



D2 Acoustical Measurement System

Cinema QuickStart Guide

Version 2.2

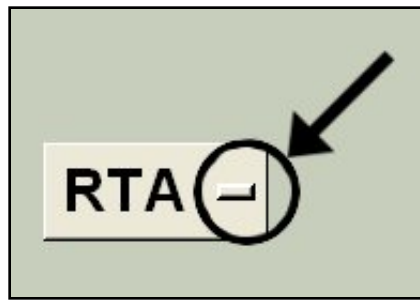
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Welcome to the AcoustX D2 Acoustical Measurement System, Cinema Version, and win|RTA software. This guide will provide you with an overview of setting up and connecting the hardware, and installing and running the software.

### Note on the software:

When you see a button with a bar on the right side, this indicates that when you click on it, a drop-down menu will appear.



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#### NOTICE

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Version 2.2

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#### Limited Warranty

AcoustX warrants the D2 Acoustical Measurement System hardware and its parts against defects in materials or workmanship for a period of one (1) year from the original date of purchase. During period, AcoustX will repair or replace a defective product or part without charge to the customer. The customer is responsible for delivering the defective component (or the entire D2 Acoustical Measurement System, if requested) to AcoustX. The customer must pay for all shipping and insurance charges transportation of the defective component(s) to AcoustX for repair. AcoustX will assume responsibility for shipping and insurance charges involved in returning the component(s) to the customer.

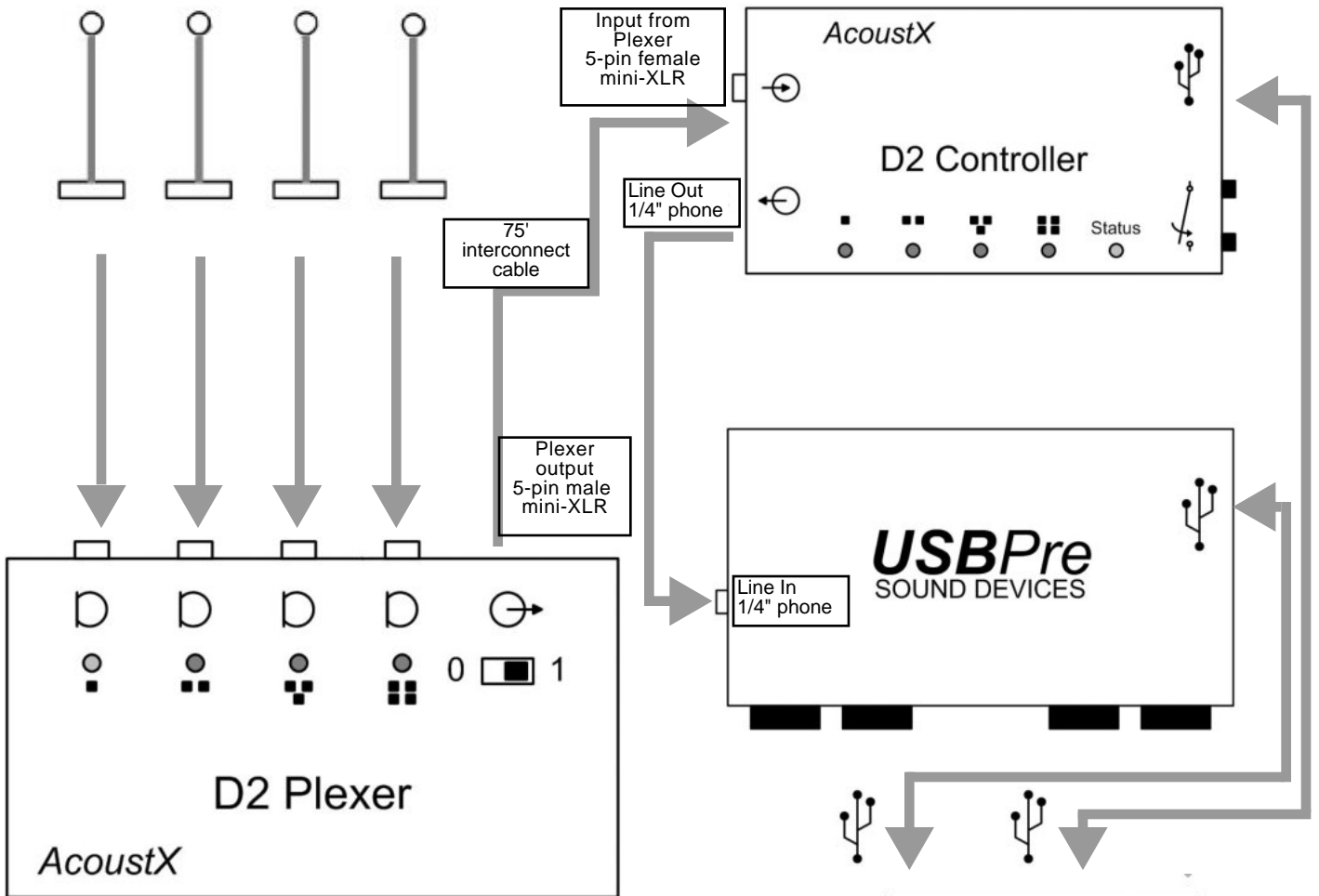
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# CONNECTION DIAGRAM

