

HyperBlade Wireless Saber Sound Software

Scimitar Operating Instructions w/ Bluetooth Sound Modules

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INTRODUCTION

The wireless saber sound kit allows you to add motion-interactive sound effects to your toys and props. With the aid of a host PC, you can playback CD quality sounds based on your own body movements. The saber module has been designed for you to easily add sound effects to lighted sabers, swords, and other motion-based props.

The Bluetooth wireless sound module kit comes complete with:

- Assembled motion board w/ Bluetooth radio
- “Scimitar” PC software on CD

INSTALLING THE SOFTWARE

To utilize the software, you need a PC running Windows 98, NT, 2000, XP, a CD rom drive, and a USB Bluetooth dongle. Prior to using the software, make sure you have read the *HyperBlade Bluetooth Serial Port Setup Guide* document.

To install the software, insert the CD into your CD drive. If the installer program does not automatically start, open explorer, click on the CD drive, and double click on the installer program named “installer.exe”.

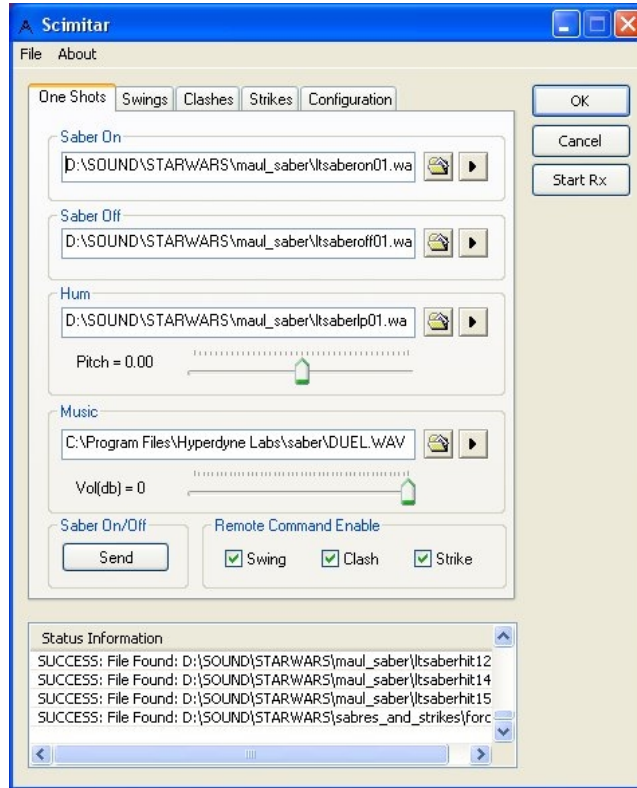
Once the installer program starts, it will prompt you where to install the application software to. The default directory for install is: C:\Program Files\Hyperdyne Labs\

Once the software is installed, you can use explorer to goto the directory where the software was installed. Open that directory and double click on the application named “Scimitar”. This is the main application you need to interface with the wireless board and playback all the sounds.

USING THE SOFTWARE

The software application has 5 tabs on it. Each tab is for configuring the different sound events, configuring the thresholds to trigger the sounds, and configuration support for the wireless boards.

Here is a picture of the 1st tab, labeled “**One Shots**”.



Using this tab:

This tab sets up the “startup” sound files for when the saber is turned on, off, and also the ambient hum that is played when the saber is active. The ambient hum sound is automatically looped, so make sure the looping sounds good and does not have any “pops” or “clicks” when the sound is looped. You might have to edit a custom sound file to get the desired looping effect.

The **Saber On** box holds the activation sound.

The **Saber Off** box holds the deactivation sound.

The **Hum** box holds the looped hum sound. The hum frame also has a pitch slider. This allows you to automatically change the desired pitch of the hum sound (lower or higher). Also note that *Automatic Pitch Hum Control is always active*. That is, as the saber is pointed down towards the ground, the hum pitch will slowly lower. As the saber is pointed up towards the sky, the hum pitch will slowly raise.

The **Music** box holds an optional music wav track that can play in the background while doing a simulated fight scene! This box also has its own volume slider, so you can set the volume of the music track independent of the saber sounds.

To the right of each edit box is a folder button, which allows you to browse for a wav file to add.

NOTE: The wav files you use for each sound can be mono or stereo. The sample rates of the sound files can be anything that is supported by your sound card. This makes it easy for you to record your own sounds, find pre-recorded wav files online, etc.

The farthest button from the edit box shows a play arrow. You can use this button to preview the sound you selected. Pushing the button will play out the wav file that you have currently selected.

The **Remote Command Enable box** has checkboxes to enable or disable certain events that the hilt responds to:

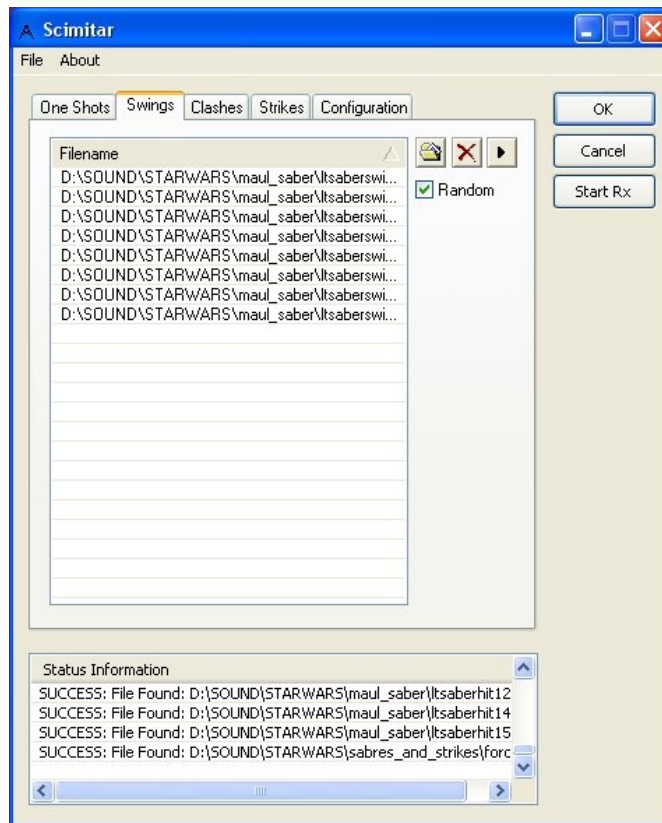
- Swing: a check mark indicates that swing information is sent to the hilt when it occurs
- Clash: a check mark enables the ClashEffect™ feature and sends clash information back to the hilt
- Strike: a check mark indicates clash information is sent back to the hilt (not used).

The **Saber On/Off** box has a pushbutton to send a remote saber activate/deactivate command back to the hilt whenever the button is pressed. Please see the *Bluetooth sound module and LED driver unit documentation* on how to connect up this feature to from the sound board to your driver board. Once this is done, a remote PC operator can ignite and retract your saber on command!

After you have selected sounds for each startup event, you can go to the next tab.

Here is a picture of the 2nd tab, labeled “Swings”.

DEFINITION: A swing is detected when the saber is lightly waved back and forth, up and down. Or if the motion unit is body worn, a swing happens when the motion unit is waved around fast or slow. The sensitivity of the swing sounds can be configured in the “Configuration” tab.



Using this tab:

This tab sets up all the swinging sound files that are automatically played out when the saber is turned on. For the swinging feature of the saber, you can now add many different swing sounds that are played out for each swing event. This gives much more variety in sound playback

To the right of each edit box is a folder button, which allows you to browse for a wav file to add.

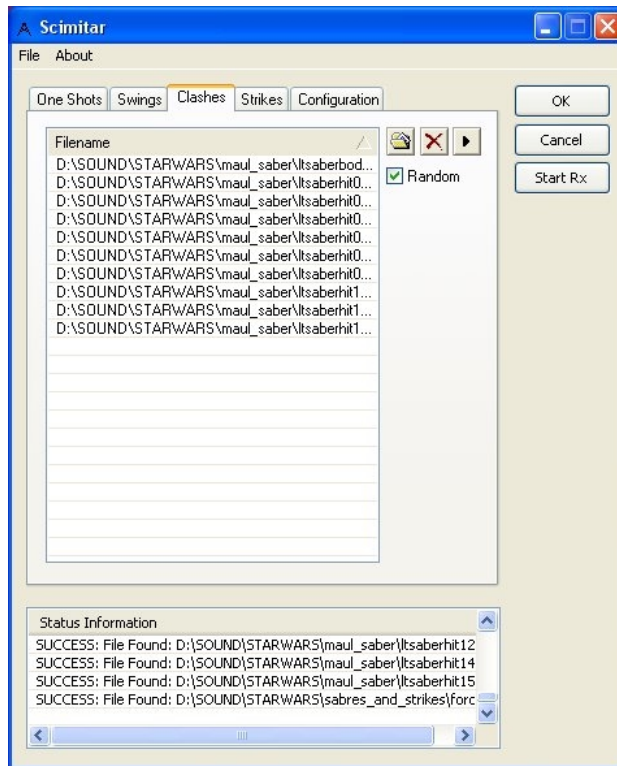
NOTE: You can add multiple files using this tab. You can remove a wav file from the file list by highlighting it and then hitting the red “X” button on the right side.

The farthest button from the edit box shows a play arrow. You can use this button to preview the sound you selected. Pushing the button will play out the wav file that you have currently selected.

There is also a random checkbox to the right of the file list. By checking this box, the sounds will be randomly selected each time a swing event is detected. If you leave this box unchecked, then the sound files are played in order from top to bottom each time a swing event is detected. After the last sound is played out, the program goes back to the top of the list and plays the list in order again. After you have selected sounds for your swing sounds, you can go to the next tab.

Here is a picture of the 3rd tab, labeled “Clashes”.

DEFINITION: A clash is detected when the saber (or motion unit) is swung and suddenly stopped, vigorously waved around, or the act of hitting something which causes a jarring effect. The sensitivity of the clash sounds can be configured in the “Configuration” tab (covered later).



Using this tab:

This tab sets up all the clashing sound files that are automatically played out when the saber is turned on. For the clashing feature of the saber, you can add many different clash sounds that are played out for each clash event. This gives much more variety in sound playback

To the right of each edit box is a folder button, which allows you to browse for a wav file to add.

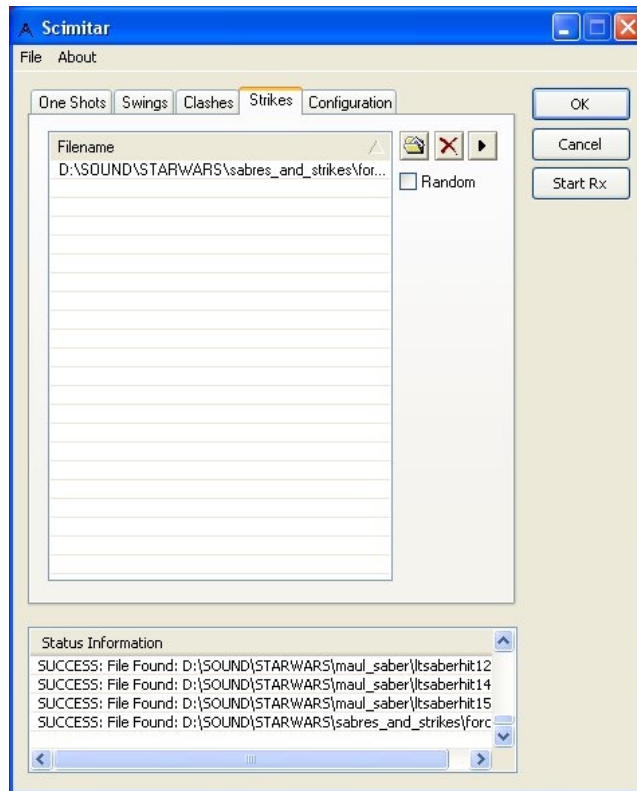
NOTE: You can add multiple files using this tab. You can remove a wav file from the file list by highlighting it and then hitting the red “X” button on the right side.

The farthest button from the edit box shows a play arrow. You can use this button to preview the sound you selected. Pushing the button will play out the wav file that you have currently selected.

There is also a random checkbox to the right of the file list. By checking this box, the sounds will be randomly selected each time a clash event is detected. If you leave this box unchecked, then the sound files are played in order from top to bottom each time a clash event is detected. After the last sound is played out, the program goes back to the top of the list and plays the list in order again. After you have selected sounds for your clash sounds, you can go to the next tab.

Here is a picture of the 4th tab, labeled “**Strikes**”.

DEFINITION: A strike is detected when the saber is suddenly pushed forward or backward only along a parallel line with the ground. The saber unit must experience a force in one axis only, which is along its longest side. The strike is good for utilizing push sounds, punching, blocking, or other movements that only go straight forwards or backwards. The sensitivity of the strike sounds can be configured in the “Configuration” tab (covered later).



Using this tab:

This tab sets up all the striking sound files that are automatically played out when the saber is turned on. For the striking feature of the saber, you can add many different strike sounds that are played out for each strike event. This gives much more variety in sound playback

To the right of each edit box is a folder button, which allows you to browse for a wav file to add.

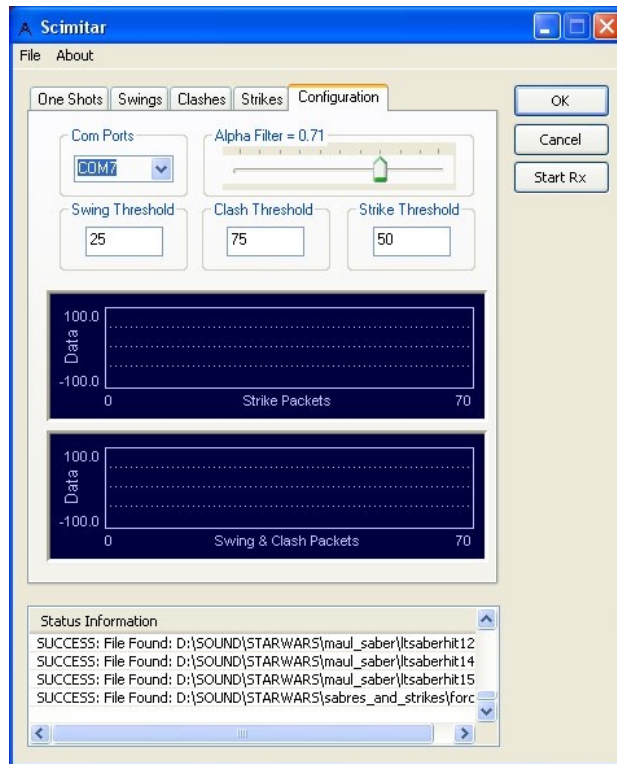
NOTE: You can add multiple files using this tab. You can remove a wav file from the file list by highlighting it and then hitting the red “X” button on the right side.

The farthest button from the edit box shows a play arrow. You can use this button to preview the sound you selected. Pushing the button will play out the wav file that you have currently selected.

There is also a random checkbox to the right of the file list. By checking this box, the sounds will be randomly selected each time a strike event is detected. If you leave this box unchecked, then the sound files are played in order from top to bottom each time a strike event is detected. After the last sound is played out, the program goes back to the top of the list and plays the list in order again. After you have selected sounds for your clash sounds, you can go to the next tab.

Here is a picture of the 5th tab, labeled “**Configuration**”.

DEFINITION: The configuration tab is the method which you can customize the sensitivity of all detected swing events, clash events, and strike events. The sensitivities will be bases on your swing style, where the motion unit is located, etc.



Using this tab:

This tab configures all of the motion “events” that are available in the saber module. The events are swings, clashes, and strikes.

The **COM Port** box chooses the Bluetooth serial port that you have assigned to your sound module. See the Bluetooth Places program for more info on this.

The **Alpha Filter** box changes the amount of smoothing done to the incoming acceleration data. Moving the slider past 0.5 increases the smoothness of the incoming data, but also delays the motion detection algorithms. A value less than 0.5 decreases the smoothness of the data (which can cause falsing), but motion detection is very rapid.

NOTE: You should tweak the alpha value so the data plots are near zero while not moving the saber and they show little variation. Also make sure for a given alpha value that swings and clashes the saber are still responsive. An alpha greater than 0.9 will result in a very sluggish movement. The rule of thumb is: The greater the alpha, the more sluggish the saber response and the lower the swing/clash thresholds should be. The less the alpha, the more responsive the saber response and the thresholds should be raised accordingly. This effectively gives you a tool to trade off threshold settings versus saber responsiveness.

