# BOO BOX
# OPERATING MANUAL

**FRIGHT IDEAS**
*Control The Fear*

## Contents

## Getting Started

Thank you for purchasing a BooBox. Your BooBox has come pre-loaded with some sample sounds so you can start getting a feel for the system right out of the box.

When you first plug in your BooBox it will begin looping the Ambient scene. Triggering one of the inputs will run one of the scare scenes. Pressing "Enter" will also run input 1's scare if you don't have a trigger handy. Ambient mode will start again once the scare scene has finished.

Press "Menu", scroll down to "Record", and choose one of the scenes to see how easy it is to program the BooBox in real-time.

Read on to learn how to put your own sounds on the card and start designing your own scenes.

**Before you get started you'll need …**

- CompactFlash Reader – Required to change the sounds on the BooBox. This will also allow you to install free firmware upgrades and programs from our website. This item is highly recommended.

- Real-Time Programmer - We cannot stress enough how the RTP truly unleashes the power of the BooBox, making it simple to program even the most elaborate scares. Otherwise you'll have to rely on downloading programs from our gallery or having us program it for you.

- Triggers - Unless you're planning on using the BooBox's built-in timer to trigger the scene at preset intervals you'll need to choose a trigger. We carry various triggers on our site, each has a description of its intended application. Read the Triggers section in this manual for more information.

- Speakers - If you'd like your BooBox to be heard you'll need at least one speaker. If all you're playing is high pitched sounds such as screams then a horn speaker will do fine. If you're playing music with a little more bass, a mid-range speaker will sound much better. A combination of the two can be ideal, one can be located at the scare and used for a scream, while the other can be located elsewhere playing spooky music leading up to the scare.

## Section 1 – About the BooBox

**BooBox Overview**

The function of the BooBox is actually quite simple. If it's waiting to run a scare it will be looping the ambient scene. The BooBox loops this scene indefinitely while waiting to be triggered. Once triggered, the BooBox will run the appropriate scare scene then return to looping the ambient scene.

**Ambient Scene**

This scene is used to set the stage for the scare ahead. Rather than having a dark or dimly lit scare, use the ambient scene to keep the area alive by flickering or fading lights in sync with some spooky sounds or music.

**Scare Scenes**

Input 1 and Input 2 can each have their own sounds, output data, delays and volume levels. Although they are independent of one another, they cannot be run at the same time. If one input is triggered while the other is scaring it will be ignored, triggers are only responded to when the ambient scene is playing.

**CompactFlash Card**

The BooBox's flash card has a specific folder structure, the card included with your BooBox has already been initialized and is ready to use. However if you have purchased your own card you will need to initialize it yourself. This can be done by simply copying the BOOBOX folder and all it's contents from your original card to the new card.

Below is a description of the layout of a BooBox's flash card. Please note that most files on the card are used by the BooBox and should be left untouched.

| BooBox Flash Card Layout | | |
|---|---|---|
| Folder | Filename | Description |
| \BOOBOX | SETTINGS.BIN | Used by the BooBox to store settings,delays, volumes, etc. |
| | BOO1FIRM.BIN | Firmware for the BooBox |
| | RTP1FIRM.BIN | Firmware for the Real-Time Programmer |
| \BOOBOX\AMBIENT | 001.BIN | Used by the BooBox to store the ambient scene's output data programmed with the Real-Time Programmer |
| | 001.MP3 | Sound file for Ambient Scene |
| \BOOBOX\INPUT1 | 001.BIN | Output data for Input 1 Scene |
| | 001.MP3 | Sound file for Input 1 Scene |
| \BOOBOX\INPUT2 | 001.BIN | Output data for Input 2 Scene |
| | 001.MP3 | Sound file for Input 2 Scene |

## Section 2 – Sound

**Choosing Your Sounds**

Ambient sounds are continuously being looped, to help the looping point sound clean there are a few things to keep in mind while choosing or making your sound.

Sound Length – Try and use a sound of at least 30 seconds in length, longer is ok too, but too long can be a pain when programming lighting effects or other outputs in sync with the sound.  Short sounds will loop too often, and unless the looping point is perfect, it may sound choppy.

Clean Looping Point – Loop the sound at a point where there is very little or no sound.  If necessary, use quick fades at the beginning and end of the sound to avoid clicks and pops.

Bitrate – The sound quality of an MP3 file is judged mainly by its bitrate.  The bitrate is measured in kilobits per second, and determines how much information will be saved for each second of sound.  Bitrates of 128Kbps – 160Kbps are pretty standard for MP3's, anything higher will likely not be noticed and just be a waste of card space.

**How to Create Your Own Sounds**

Sound files can be saved in many different formats, the BooBox uses the popular format known as MP3.  If the sound you want to use is saved in a different format, or is on a CD, you'll need to convert it.

Getting a sound just right may require some editing.  Programs known as waveform editors allow you to modify every aspect of a sound.  If you've never tried using one before it can actually be quite fun, and when you're done with the sound it will be exactly what you wanted.

Visit the FAQ page in our website's support section, we'll maintain links to popular sound editing software and conversion tools.

**Designing Scenes Without Sound**

There are times when an ambient or scare scene is better off with no sound at all.  In these cases simply remove the appropriate sound file from the flash card.

**Copying Sounds to the Flash Card**

Each scene has its own folder on the card where it's output data and sound file is stored.  To change a sound file, just replace the existing file with the new file.  The new file must have the exact same filename as the original file for it to work.

| BooBox Sound Files | | |
|---|---|---|
| Folder | Filename | Description |
| \BOOBOX\AMBIENT\ | 001.MP3 | Sound file for Ambient Mode |
| \BOOBOX\INPUT1\ | 001.MP3 | Sound file for Input 1 Scare |
| \BOOBOX\INPUT2\ | 001.MP3 | Sound file for Input 2 Scare |
| | | |

**Adjusting Volumes**

The BooBox allows you to adjust the playback volume individually for each scene and channel.  This way you can set the ambient sound to play back softly, while having the scare sound play loud.  This feature is very useful, generally this would have required changing the sound file with a waveform editor.

You can also adjust the volume separately for the left and right channels.  If you are using the same speakers for each channel then for the most part these will be kept the same.  If you want to get really creative and use a horn speaker on one channel to belt out screams, while using a standard speaker on the other for music, the volumes may need to be set differently.

## Section 3 – Triggers

**Choosing a Trigger**

There are many different types of triggers, choosing the right one for your setup will help make your scare more effective.  Below is a quick summary of some popular triggers …

<table>
<tr><td colspan="3" align="center"><strong>Trigger Pros and Cons</strong></td></tr>
<tr><td align="center"><strong>Trigger</strong></td><td align="center"><strong>Pros</strong></td><td align="center"><strong>Cons</strong></td></tr>
<tr><td>PIR Motion Sensor</td><td>- Very affordable<br>- Unaffected by fog machines<br>- Easily installed</td><td>- Triggering time can vary a bit</td></tr>
<tr><td>Beam Sensor</td><td>- Triggering time is instant and consistent</td><td>- Can be a bit pricey<br>- Installation can be tricky at first<br>- Affected by fog machines</td></tr>
<tr><td>Pressure Mat</td><td>- Relatively affordable<br>- Simple installation</td><td>- Patrons can often spot the mat<br>- Patrons may not step on mat<br>- Hiding and protecting the wire and mat</td></tr>
<tr><td>Pushbutton</td><td>- Actor can judge best time to trigger</td><td>- Need an actor</td></tr>
</table>

**Trigger Contact Types**

In order for the BooBox to be able to read your trigger properly you must set the contact type in the input's menu.

Triggers are generally available in different contact configurations, normally open (N.O.) and normally closed (N.C.).  A normally open trigger will keep the BooBox's input circuit open until it is triggered, a normally closed circuit will keep it closed.  Below is a list of popular triggers along with their common contact configuration.

<table>
<tr><td colspan="2" align="center"><strong>Trigger Contact Configurations</strong></td></tr>
<tr><td align="center">Trigger</td><td align="center">Configuration</td></tr>
<tr><td align="center">PIR Motion Sensor</td><td align="center">N.C.</td></tr>
<tr><td align="center">Beam Sensor</td><td align="center">Both</td></tr>
<tr><td align="center">Pressure Mat</td><td align="center">N.O.</td></tr>
<tr><td align="center">Pushbutton</td><td align="center">N.O.</td></tr>
</table>

Beam Sensors generally have both N.O. and N.C. options available, however they may be termed "Dark On" and "Dark Off".  If you are unsure which type of contact your trigger has use the BooBox's input LED's to help you determine, the LED will be on when the input circuit is closed.

### Using Your Own Trigger

If you'd like to use your own trigger use the included pigtail to connect it to the BooBox. The input connector has three wires designated as follows:

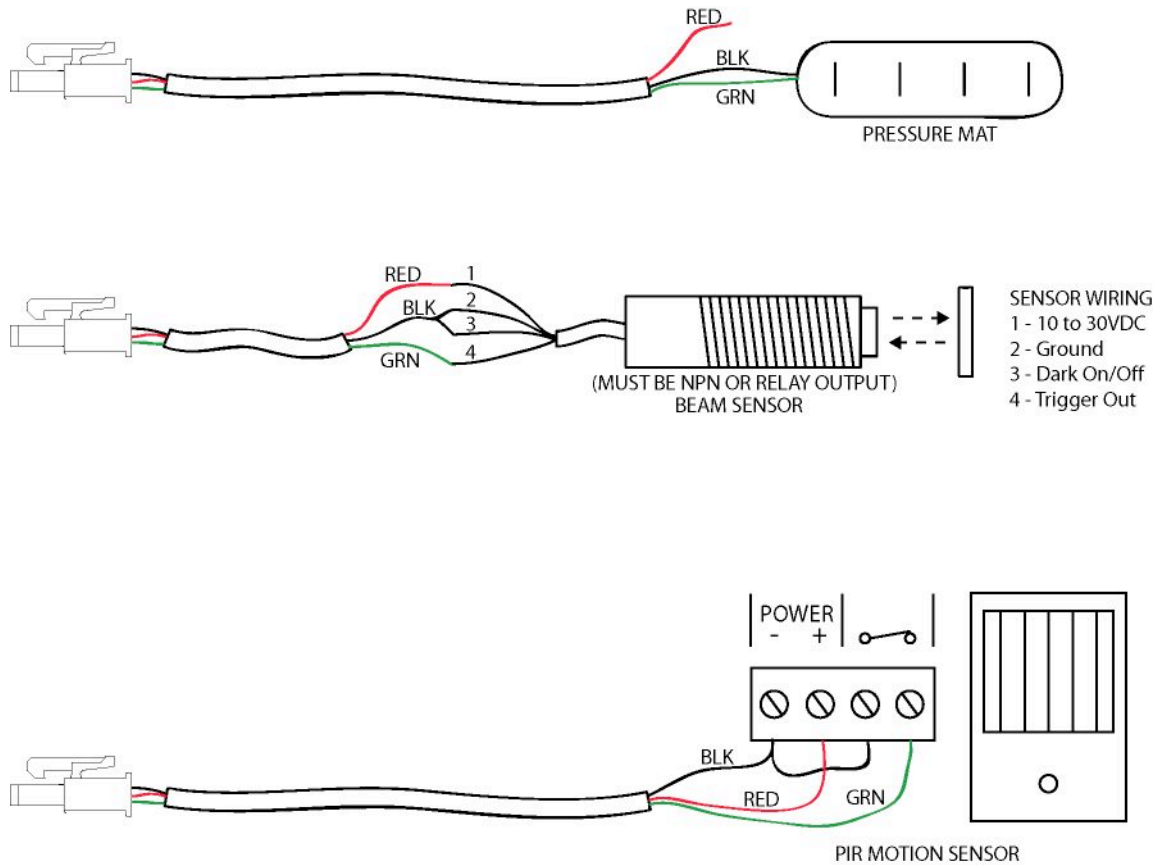| Input Connector Wiring | |
|---|---|
| Black | Common |
| Red | +12-14 Volts DC Output<br>For triggers that require a power supply |
| Green | Trigger<br>Touch this to Common to trigger the input |

If all you're using is a simple pressure pad, pushbutton, or other type of contact closure, connect the two wires from the trigger to the Black and Green wires on the input connector.

If you're using a trigger that requires 12-14 volts DC, such as a beam sensor or PIR motion sensor, connect its power supply leads to the Black and Red wires on the input connector. The trigger's output connects to the green wire, if the trigger's output is a contact closure such as a relay, connect the other side of the contact to the black wire.

### Using PIR Motion Sensors

PIR motion sensors require a warm-up period of about 2 minutes when they power up. You'll notice the BooBox will wait for the sensor to complete this cycle before it runs a scene. This is normal, it prevents the BooBox from triggering continuously while the sensor warms up.

## Trigger Wiring Examples



RED
BLK
GRN
PRESSURE MAT

RED 1
BLK 2
3
GRN 4
(MUST BE NPN OR RELAY OUTPUT)
BEAM SENSOR

SENSOR WIRING
1 - 10 to 30VDC
2 - Ground
3 - Dark On/Off
4 - Trigger Out

POWER
- +
BLK
RED GRN
PIR MOTION SENSOR

## Adjusting Trigger Delays

Each input has independent pre and post scare delays.  The pre-scare delay sets how long the BooBox will wait to scare once the trigger has been tripped.  The post-scare delay sets how long the BooBox will ignore the trigger once the scare has finished, sometimes this is referred to as recycle time.

To increment the delay, press the up or down arrows, holding either button for a second or so will begin to adjust the delay at a faster rate.

## Using the Built-in Timer

The BooBox's built in timer can be used to trigger input 1's scene automatically after a set amount of time.  Set the BooBox to trigger anywhere from every second, to every half hour.  Holding the up or down arrows for a second or so while adjusting the time will begin to change it at a faster rate.

To disable the timer set it to zero.

## Section 4 – Outputs

**AC Outputs 1 & 2**

These are simple ON/OFF relay outputs.  Use these outputs to control anything that would generally plug into a standard outlet.  Do not connect large motors to these outputs.  These outputs can provide a maximum current of 8 amps together – not each.

**Lighting Outputs 3 & 4**

These outputs are designed specifically to dim incandescent lights, do not connect fluorescent or low-voltage transformer lighting to these outputs.  These outputs can provide a maximum of 500 watts together – not each.

**Relay Outputs 5 thru 8**

These outputs are simple ON/OFF contact closure outputs.  Use these outputs to control things that are generally triggered by buttons.  Fog machines, some props, and low voltage solenoids are examples of these.  Each output can switch a maximum of 10 amps.

**Audio Outputs**

The BooBox has two audio outputs, one line-level output for connection to an external amp, and one amplified output for connection directly to speakers.  Both can be used at the same time if so desired.

### Controlling Solenoids or Large Relays

Solenoids and Large Relays create a lot of interference when they are turned off.  This can wreak havoc to nearby electronic devices.  If you notice the sound is stopping unexpectedly when controlling one of these devices this is most likely your problem.  The solution depends on whether you are using AC or DC solenoids.

### AC Solenoids

A high voltage capacitor must be installed to absorb the feedback.  The best place to install it is as close as possible to the solenoid, if that's not possible then across the terminal block may work as well.

