

# **Aliens Motion Tracker Sound Board**

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**<http://www.hyperdynelabs.com>**

## **Functional Overview**

Once powered up, the board plays out the well-known tracker search pinging sound from Aliens. A white LED also strobes in sync with the sound. This LED can be used to backlight the tracker screen to emulate the tracker effect.

The IR motion module can detect motion up to 10-15 feet. Once the module detects motion for more than ¼ sec., the tracker will begin to “whine”, denoting it has “spotted” a target. As motion is subsequently detected, the tracker will increase its pitch over time to emulate the target getting closer. The tracker will increase its whine for every 3 seconds of motion that has been detected. Once motion is not detected, the tracker goes back to search mode state (just play out the pinging sound).

If the target disappears for a short time (if somebody stops moving or is no longer detected), the tracker will remember its last tracking state for up to 10 seconds. If subsequent motion is detected within 10 seconds of losing the target, the sound board will continue “whining” from its last known tracker state. If motion is not detected within 10 seconds, the tracker resets to the lowest pitch when subsequent motion is detected. This gives you the realization that you are truly tracking different targets, which is very similar to what is seen in the movie! After 10 seconds of no motion activity, you can “track” another target.

The sound board includes the pinging sound and 5 gradient pitch whines. The whining sounds increase from low pitch to high pitch. Since the IR module cannot accurately “range” distance to a target, the pitch increases as a function of how long the target has been detected. The IR motion module is sensitive to human motion. Targets that stand still may not be detected. However, if you are moving with the tracker in hand, then still targets would be able to be detected since the IR module only cares about detecting motion (from a still target with the tracker moving or from a moving target with the tracker still).

The onboard switch turns the IR sensor monitoring on and off. If you don’t want the IR module active, flipping the switch will turn it off. In this mode, all you hear is the pinging sound. Flipping the switch back will reactivate the IR motion detection mode.

If you do not have the IR switch as seen in the picture, you will find it in the middle of the board. Moving that switch will toggle between IR sensor mode and manual sensor mode.

The sound package comes with

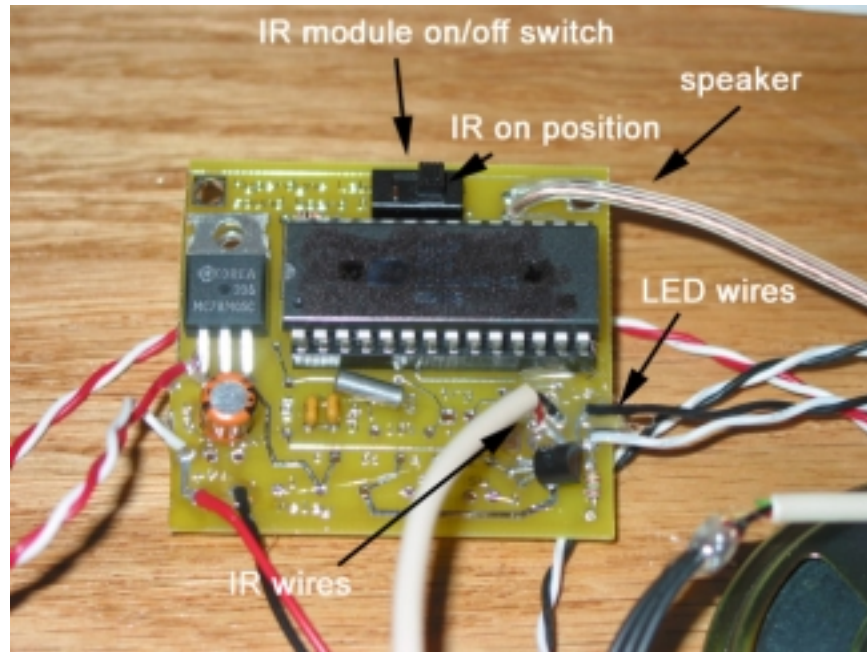
- programmed and assembled sound board
- IR motion detector module
- small speaker (wired up)
- master power switch (wired up)

## **Power supply**

The sound board runs on batteries. You can use a 9V battery, a 6AA battery pack, or any other DC source in the range of 8-12V. The 6AA battery pack will last much longer than a single 9V. If you do use a 9V, consider a lithium or rechargeable nickel-metal hydride battery.

