

Wireless Saber Sound Software

Scimitar Operating Instructions

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 saber kit comes complete with:

- Assembled motion board
- Assembled base station board w/ PC serial connector
- Base station antenna
- PC serial cable
- Coin cell batteries
- Battery connectors for 9V battery or 2 coin cells
- “Scimitar” PC software on CD
- Motion board plastic case

Sold separately are the off-the-shelf wireless modules needed to make a wireless unit. If you are not implementing a wireless link, then you do not need these modules. The wireless modules can be readily purchased from several online vendors. Here are the model numbers for the receiver and transmitter functions.

INSTALLING THE SOFTWARE

To utilize the software, you need a PC running Windows 98, NT, 2000, XP, a CD rom drive, and a standard serial port.

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”.

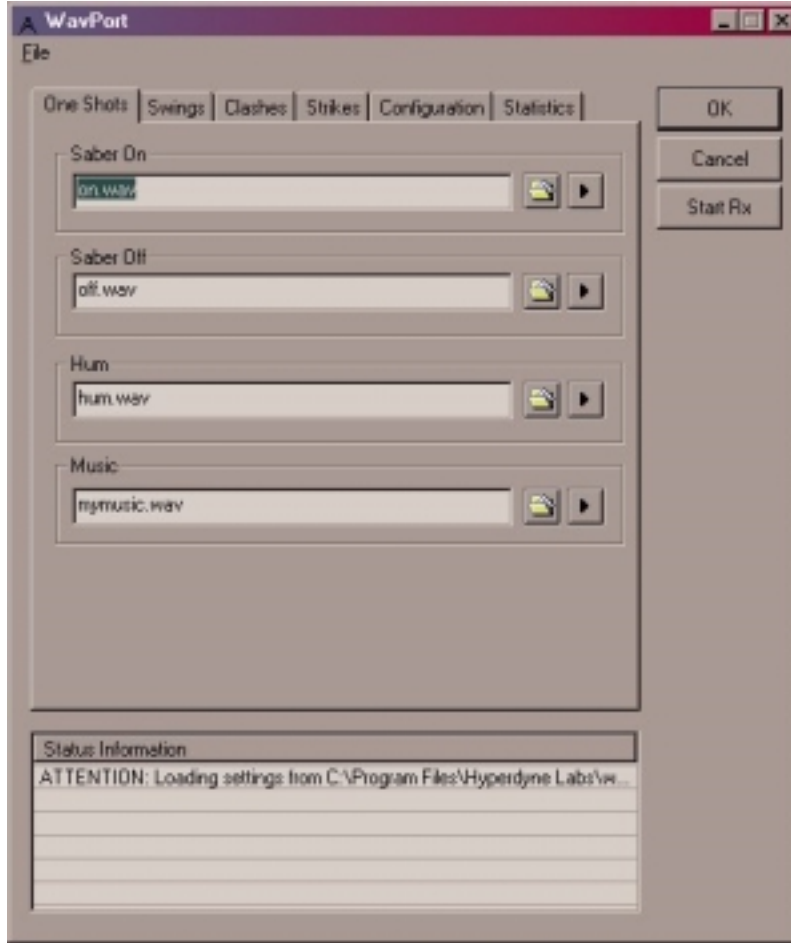
Once the installer program starts, it will prompt you where to install the application software to. The default directory for install is: C:\Program Files\Hyperdyne Labs\

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 boards and playback all the sounds.

USING THE SOFTWARE

The software application has 6 tabs on it. Each tab is for configuring the different sound events, configuring the thresholds to trigger the sounds, and testing 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.

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

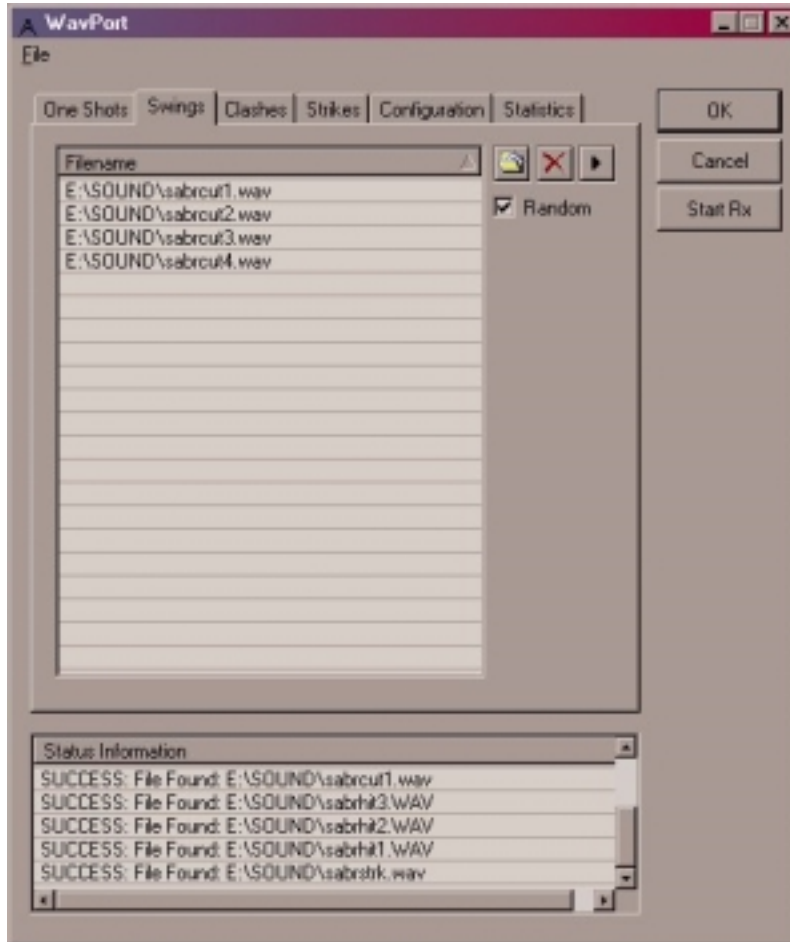
NOTE: The wav files you use for each sound can be mono or stereo. The sample rates of the sound files can be anything that is supported by your sound card. This makes it easy for you to record your own sounds, find pre-recorded wav files online, etc.

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.

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.

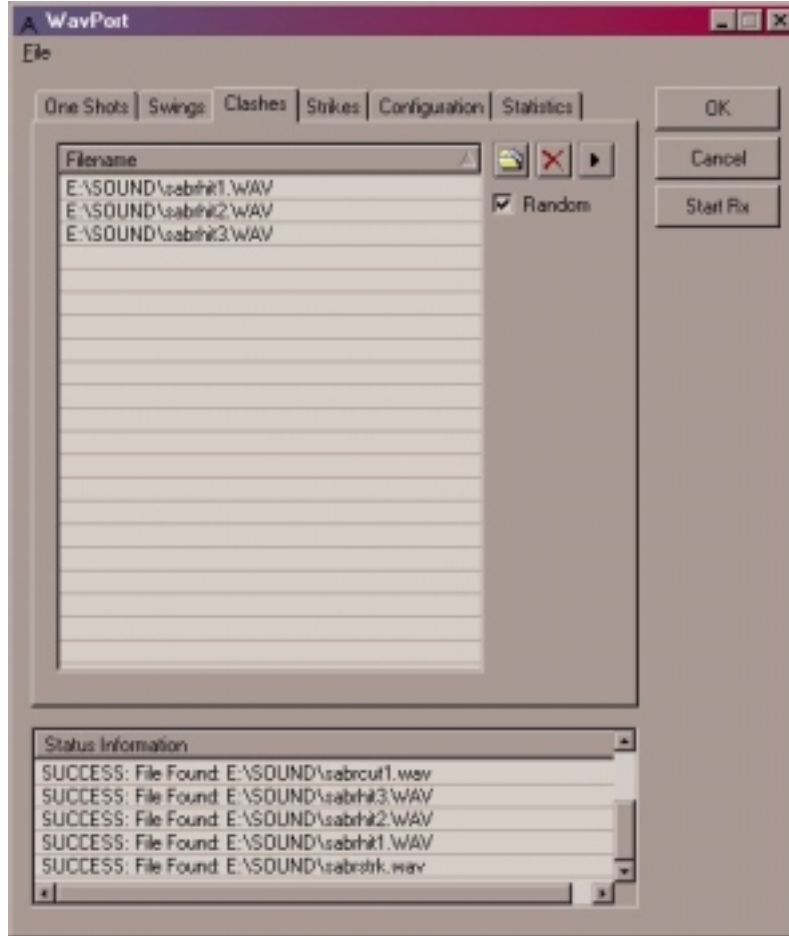
NOTE: You can add multiple files using this tab. You can remove a wav file from the file list by highlighting it and then hitting the red “X” button on the right side.

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.



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.

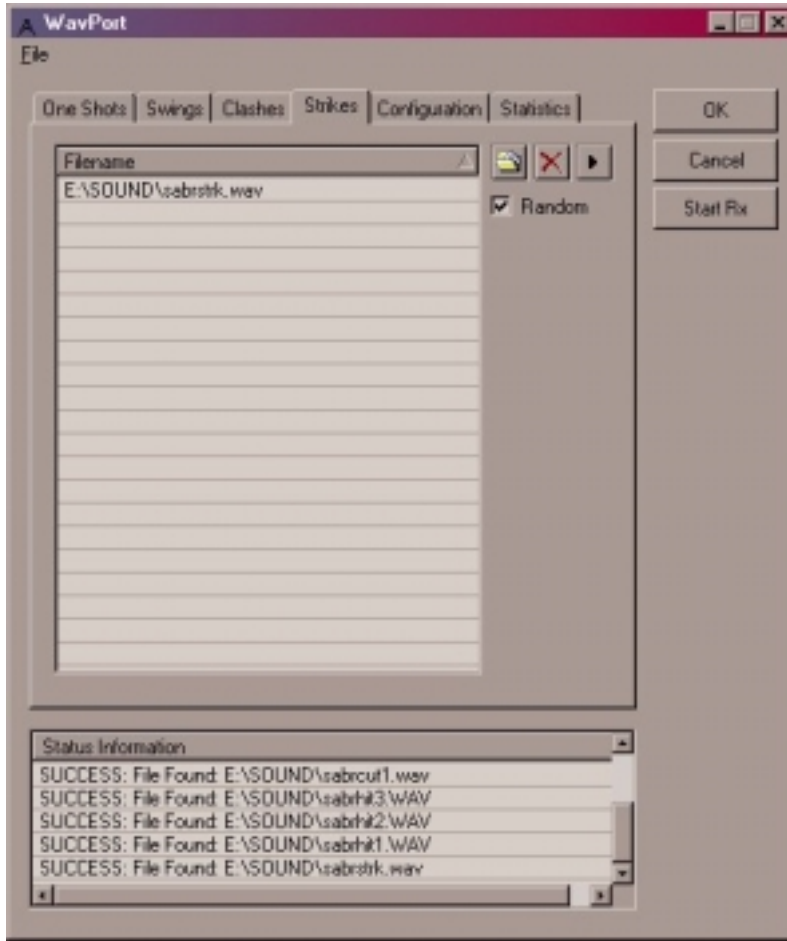
NOTE: You can add multiple files using this tab. You can remove a wav file from the file list by highlighting it and then hitting the red “X” button on the right side.

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 (or motion unit) is suddenly pushed forward or backward only. The motion 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.



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.

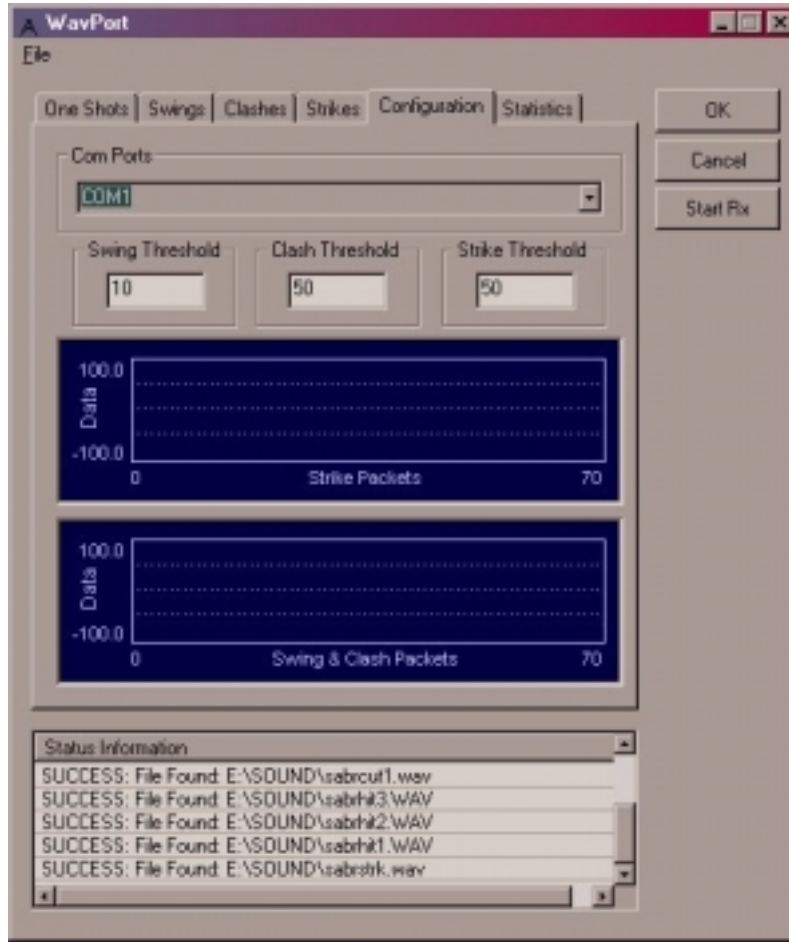
NOTE: You can add multiple files using this tab. You can remove a wav file from the file list by highlighting it and then hitting the red “X” button on the right side.

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 **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.

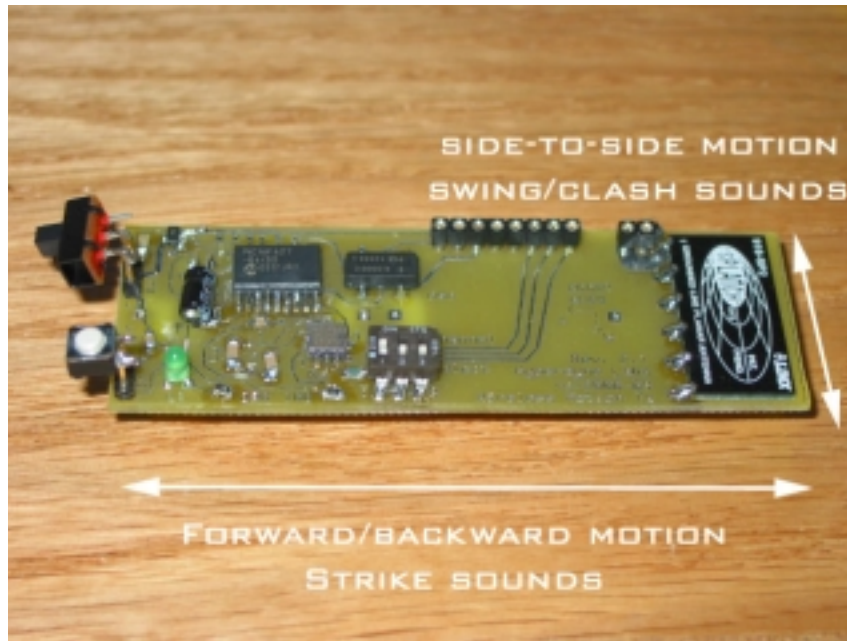
The **Clash Threshold** box sets the threshold that must be surpassed before a clash sound is played out. A clash can be thought of as a hard swing sound. When you suddenly stop the motion board, jar it, or vigorously wave it around, you can see on the second graph how the registered motion jumps back 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. 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.

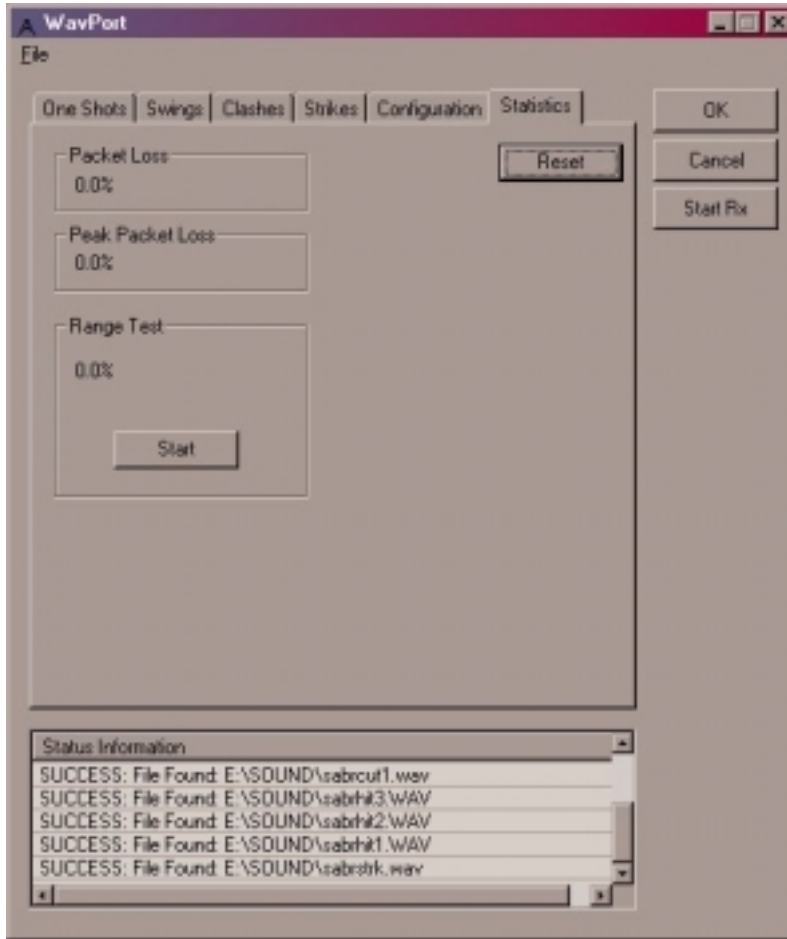
Here is a picture of the motion board and the types of defined motion.



You can see if you wear the motion board on your wrist or even install it in a hilt, then a push forward or backward would initiate a strike sound. Waving the hilt side to side would play out swing and clash sounds.

Here is a picture of the 6th ab, labeled “**Statistics**”.

DEFINITION: The statistics tab is used for range testing and determining the quality of the wireless connection. There are numbers that indicate the amount of data that is being lost over the link, which could be due to interference, low batteries, or other factors.



Using this tab:

This tab reports the data loss percentages as you move around the room with the motion unit. You can perform a Range Test by booting the motion board into the special range-test mode (see the wireless kit instruction manual on how to do this).

Once the motion board is in the range-test mode, you can press the “Start” button in the Range Test box. You will hear a cadence tone when the motion board and base station unit are communicating. When the motion board goes out of range of the base station unit, the tone will stop. Also, a percentage of data loss is shown in numeric form. The higher the percentage, the lower the quality of the wireless link. A low percentage number means you have a good data link that is not losing much data from the motion board to the base station unit.