The **Swing Threshold** box sets the threshold that must be surpassed before a swing sound is played out. A good starting number for this threshold is in the range of 20-40. By looking at the second graph denoted “Swing and Clash Packets”, you can fine tune the threshold to the values you see when you wave the motion unit around.

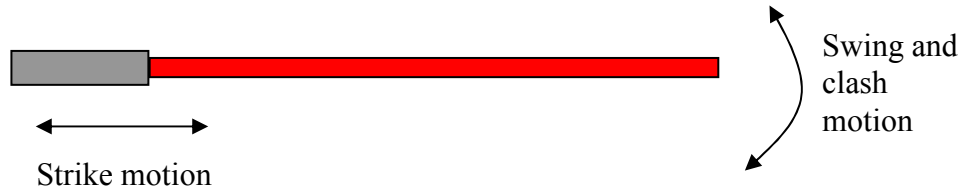
The **Clash Threshold** box sets the threshold that must be surpassed before a clash sound is played out. A clash can be thought of as a hard swing sound. When you suddenly stop the motion board, jar it, or vigorously wave it around, you can see on the second graph how the registered motion jumps back and forth. The clash is a second higher threshold that detects these sudden stops or motion. This allows you to play out swing sounds, but also have a second clash sound set play out when you wave the unit around more aggressively.

A good starting number for the clash threshold is 4 or 5 times the value of the swing threshold. By looking at the second graph denoted “Swing and Clash Packets”, you can fine tune the threshold to the values you see when you vigorously wave the motion unit around.

The **Strike Threshold** box sets the threshold that must be surpassed before a strike sound is played out. A strike is a unique motion that is done forward and backward only parallel to the ground. When you suddenly move the board back or forth in a straight line, you can see on the first graph how the registered motion jumps back and forth. The strike sound will play out if the threshold is surpassed, and if the registered motion is very straight. This allows you to play out a third set of special sounds, just as push sounds, punching, blocking, blaster deflection, etc.

As previously mentioned, the first graph will show the registered motion of the motion board as you move it back and forth. The second graph shows the registered motion as you move the motion board side to side.

Here is a picture of a saber and the types of defined motion.



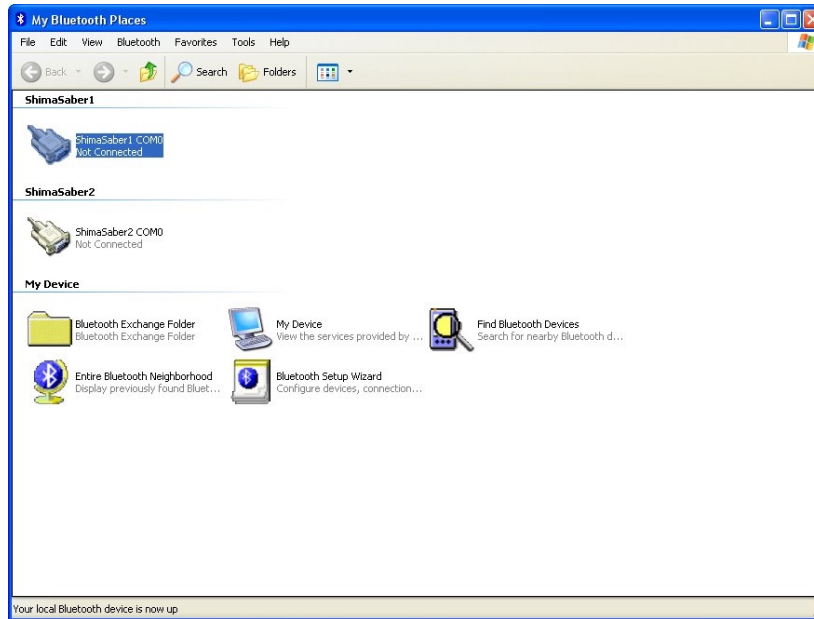
You can see a push forward or backward would initiate a strike sound. Waving the hilt side to side would play out swing and clash sounds.