Equipment in Auditorium

Equipment in Projection Booth

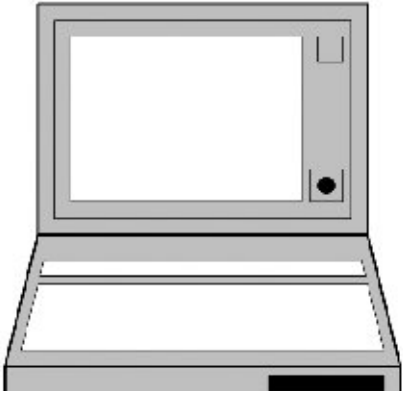
## Microphones



Each microphone must be connected to its assigned input by matching the marker on the connector to the symbol on the Plexer.

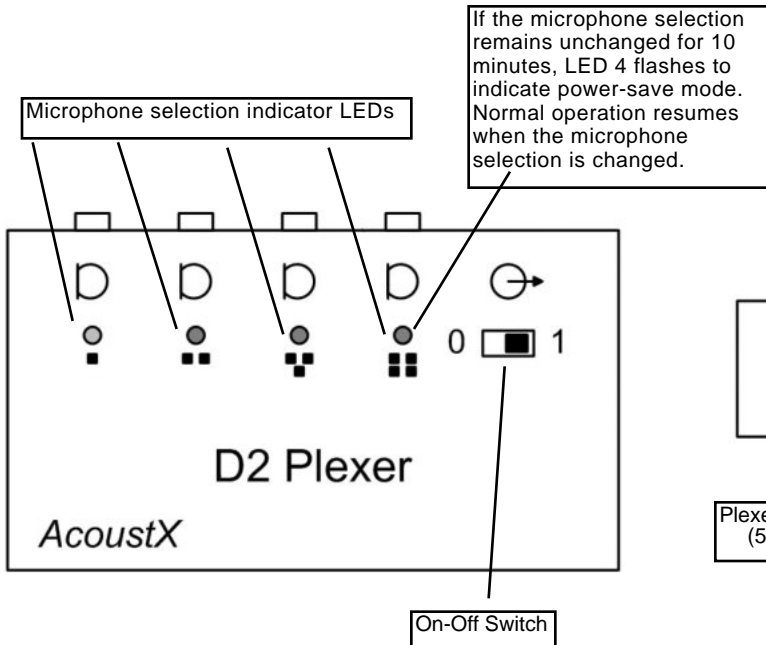
Once installed, these USB devices should always be connected to the same physical USB port for proper operation.  
Use only USB ports that are built in to the computer, not external hubs.