## Install

The sound board is already connected up to the IR module. Here is a pic of the custom sound board:



The sound board comes with a small speaker which is pretty loud. But, if loudness is an issue, you can replace it with a bigger 5" speaker from Radio Shack. Be sure to enclose the back of the speaker in a closed area. Also, expose the front of the speaker to the outside free air. This will give you maximum volume! You can also see the switch that turns the IR module on and off. The switch position nearest the speaker wires turns on the IR module. The other position turns off the IR module (you will only get the pinging sound).

### IR motion detector operation:

The IR sensor is hooked up to the trigger input. Here is the pic of it:



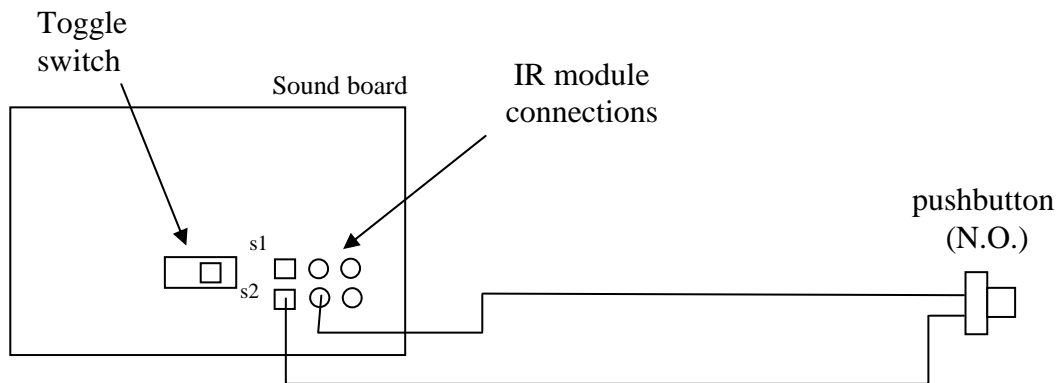
The IR sensor derives power from the sound board. When the sound board is powered up, it will take the IR sensor a maximum of 30 seconds before it responds to any motion. This is its warm up period. After that, it will activate the sound board if any motion is detected in its field of view.

It would be best to install the IR module facing forward “looking out” of the motion tracker drill case or main body. If the motion detector is facing the operator, you will always detect yourself, which isn’t much fun since the tracker will always whine!

You can remove the fresnel lens from the IR module board if you like. This may make it easier to install into the tracker unit. However, note that without the lens, the detection distance of the module may decrease quite a bit. The field of view in which the IR detector will “see” somebody also decreases without the lens.

### Making the sound board “whine” without the IR module

If you want to trigger the sound board to whine without the use of the IR module, **move the onboard toggle switch to the location shown below. This will turn on the “manual” whining mode using the pushbutton. Moving the toggle switch to the other position turns on the IR tracking mode using the sensor.**



### LEDs

There is one super bright white LED connected to the sound board. This LED strobos in unison with the tracker pinging sound. It is bright enough to backlight the tracker screen. You can add one more LED to the output wires if the one LED does not give you enough brightness. The board can accept any color LED (blue, white, red, green, etc). For example, you can add a second blue LED to give the light strobe a blue/white hue.

If you do want to hook up a second LED, connect it up in parallel with the installed LED. To accomplish this, simple solder the new LED leads to the currently installed LED leads. You must maintain polarity for the LED. The longer leg on the LED is typically the positive end. The white wire connected to the LED from the sound board is typically the positive side of the LED.

Here is a diagram of a parallel LED connection:

