

## HyperBlade Saber Blade System In-the-Hilt Sound Unit

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<http://www.hyperdynelabs.com>

Congratulations on your purchase of a HyperBlade saber blade kit! This kit is the ultimate saber upgrade for saber collectors, enthusiasts, role players, and costumers.

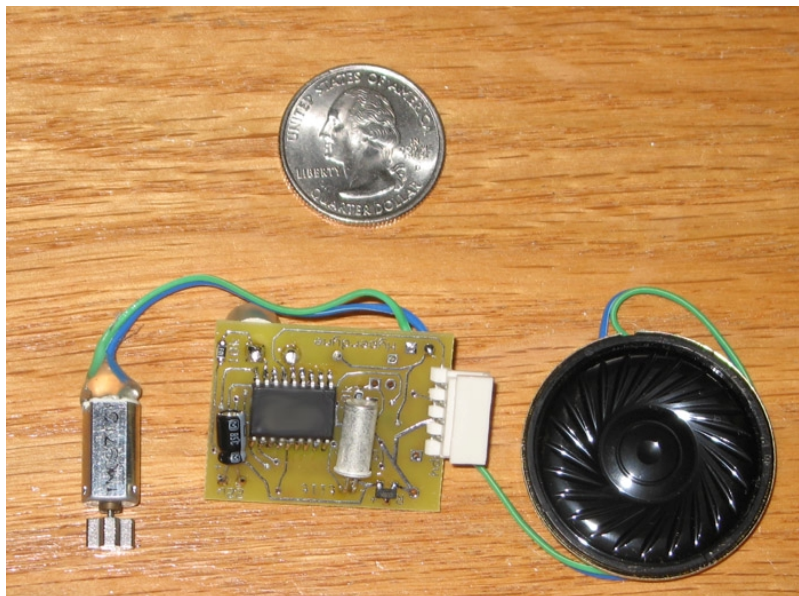
*Your saber kit was manufactured using the highest-grade components available, please handle it with care as not to damage any of the components from static electricity. If you are not familiar with static electricity handling procedures, please refer to ESD procedures. Basic information on ESD can be found here:*  
[http://en.wikipedia.org/wiki/Electrostatic\\_discharge](http://en.wikipedia.org/wiki/Electrostatic_discharge)

**NOTICE:** There is no warranty on kits. It is your responsibility to install the board. Opened kits cannot be returned. Be careful if you use a battery source that is capable of delivering a lot of current. Contact a professional if you need assistance. Hyperdyne Labs assumes no responsibility for the misuse of this kit.

### HyperBlade (In hilt) Sound Unit

Our sound module is plug-and-play compatible with our LED driver unit. The sound board incorporates several “never-before” seen features that is unique to our HyperBlade system – including our ClashEffect™ feature and multi-speed vibrating ForceFeedback™ feature.

Here is a pic of the HyperBlade in-hilt sound board:



## Connection to LED Driver Unit

To connect your sound board to the driver unit, simply connect the grey 4-pin cable from the driver unit to the header on the sound board. The connector is keyed so it only goes in one way.

That is it!

The sound board receives power and signals from this cable, so you don't need to make any other connections.

## Sound Board Features

The HyperBlade sound board includes several features – these include integrated ClashEffect output to the driver board (to synchronize clash sound and blade flicker), and a ForceFeedback multi-speed vib motor. The motor will vibrate at 3 different speeds depending on the event (hum, swing, clash).

These features are all automated and do not require any setup. The pushbutton on the LED driver board controls both the blade and sound board, so you only need the one button to control the entire saber!

The sound board features an ignition sound, retraction sound, looping hum, 5 swing sounds, and 3 clash sounds. The swing and clash sounds are automatically played out based on the swing and motion sensors onboard.