STARTING A SESSION

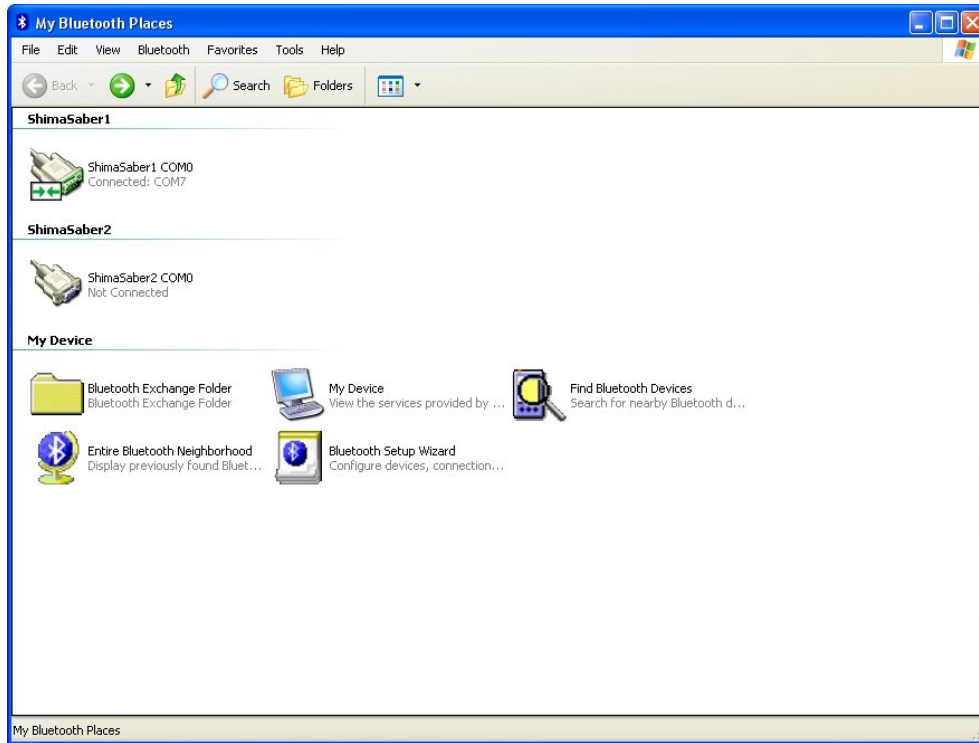
You will first need to setup your Bluetooth USB dongle by installing their software. Also you will have to install a virtual serial port under the “Bluetooth Places” program that is installed with the dongle. This virtual serial port is what the Scimitar software attaches to in order to receive data from the wireless module. This procedure is covered in the *HyperBlade Bluetooth Serial Port Setup* Guide document.

Turn on your wireless sound module. If you are using our HyperBlade system with a driver unit, do this by holding in the saber pushbutton for more than 2 sec. This will supply power to the Bluetooth module and allow the radio to boot up (**DO NOT ignite the saber blade at this time!**) If you ignite the saber blade you will have to remove power from the Bluetooth module (by holding the button in again), deactivate the saber blade, then power the sound module up again.

Now go to the “My Bluetooth Places” icon and double click it. You can see in the below pic that two sound modules have been linked to different virtual serial ports. We will be connecting to the top device.



Right click on the COM0 connection icon (corresponding to the paired sound module) that is currently powered on and select “Connect”. You will see a dialog come up. When the connection is complete you will see the connection next to the serial port.



You can see in our example that the wireless sound module “ShimaSaber1” has been connected to serial port COM7!

Start up the Scimitar application. Goto the **Configuration** tab. Select the proper COM port that the Bluetooth connection corresponds to. The software will detect the com ports that are available on the computer. NOTE: The program will remember the last selected port and thresholds.

