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ListenIR LT-84 Divisible Room Application

Overview:

This tech note covers the technology and setup required to design an IR wireless assistive listening system for divisible room applications. Using the LT-84 Transmitter/Radiator which has four available IR channels and the iDSP LR-4200 IR Receiver featuring Auto-Seek mode, divisible room applications for up to four sections are possible.

Required Products:

- **LT-84** IR Transmitter/Radiator combo for each room.
- **(Optional) LA-141** Expansion IR Radiator if additional coverage is needed for each room.
- **LR-4200-IR** iDSP IR Receiver. (LR-5200-IR iDSP IR Receiver optional)
- A third party audio matrix switcher.

Setup:

- LT-84 Setup:

Each individual room/section must have an independent LT-84.

Each LT-84 must be set to a unique IR channel.

An audio matrix switcher is required to provide a separate audio source to each independent LT-84 when rooms are divided and a common audio source when rooms are combined.

- LR-4200-IR Setup:

The LR-4200-IR must have Auto-Seek enabled which allows it to automatically tune to the appropriate IR channel within the room/section.

For optimal performance, the squelch setting may need to be adjusted. When moving from one room/section to another, the receiver will squelch and then quickly auto-tune to the next strongest signal. If the noise level becomes higher than desired during this transition, you will need to increase the squelch. If audio drops out during this transition, the squelch setting may be set too high and needs to be lowered.

To enable the Auto-Seek feature and adjust squelch, the LR-4200-IR must be connected and configured via the iDSP Software Suite. A FREE download is available at http://www.listentech.com/support/software/.

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Scenario #1: All Dividers Closed/Four Rooms Separated:

Diagram 1 below shows a four-way divisible room. In this configuration the dividers are closed, forming four individual rooms. Each LT-84 in **Rooms A**, **B**, **C** and **D** operates independently. Each room's LT-84 must be set to a different IR channel.

The LR-4200-IR receiver (with Auto-Seek enabled) automatically tunes to the correct channel as it is moved from room to room.

Example: When the LR-4200-IR receiver enters **Room A** it auto-tunes to Channel 1, when it leaves the room it squelches. When the LR-4200-IR receiver enters **Room B** it auto-tunes to Channel 2, etc.

Diagram 1 – Four Rooms Separated
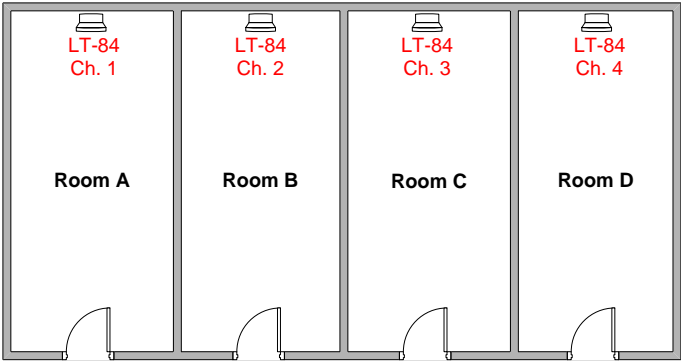
Each LT-84 requires an independent audio source routed to it via the audio matrix switcher, as seen in *Diagram* 2 below.

*Diagram 2 – Audio Routing with Four Rooms Separated*
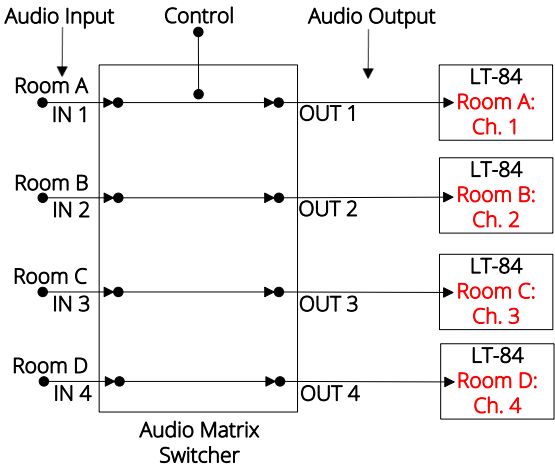
Scenario #2: Single Divider Opened/Two Rooms Combined:

In Scenario #2 a single divider is opened, combining rooms A & B into one large room, leaving room C & D separate (see *Diagram* 3). Each LT-84 within the combined room still operates independently but with a common audio source. Each LT-84 remains set on a different IR channel.

The LR-4200-IR receiver (with Auto-Seek enabled) automatically tunes to the strongest channel within the combined area. Adjusting the IR receiver squelch setting may be necessary to optimize the transition between sections A & B. With proper squelch setup, transitions are near transparent because both LT-84s contain the same audio as described below.
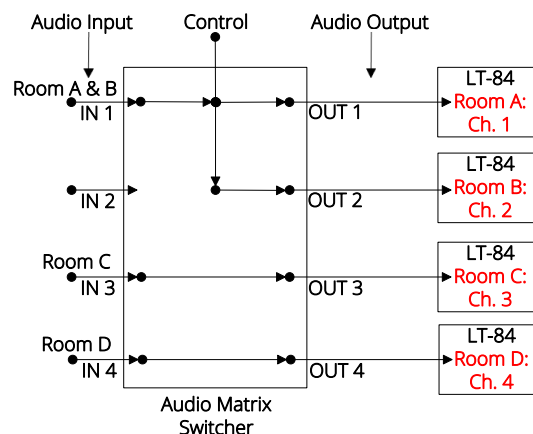
Example: When the LR-4200-IR receiver enters **Section A** of the combined room it tunes to Channel 1. When the LR-4200-IR receiver moves into **Section B** it tunes to Channel 2.