Host computer

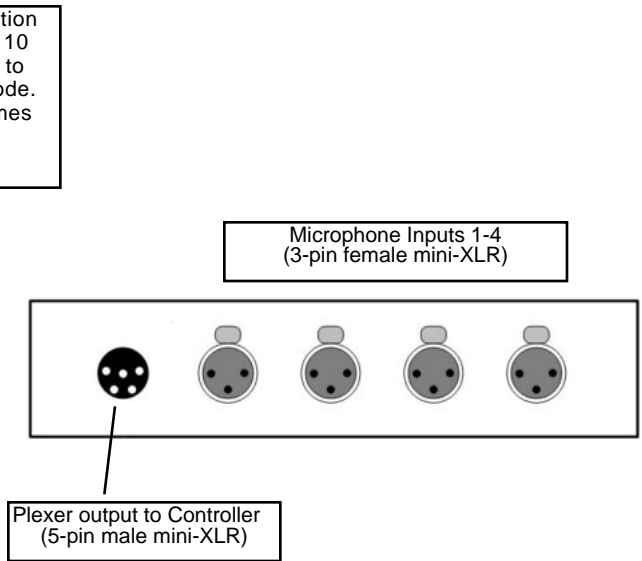


# Plexer Panel Diagrams

Front Panel View

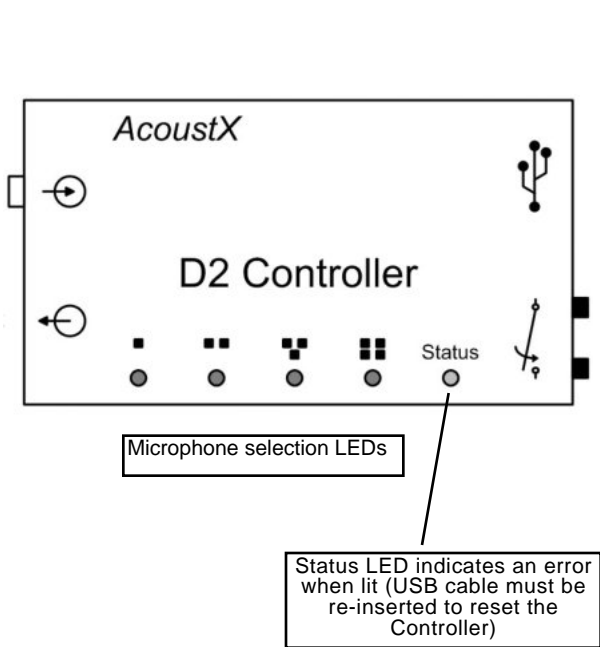


Top Panel View

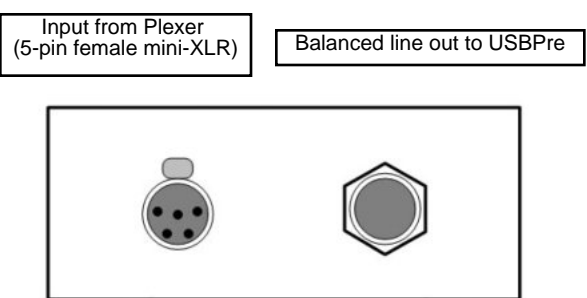


# Controller Panel Diagrams

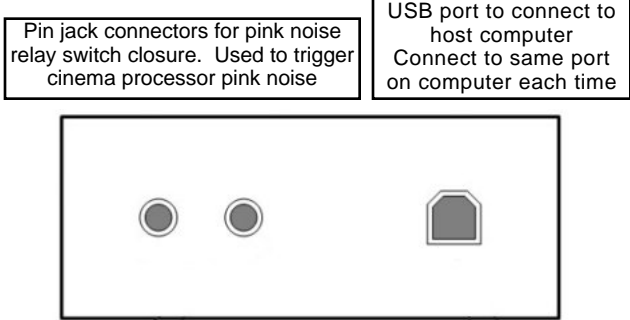
Top Panel



Left Panel

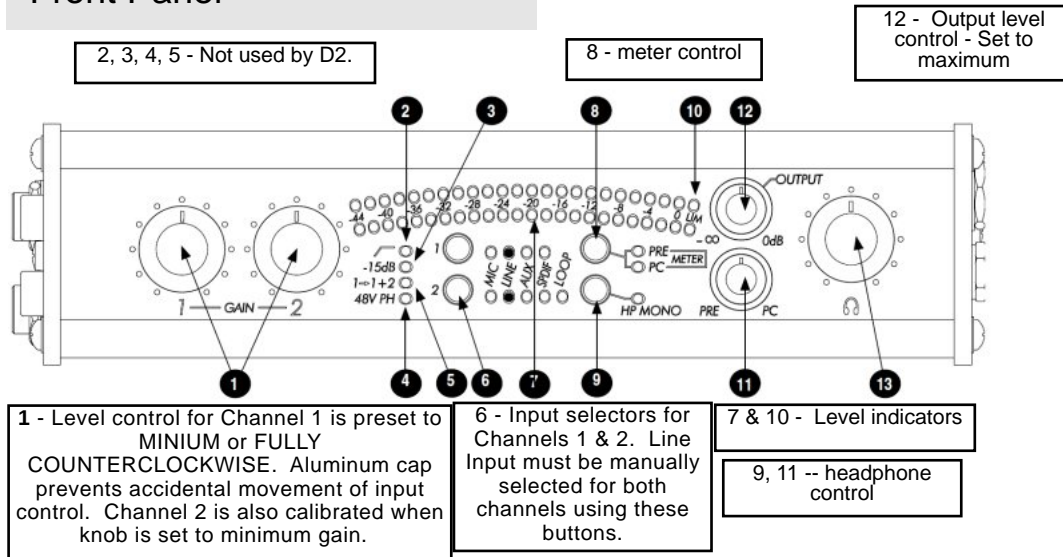


Right Panel

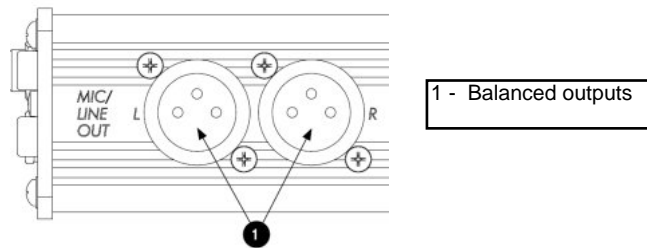


# USBPre2 Panel Diagrams

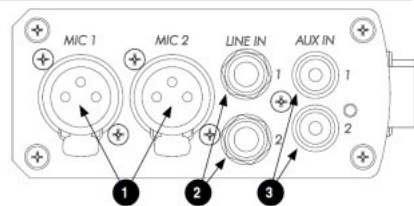
## Front Panel



## Back Panel



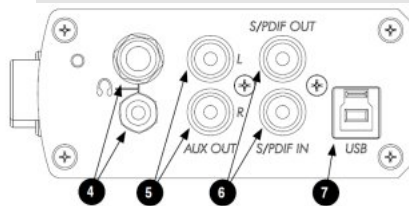
## Input (Left) Panel



2 - The D2 uses the Line 1 input by default. Line 2 can be selected in software. Both channels are active in X-Y modes.

1 & 3 - Not used by the D2.

## Output (Right) Panel



4 - Headphone outputs.

5 - Select AUX in Output.

7 - USB connection to host computer. Connect to same port on computer each time.

6 - Select S/PDIF in Input/Output.

# Installation

1. Install the USBPre2 Digital Audio Interface first. Please refer to the documentation accompanying the USBPre for complete installation and operating instructions. Refer to the connection diagram and to the USBPre panel diagrams in this document for information on proper connection of the device. (Note: The USBPre must be connected directly to a USB input on the computer instead of through an external USB hub.) Under Windows Vista, 7, & 8 you must set the sampling rate to 48 kHz 16 bit for Recording and Playback for the USBPre in the Windows Control Panel. You may also use the SoundDevices ASIO drivers available on their website. When using ASIO, you do not need to set the sampling rate.
2. Connect the D<sub>2</sub> Controller as shown in the connection diagram. The Controller must be connected directly to a USB input on the computer instead of through an external USB hub. When the Controller is connected, the computer should prompt for drivers for the device. The necessary drivers are found on the D<sub>2</sub> CD.
3. Insert the D<sub>2</sub> 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 software onto the host computer. A short-cut icon for win|RTA can be placed on the desktop during the installation procedure.
4. Connect the remaining components of the D<sub>2</sub> Acoustical Measurement System (D<sub>2</sub> Plexer and microphones) as shown in the connection and panel diagrams.
5. Install the 9V alkaline battery in the Plexer opening the battery cover on the back panel. If you want to use a rechargeable battery, a 9V NiMH battery with a 250 mAh or greater rating is recommended.
6. Double-click on the short-cut icon placed on the desktop to start the win|RTA software. Note that a default configuration (preferences) will be created the first time the program is executed. The user should customize this information as appropriate in the Config panels.
7. After installation, enable microphone calibration by selecting mic cal numbers in the Config menu. (See the Config diagrams later in this document.) The microphone serial numbers are assigned with Mic 1 as the lowest serial number through Mic 4 as the highest serial number. The "Mic Cal" checkbox must be selected to enable mic calibration.
8. With the USBPre2 connected, select the "Interfaces" window in Config. Press "Select" and choose USBPre2 from the list of available interfaces.
9. Finally, click "Save Configuration" to store the preferences to disk.

# Main Screen

The screenshot shows the main interface of the D2 Acoustical Measurement System. At the top, there are buttons for '1 2 3 4 PLEX', 'RUN STOP GO PINK', and 'RTA'. A central display shows '80.2 dBC'. Below this is a large bar graph with a vertical scale from 40 to 80 dB and a horizontal axis for frequency from 25 to 20k Hz. The graph shows a series of green bars representing the frequency response. To the right of the graph are controls for 'Measurement units', 'Open Config window', 'Set length of timed average', 'Timed average countdown', 'Reference line', 'Change Reference line', 'Screen response', 'Vertical resolution', and 'Frequency resolution'. At the bottom, there are function keys labeled 'F1 Mic 1' through 'F10 File A'. Numerous callout boxes provide detailed instructions for each part of the interface, such as 'Select file to display as File A', 'Start selected test', 'Vertical scale', and 'Filter band center frequencies'.

## 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 as text (.TXT)
- Shift-click and drag mouse on display to zoom view in RTA mode. Click to restore.
- Right-click displays edit menu when in comment
- Hold cursor over filename field to see full pathname

## 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
- Shift-click on Home CTT Coverage test button to rename
- X-Y
- Shift-click-drag moves both channel gains together

# Configuration: Profile and Interfaces

### Configuration Options

Profile Display Mic

Interfaces Input Output

Save Configuration

Operator

Company

Room ID

Data Dir

CTT Profile

Cinema  Mix  Home

Length Units

Feet  Meters

Window Size

Normal  Netbook

Write configuration data to disk

Select data directory

Set default units for measurements

Technician name

Organization

Name of theatre

Selected data directory Defaults to "My Documents"

Set software options for type of room under test

Normal is for displays 1024x768 or larger. Netbook is for the smaller netbook screens, typically 1024x600. Save Configuration and restart win|RTA to take effect.

### Configuration Options

Profile Display Mic

Interfaces Input Output

Save Configuration

Audio Interface Select

Normal  Independent

Select

D2 Controller Present

Select audio interface

Enable D2 Controller



# Configuration: Microphones

**Configuration Options**

Profile | Display | **Mic**

Interfaces | Input | Output

Save Configuration

Apply Mic Calibration

Mic 1 S/N	1001	Clear
Mic 2 S/N	1002	Clear
Mic 3 S/N	1003	Clear
Mic 4 S/N	1004	Clear

	Bump	Disable
Mic 1	0.0	<input type="checkbox"/>
Mic 2	0.0	<input type="checkbox"/>
Mic 3	0.0	<input type="checkbox"/>
Mic 4	0.0	<input type="checkbox"/>

Enable and load microphone calibration files.