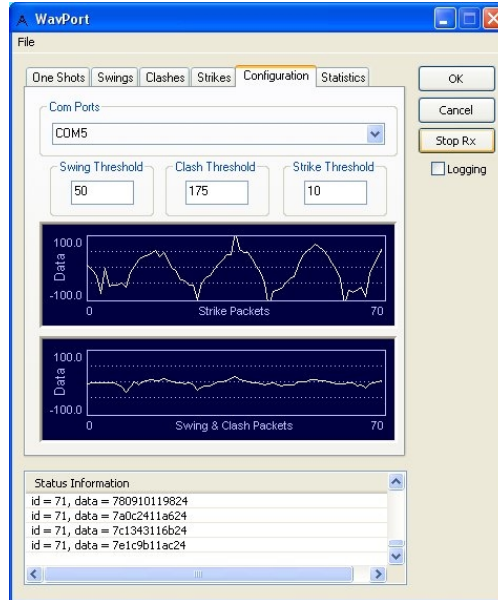
Hit the button on the right side labeled “Start RX”. This will open up the selected COM port and begin to receive data from the hilt.

NOTE: You wont see data on the Config graphs right away since the very first time during Bluetooth startup there cannot be any data transfers. This is normal. But once you ignite the blade data will start streaming - then you should see it on the graphs in the Scimitar program.

If data is successfully being transmitted and received, you will see the two graphs drawing a white line. This is the registered motion as it is being received. If you wave the motion board around, you will see the registered motion show up on the graphs.

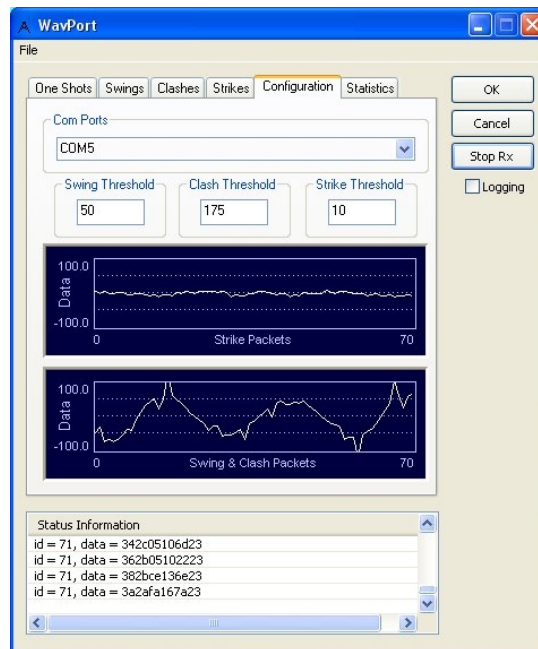
Wave the motion board back and forth (away and towards you). You should see motion being registered on the top graph.

Here is a picture of the strike graph you should see during a back and forth motion:



Wave the motion board side to side (to the left and right of you). You should see motion being registered on the bottom graph.

Here is a picture of the swing graph when you wave the motion board side to side:



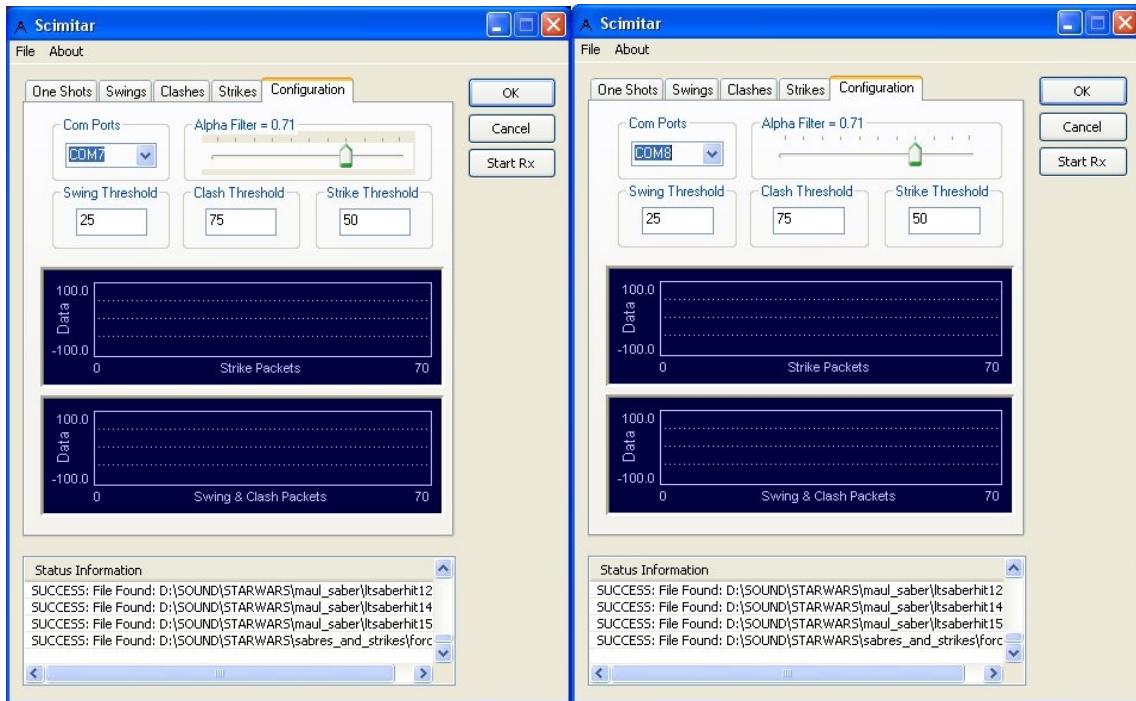
Your wireless connection is complete! You can now ignite your blade and the sound effects will start playing out based on the motion of the saber!

