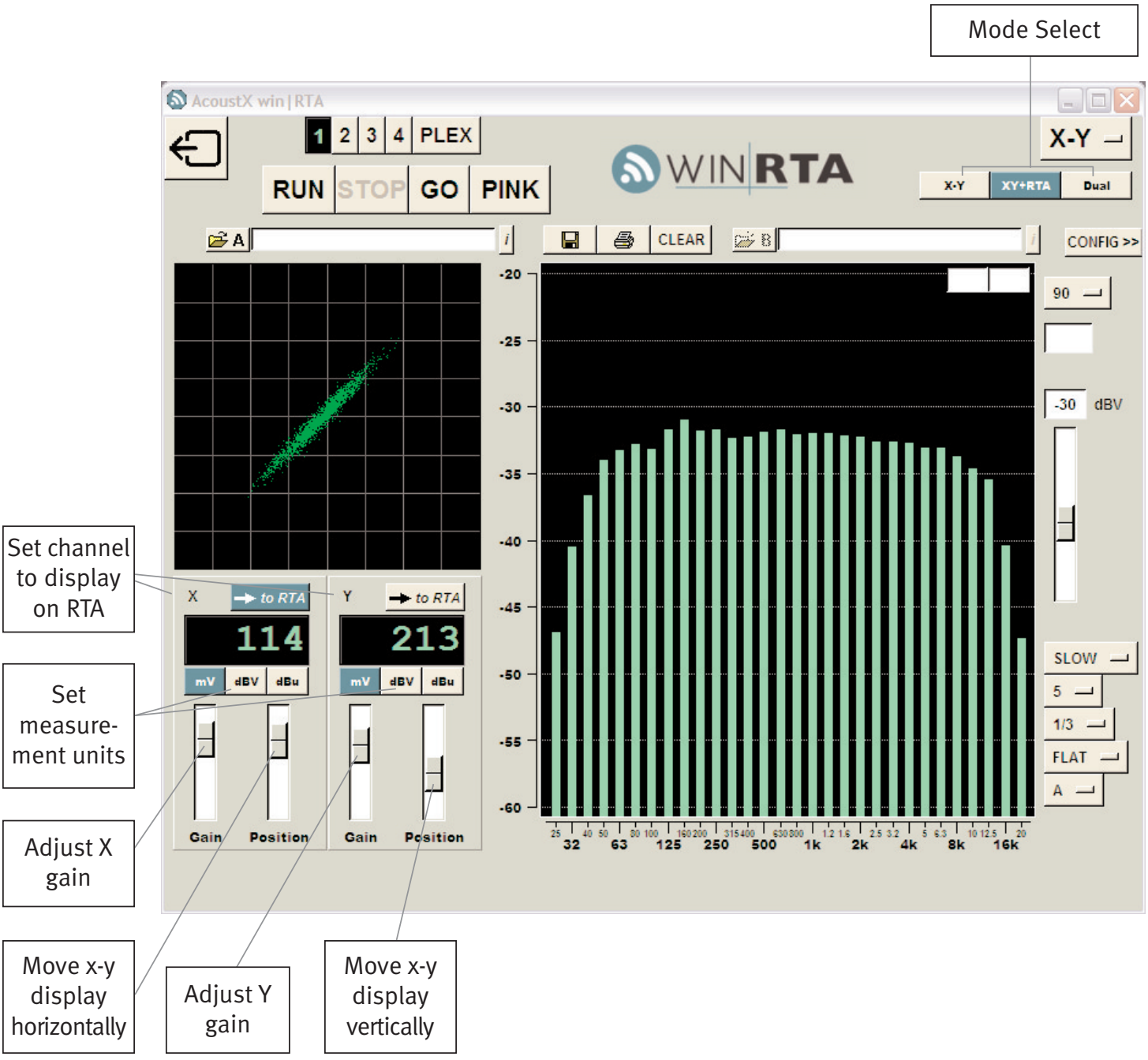
Set default length units

Select directory for stored data

Select directory for stored data. Directory defaults to "My Documents"

Write configuration data to disk

D2 Acoustical Measurement System: *X-Y Scope*



D2 Acoustical Measurement System: *Dual Trace Scope*