The Packet Loss and Peak Packet Loss boxes show statistics on how much data is being lost over the wireless link. Again, a low percentage means that the wireless link is very good (and you are not losing very much data). Whereas a large percentage (or increasing percentage) means that you are losing much data and the wireless link is not very good.

A large packet loss percentage means that some of your motion may not be detected by the base station unit. Consequently, the sounds may not play back when they should, since the registered motion is never “seen” by the computer program. You can better the wireless link by adding fresh batteries and moving closer to the base station unit. A poor wireless link may also be due to surrounding RF interference. You can change the wireless channel to help alleviate the interference problem (see the wireless kit instructions on how to do this).

STARTING A SESSION

Connect the included serial cable to the base station unit, and the other end goes to your PC’s serial port. You need an open COM port in order to operate the software.

NOTE: If you do not have a standard DB9 serial port on your computer, you will need to get either: 1) Internal PCI serial port card or 2) a USB to serial converter box. This depends on your computer and the peripherals it has available to it.

Turn on the base station unit first. The green LED should come on. The red LED indicates that you are receiving wireless data. *If the red LED is on, that means you have potential interfering devices in the vicinity (900Mhz cordless phone, computer, etc).* To rectify this, you can change the channel on the motion unit and the base station unit. You can set the units on a channel that has little to no interference. Any interference will basically limit the distance that the motion unit can be from the base station unit and still receive data.

Turn on the motion unit. The green LED on the motion unit should glow. The red LED on the base station unit should now come on, indicating that the base station unit is receiving data from the motion unit.

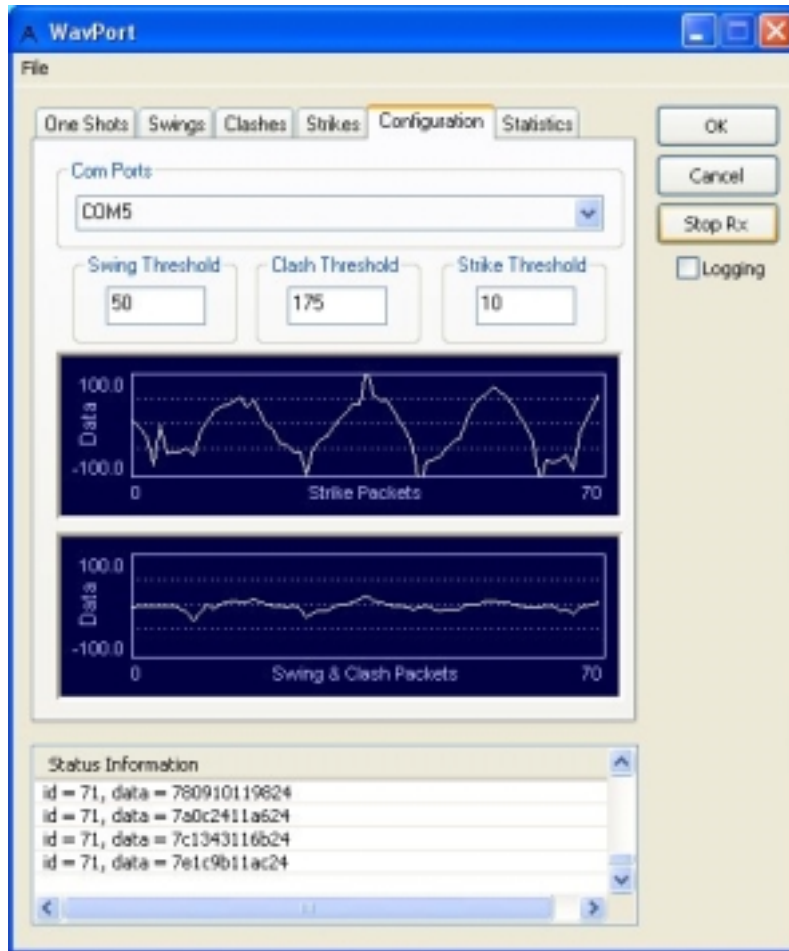
Start up the Scimitar application. Goto the **Configuration** tab. Select the proper COM port that the base station unit is connected to. The software will detect the com ports that are available on the computer. NOTE: The program will remember the last selected port and thresholds.