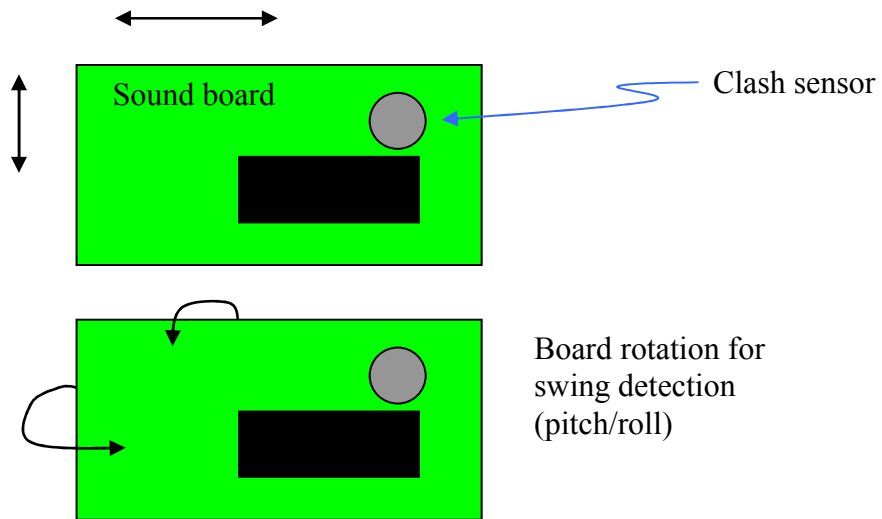
### Swing and clash detection

Clashes are detected best when the board is vibrated in the same plane as the sound board. If the board is vibrated in the plane perpendicular to the board, the clash sensor is not very sensitive in this plane and thus may not detect weak clashes.

Swings are triggered when the board is rotated  $> 30$  degrees on either the long or short axis. This is known as pitch and roll. The sound board will react to any large pitch or roll movement of the hilt by playing out a swing sound. This also means large hilt rotations (without a discernable swing motion) will also trigger a swing sound, due to the swing sensor used. Centrifugal force from swinging will also cause the sensor to trigger normally.

**NOTE:** If you are triggering swing sounds one after another and not moving the hilt, the swing sensor on the board is most likely in a sensitive spot. Try rotating the hilt in your hand 90 degrees to rectify this.

Board movement for detected clash  
movements (same plane as board)

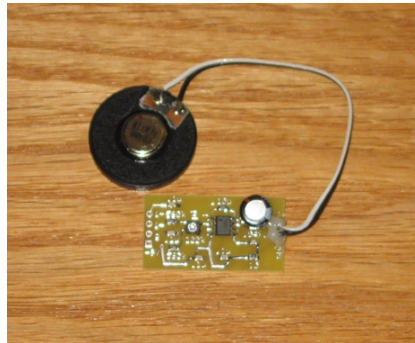


NOTE: If you are getting too many clash sounds, make sure the vibration motor is not too close to the vibration sensor. If it is then you can get many false clash sounds due to the motor's influence on the sensor.

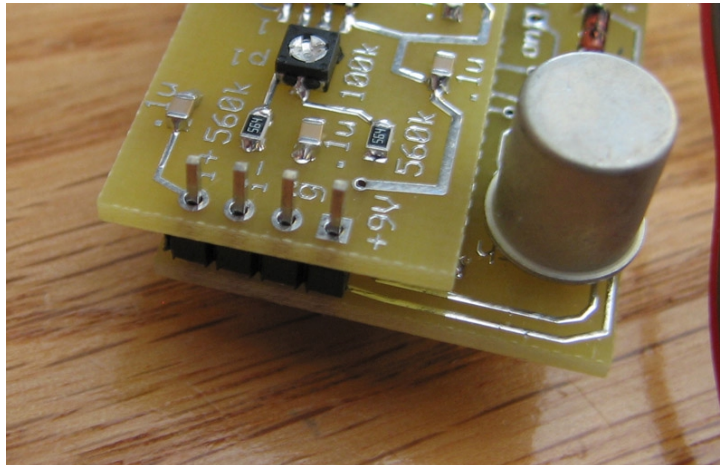
## Connecting External Mini Audio Amp for Loud Operation

As an option, we also offer a mini audio amp which will significantly raise the output volume of the sound board. If you bought the sound board and amp separately, you will have to remove the speaker from the sound board and wire in the amp inline.

Here is a pic of the mini amp:



The amp connects to the header on the sound board as shown, creating a board “sandwich”:

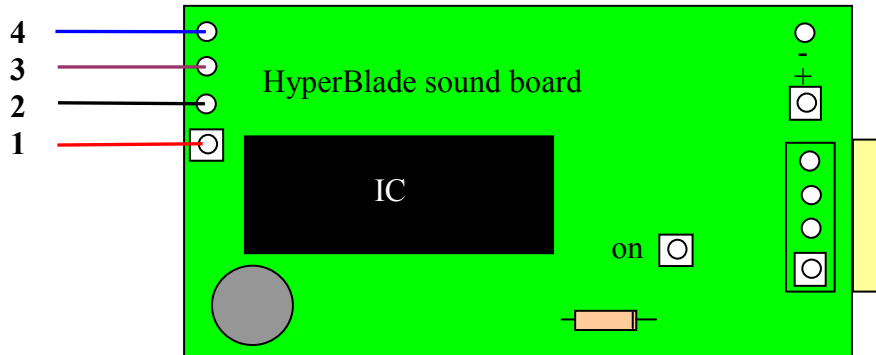


You can either solder the pins to the amp pads or you can run wire from the sound board to the amp header. Whichever you choose. The above pic is the easiest way to connect them together.

