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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:

**System Diagram (p.3)**
This diagram provides a general overview of all the elements of the D2 Acoustical Measurement System, including a description of their function, and their relation to other system components.

**Connection Diagram (p.4)**
The connection diagram depicts in detail the physical connections necessary to operate the D2 as described in this and other documents. Included are connector and cable types, and special notes regarding conditions that must be met for proper system operation.

**D2 Plexer Panel Diagrams (p.5)**
These diagrams describe in detail the location and function of all connectors, controls, and indicators on the D2 Plexer.

**D2 Controller Panel Diagrams (p.5)**
These diagrams describe in detail the location and function of all connectors, controls, and indicators on the D2 Controller.

**USBPre Panel Diagrams (p.6)**
These diagrams describe in detail the location and function of all connectors, controls, and indicators on the USBPre Digital Audio Interface.

**win|RTA Software Screen (p.7)**
This diagram provides an overview of the main software window of the win|RTA operating software, with labels indicating the function and usage of all user-interface elements.

**win|RTA Config Screen (p.8)**
This diagram provides the config section of the main software window of the win|RTA operating software, with labels indicating the function and usage of all user-interface elements.

**Software Installation and Startup (p.9)**
This section describes the steps necessary to successfully install the win|RTA software from the distribution disk, and run the installed software.
Microphones

The D2 utilizes rugged, low diffraction, electret condenser microphones for accurate repeatable measurements. Each microphone is calibrated against a Brüel & Kjær® 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/2000 computer with 2 USB ports (USB hubs are not acceptable).
**Equipment in Auditorium**

Microphones

Each microphone must be matched to a specific input as indicated by the marker on the connector.

- Mic Inputs: 3-pin female mini-XLR
- 40’ mic cables
- 75’ cable to auditorium

**Equipment in Projection Booth**

**D2 Controller**

- USB Port
- Line 1 in 1/4” Phono
- Line Out 1/4” Phone

**USBPre**

- USB Port 1
- USB Port 2

2 separate USB ports must be used (USB hubs are not acceptable)

**Host Computer**

Once installed, the devices should always be connected to the same physical port for proper operation.

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**D2 Acoustical Measurement System: Connection Diagram**
D2 Acoustical Measurement System: D2 Plexer Panel Diagrams

**Top Panel View**
- Microphone selection indicator LEDs
- On-Off Switch

If the microphone selection remains unchanged for 10 minutes, LED 4 flashes to indicate power-save mode. Normal operation resumes when the microphone selection is changed.

**Rear Panel View**
- Plexer Output to D2 Controller (5-pin male mini-XLR)
- Microphone Inputs 1-4 (3-pin female mini-XLR)

D2 Acoustical Measurement System: D2 Controller Panel Diagrams

**Top Panel View**
- Microphone selection indicator LEDs
- Status LED indicates an error when lit (USB cable must be re-inserted to reset the controller)

**Left Panel View**
- Microphone input from D2 Plexer (5-pin female mini-XLR)
- Line out audio to USB Pre Digital Audio Interface

**Right Panel View**
- Pin-jack connectors for pink-noise relay switch closure point. Used to trigger Cinema Processor pink noise
- USB type-B connector for USB cable to host PC (should always be connected to the same physical input on the host PC)
D2 Acoustical Measurement System: **USBPre Panel Diagrams**

**Front Panel**

Input Gain Controls for channels 1 and 2

Input selection indicators for channels 1 and 2

Input level indicators for channels 1 and 2

Power On LED

Line level input for channel 1 is preset to MINIMUM or FULLY COUNTERCLOCKWISE. Aluminum cap prevents accidental movement of input control.

Line level input must be manually selected for channel 1 using selector button 1.

Input selector buttons for channels 1 and 2

Headphone mono selector

Headphone mix control

Headphone level control

**Input (Left) Panel**

Line input for channel 1 must be connected to the line out connector of the D2 Controller. This input is also used for A-chain measurements.

**Output (Left) Panel**

Pink noise output. Note: The Windows volume control affects the level of this output. To be sure of the pink noise level, loop PC audio output to Line 1 input.

SPDIF inputs and outputs

USB type-B connector for USB cable to host PC (must always be connected to the same physical input on the host PC)
D2 Acoustical Measurement System: Main Software Screen

- Exits the program
- Selects single mic input mode for mics 1-4
- Turns on analyzer
- Stops all processes
- Starts the selected test
- Turns pink noise ON or OFF
- Vertical scale decibel reference values
- Horizontal scale frequency reference values. The number of displayed values depends on the frequency resolution setting (1/1, 1/3, 1/6, 1/12)
- User definable Function Key shortcuts. Shift key enables new row of function keys.

- Selects mic plex input mode
- Prints the screen
- Clears the screen
- Current SPL reading
- 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)
- Selects SPL weighting (dBA, dBC, Flat, mV, dBu)
- Opens the win/RTA software configuration screen
- Select length of timed average (20, 30, 60 seconds)
- Time remaining in average
- Reference line
- Moves reference line up or down
- Selects screen response (Fast, Slow, S5, S10)
- Selects vertical resolution (1, 2, 5, 10)

- Selects screen offset (Flat, X, User)
- Selects frequency resolution (1/1, 1/3, 1/6, 1/12)

NOTE:
- ESC key kills all processes
- PgUp/PgDn moves reference line
After installation, enable microphone calibration by selecting mic cal numbers in the config menu. The 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 serial numbers on each microphone cable). Then click on “Mic Cal” in the config menu. Finally, click Save to store the configuration.
Installation and first-time startup of the D2 Acoustical Measurement System is accomplished through a four (4) step process as follows:

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 5. 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 in “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 4-5 and the panel diagrams on pages 6-9.

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 7).

7. After installation, enable microphone calibration by selecting mic cal numbers in the config menu. (see the “CONFIG” diagram on page 8) 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 to store the configuration.

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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 this 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 for 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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