If you want to close the session just hit OK and the Scimitar program will end. Also note when you do this the Bluetooth COM connection will also drop. So to reconnect you will have to perform the above procedure again.

Multiple Scimitar Sessions

If you are using more than one saber with wireless sound modules, then you can run multiple copies of Scimitar and make sure you have the correct COM port for each session. Just double click on the Scimitar icon twice to initiate 2 sessions of the program. Set up the COM ports for each wireless sound module. Connect to the sound modules like above, then start receiving data from the Scimitar applications. The Scimitar program will automatically mix the sounds from both sabers and play the final mix out to the sound card!

Below you can see 2 sessions of scimitar running, one with COM7 for the first wireless module, and COM8 for the second wireless module.



Since for this PC setup there are 2 bluetooth sound modules associated with those 2 COM ports. Now when I power up both wireless sound modules, connect to them under “My Bluetooth Places”, then ignite the sabers both Scimitar programs will receive the streaming data from the respective saber hilt, giving you 2 sabers under PC control!!

TROUBLESHOOTING

Q: The swing and clash sounds don't corroborate with my movements.

A: You have to tune the thresholds to match your swinging style. Goto the configuration tab in Scimitar and see how the registered motion shows up for your normal waving and vigorous waving. Set the swing threshold to a lower value than the clash threshold. To just turn on swing sounds, you can set the clash threshold to a very large number, effectively turning off the clash sounds.

Q: I cant get the strike sounds to play out.

A: In order for the strike sounds to play out, you must move the board in a very straight line back and forth with respect to the board's long side. If you do not do this, or move the board at a slight angle from its long side, the sounds will not play out consistently. You can lower the strike threshold until you get the hang of triggering the strike sounds.

Q: The strike sounds play out when I wave the motion board around.

A: If the strike threshold is too low, then there is a possibility of a strike sound playing out while waving the motion board around. You should increase the strike threshold to a point where it normally does not play out while swinging, but also set the strike threshold to a point where you can still trigger it by pushing forward and back. The alignment of the board for strike sounds is VERY important.

Q: The range of the motion board decreases over time.

A: The wireless connection will be effected by walls, obstructions, RF noise, and other environmental factors. The best environment is an open air area with little structure. Also, you must have the Bluetooth antenna in the hilt pointing down out of a clear area. Bottling the antenna inside a metal hilt is a bad idea, and will degrade the usable range of the wireless link!

Q: When I go too far the connection gets lost.

A: This can happen and you may have to power down and reset the Bluetooth connection as described above. If you start getting too far away, you will see dropped or lagging data coming in over the Config graph windows. Use these graphs as a telltale that you are getting too far from the base and that sporadic behavior may set in.

Questions, concerns, comments, or found bugs for the Scimitar software should be sent to support@hyperdynelabs.com

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Hyperdyne Labs accepts no liability in the misuse of its products. Simulated sword play should only be performed by trained professionals. Please consult a professional before attempting any kind of simulated play.