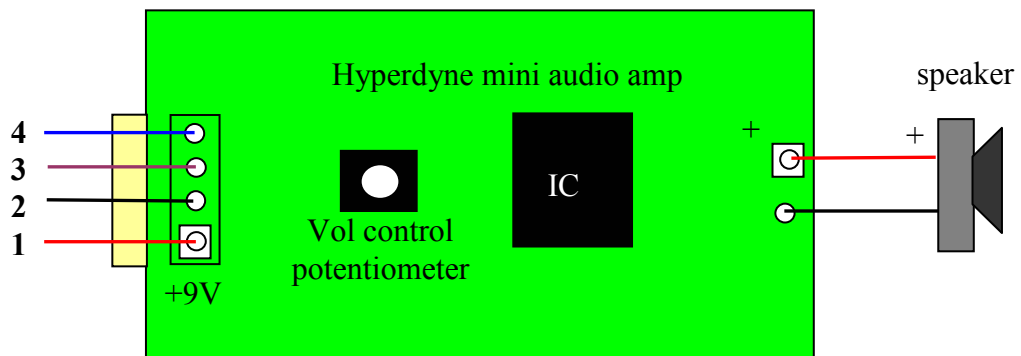
You can then heat shrink the entire assembly (both boards) or first heat shrink the amp and then the sound board and attach them. Either way you want to heat shrink them to prevent any shorting out inside the hilt.

Here is a diagram showing the connections you will need to make with our mini audio amp board:

### External Audio Amp Wire Connections From In-Hilt Sound Board

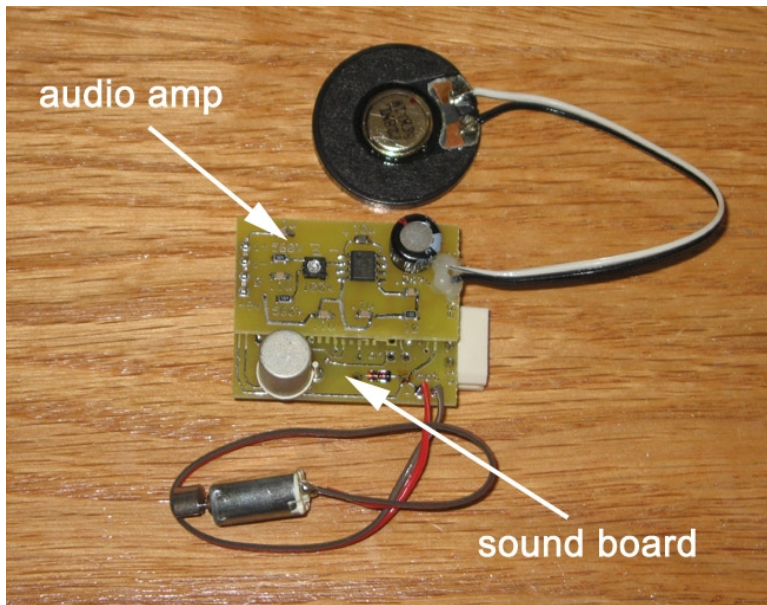


### Wire Connections to Audio Amp Board



HINT: Turn the tiny Vol control tuning screw to increase/decrease the volume of the output sounds. The volume potentiometer will stop at its extreme turns. You can use a small jewelers screwdriver to turn the pot. You want to tune it so the sounds are loud but not too loud so they are distorting.

Here is a picture of the sound board and audio amp wired together:



You can install both boards in your saber hilt and achieve super loud sound!