Adjust the gain of individual microphones.

Disable one or more microphones

# Configuration: Display

**Configuration Options**

Profile **Display** Mic

Interfaces Input Output

Save Configuration

Octave Grid

Show Values

Balloon Help

Cell Uniformity

User Avg Time

X-Curve Position

Variable X-Curve

ST202  # Seats

Sliding Knee  Room Length

Data Averaging

File #1	<input type="text"/>	Clear
File #2	<input type="text"/>	Clear
File #3	<input type="text"/>	Clear
File #4	<input type="text"/>	Clear

Gain Leveling

Calculate

Display octave markers

Show bar values when cursor is moved over a bar

Enable balloon help

Set display for Cat. No. 566 test film (film projectors)

Set length of User Average

Change the vertical position of the X-Curve

Enable Variable X-Curve

The variable X-Curve can either change the slope of the curve (according to SMPTE ST202) or the frequency at which the slope begins (the knee).

Average data from previous measurements. This is useful if you wish to use one microphone and get results similar to using the multiplexer. Make measurements at four different positions, load the four files, and click Calculate. For best results, load the data taken at reference position into File #1 and enable Gain Leveling.

# Configuration: Input and Output

**Configuration Options**

Profile | Display | Mic

Interfaces | **Input** | Output

Save Configuration

Input

**Line** | S/PDIF

Channel

**1** | 2

High Pass Filter

0 dBFS Reference

Full scale square wave

Full scale sine wave

Select Input

Select input channel for line input  
(Mic selection is on main screen)

Apply 22 Hz high pass filter to FLAT, Line In, S/PDIF

Select 0 dBFS reference. There is a 3 dB  
difference between settings.

**Configuration Options**

Profile | Display | Mic

Interfaces | Input | **Output**

Save Configuration

D2 Relay

**Pink** | Sine

Norm  500-2k

Line | **Aux** | S/PDIF

Level   **dBV** | dBu

Ch 1

Ch 2

Configure PINK Button behavior

Select test signal output port

Set units of measure and level for outputs

Enable outputs. In Analog mode,  
the channels can be named.

# X-Y Oscilloscope

The screenshot displays the AcoustX software interface. At the top, there are window controls and a 'Mode Select' dropdown menu currently set to 'X-Y'. Below this are buttons for 'RUN', 'STOP', 'GO', and 'PINK', along with the 'D2 Acoustical Measurement System' logo. The main display area is split into two sections: an X-Y Oscilloscope on the left showing a green diagonal line of data points, and a Real-Time Analyzer (RTA) on the right showing a green bar chart. The RTA has a frequency axis from 25 to 20 kHz and an amplitude axis from -60 to -20 dBV. On the left side, there are two channel control panels for X and Y. Each panel includes a 'to RTA' button, a digital display showing '114' for X and '213' for Y, and three unit selection buttons (mV, dBV, dBu). Below these are 'Gain' and 'Position' sliders for each channel. Callout boxes with arrows point to these controls: 'Set channel to display on RTA' points to the 'to RTA' button; 'Set measurement units' points to the unit selection buttons; 'Adjust X gain' points to the X Gain slider; 'Move X-Y display horizontally' points to the X Position slider; 'Adjust Y gain' points to the Y Gain slider; and 'Move X-Y display vertically' points to the Y Position slider. On the right side of the RTA, there are additional controls including a 'CONFIG >>' button, a '90' degree phase selector, a '-30 dBV' level indicator, a 'SLOW' speed selector, and '5', '1/3', 'FLAT', and 'A' filter options.

Mode Select

Set channel to display on RTA

Set measurement units

Adjust X gain

Move X-Y display horizontally

Adjust Y gain

Move X-Y display vertically

# Dual Trace Oscilloscope