Diagram 3 – Two Rooms Combined
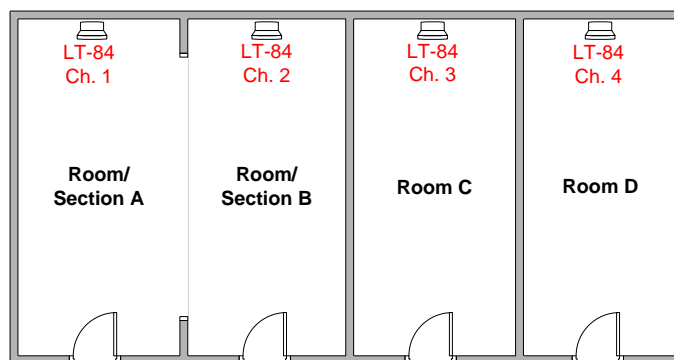
Room A & B has a common audio source routed to it via the audio matrix switcher, as seen in *Diagram* 4 below. Room C & D audio remains independent.

Diagram 4 – Audio Routing with Two Rooms Combined

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Scenario #3: All Dividers Opened/All Rooms Combined:

In Scenario #3 all the dividers are opened, forming a single large room. A common audio source is routed to all four LT-84s. Each LT-84 still operates on a separate IR channel, as shown in *Diagram* 5 below.

The LR-4200-IR receiver (with Auto-Seek enabled) automatically tunes to the strongest channel within the combined area. Adjusting the IR receiver squelch setting may be necessary to optimize the transition between sections. With proper squelch setup, transitions are near transparent because both LT-84s contain the same audio, as described below.
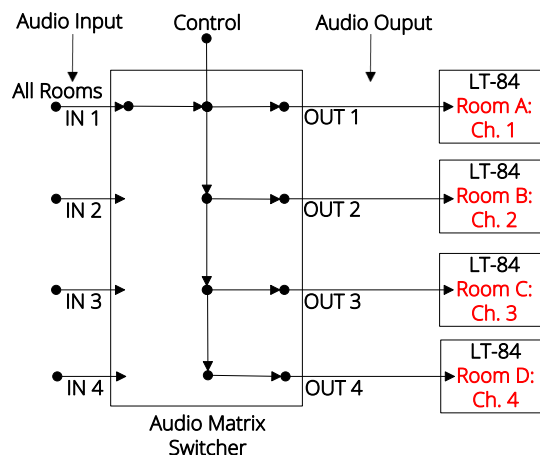
Example: When the LR-4200-IR receiver enters **Section A** of the combined room it tunes to Channel 1. When the LR-4200-IR receiver moves into **Section B** it tunes to Channel 2.

Diagram 5 - Four Rooms Combined
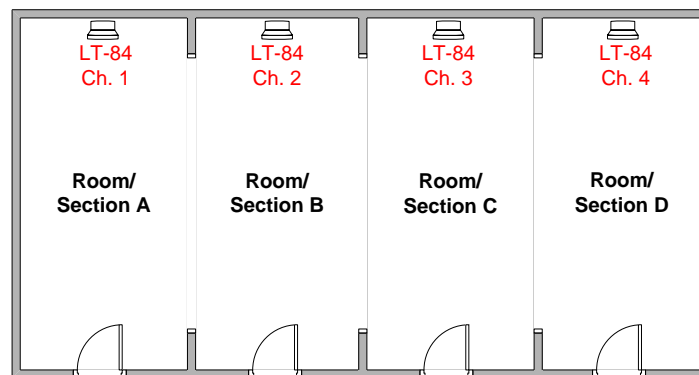
Each LT-84 has a common audio source routed to it via the audio matrix switcher as seen in *Diagram* 6 below.

Diagram 6 - Audio Routing with Four Rooms Combined

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Design Considerations:

- Coverage:

It is important to ensure that the system is designed so that the radiators cover the space adequately. There should be plenty of coverage overlap when the rooms are combined. This guarantees no noisy or dead spots when moving from one room/section to another. If coverage is not adequate with a single LT-84, add one or more LA-141 Expansion Radiators as necessary.

- Maximum amount of rooms:

When using the LT-84's in a divisible room application, it is possible to achieve up to 4 rooms with a single channel per room. There are 4 total available channels on the LT-84 – it is important to note that channels may not be re-used as interference will occur when the rooms are combined. If your divisible room application requires more than 4 rooms, it is necessary to deploy the LT-82 and LA-140. Please see the ListenIR LT-82 Divisible Room Application Note at www.listentech.com.

Should you have additional questions or require further assistance, please contact Listen Technologies at support@listentech.com or by calling 1-800-330-0890.