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 motion unit.

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.

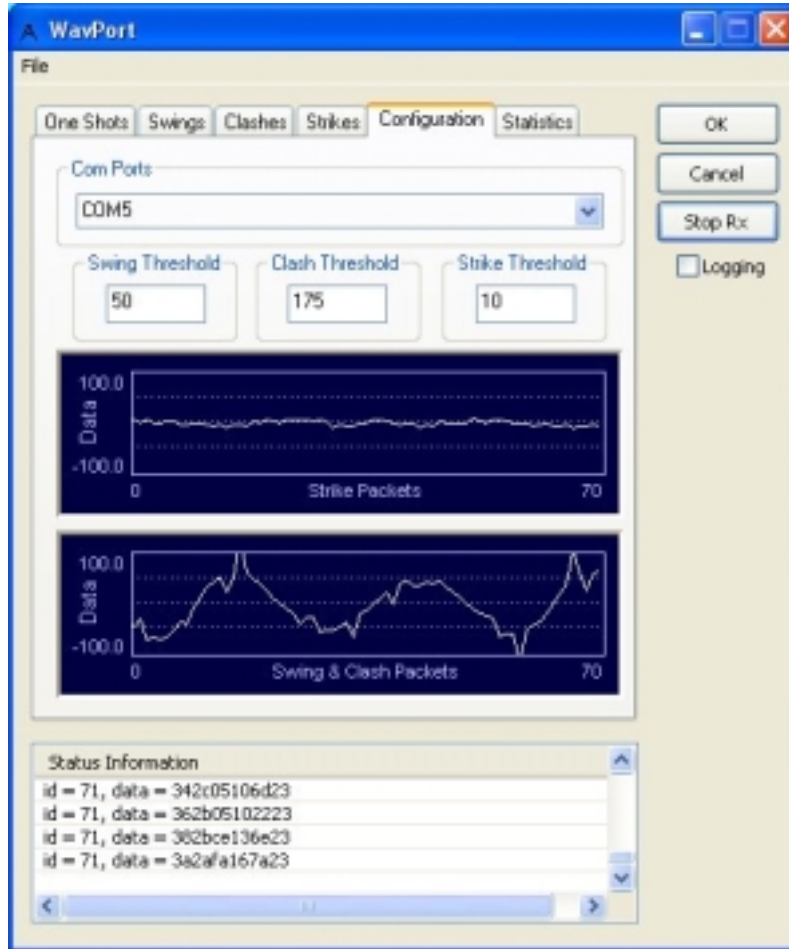
Wave the motion board back and forth (away and towards you). You should see motion being registered on the top graph.

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:



TROUBLESHOOTING

Q: I power on the boards and start the software, but no motion is detected.

A: Make sure the correct COM port is selected. Also make sure that you hit the “Start Rx” button to begin receiving data from the base station unit. If this still does not work, turn off the motion board and make sure the red LED on the base station unit turns off. If the red LED is still on, you may have too much interference around. Change the wireless channel and try again.

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 watch batteries used on the motion board are used for space constraints only. You can hook up a 9V or even 4AA (6V) batteries for longer life. The motion board can run off any DC voltage source from 4-18V. So any combination of batteries is possible. The smaller batteries typically have shorter life spans.

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

The transmitter and receiver modules are **not** a product of Hyperdyne Labs and must be purchased **separately** and **assembled** with the Saber Sound Kit hardware in order to have a fully operational kit. The modules are **not** certified by the Federal Communications Commission. If they are used in a completed product, that product **must** be submitted to a testing laboratory and FCC certified before it is sold.

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