### **Electronic Specifications**

Unit dimensions: 1.3" L x 1" W

Speaker: 1-1.4" diameter, 8 ohm,

Output power: 125mW (without amp), 750mW (with amp)

Input voltage: 6-9V

Current consumption: 50-100mA (normal), 20uA (in sleep)

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## ADVANCED OPERATION / EXTERNAL CONTROL PINS (do not read if using a HyperBlade LED driver unit)

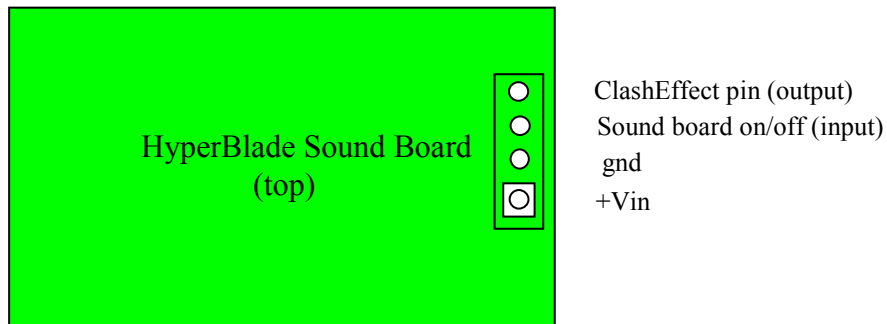
### Sound Board External Controls

The saber driver board also has some external TTL (+5V) inputs and outputs that interface with our LED driver unit. These include:

- 1) TTL output: ClashEffect pin to tell the driver board to flicker the blade in the event of a clash. (can be connected to a momentary pushbutton).
- 2) TTL input: Tells the sound board to activate/deactivate (can be connected to a momentary pushbutton).

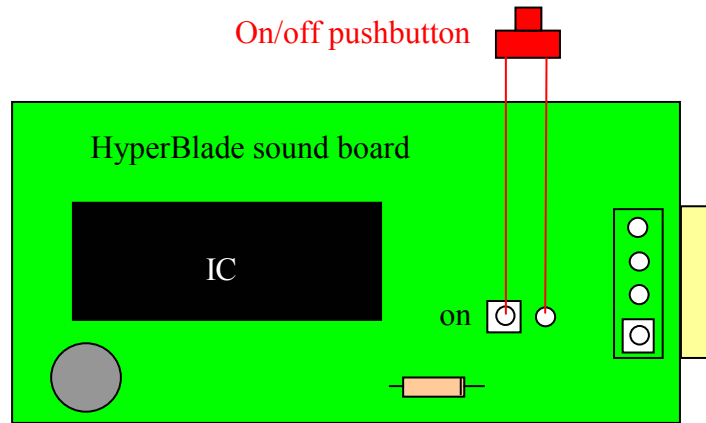
**If you are *not* interfacing with our LED driver board, these additional inputs are accessible off the sound board's 4-pin header.**

### HyperBlade Sound Board External Control Lines

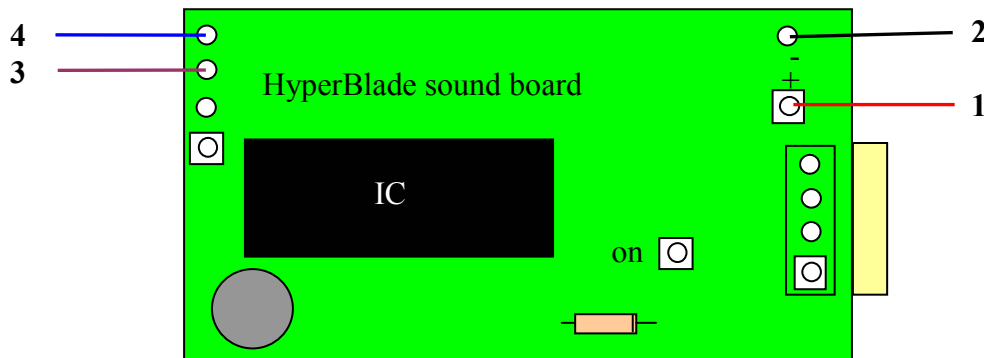


**HINT:** If you are not using our HyperBlade LED driver unit and still want to activate/deactivate the sound module manually, you can hook the on/off input line to a momentary pushbutton to control the saber sounds.

Here is the wiring diagram to accomplish this (red shows added wires/parts):



Here is how to connect external power and a speaker when not using our LED driver unit:



Where the above labeled pins are:

- 1 Power in + (6-9V)
- 2 Power in -
- 3 Speaker -
- 4 Speaker +

Special Technical Notes:

The sound board has no on/off switch. This is because the board goes into a sleep mode when the saber is in the "off" state. Thus the circuit only consumes microamps and can stay connected to the battery. For long term storage you can use the battery "key" jack method that is outlined in our LED driver unit document.

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