Radio Shack part numbers: 272-1053 or 272-1051
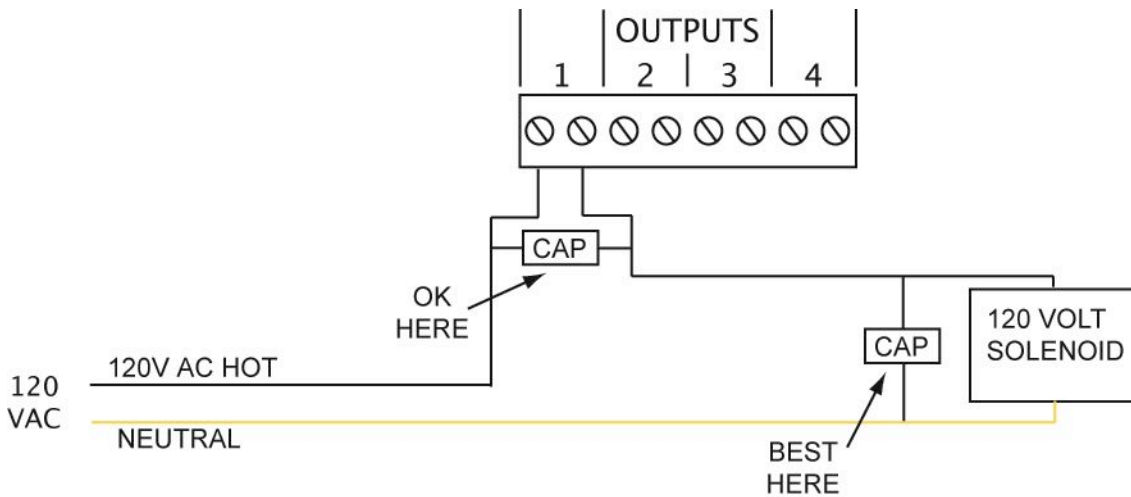


### DC Solenoids

A diode must be installed across the solenoid.  Note the orientation of the diode, using the line on the one side as a guide.  Locate the diode as close to the solenoid as possible.  A standard 1N4001 – 1N4004 diode will work fine, available for less than a dollar at your local Radio Shack.

Radio Shack part number: 276-1103 or 276-1102
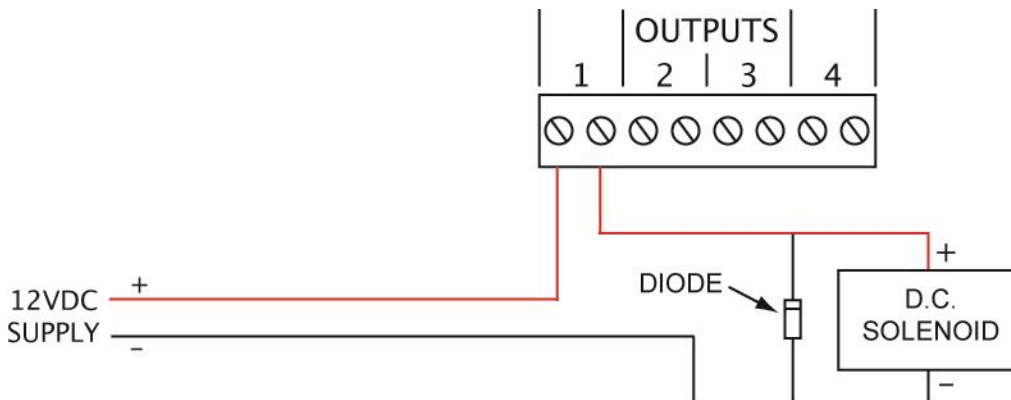
## Section 5 – Real-Time Programming

**About the Real-Time Programmer (RTP)**

The RTP is an extremely powerful yet simple way to program the BooBox.  For simple scenes, all of the outputs can be programmed at once.  For more complex scenes, as little as one output can be programmed at a time, layering each one on top of the other until the scene is just right.

Each button/slider on the RTP has a small LED next to it, if the LED is on then that output will be recorded.  If the LED is off, then any existing data for that output, if any, will be played instead.  Hold the ENABLE button and press one of the output buttons to enable/disable their recording status.  For the sliders, moving them below the 50% mark will disable them, moving them above will enable them.

**Recording a Scene**

Once you have your sound file selected and copied to the flash card you can begin programming the BooBox's outputs.

On the BooBox press MENU, scroll down to RECORD, choose which scene you'd like to record and press ENTER.  If the RTP is not connected, connect it now.  From this point on all programming is done on the RTP.

Pressing PLAY will playback the existing scene.  If you'd like to modify the existing scene, enable only the outputs you'd like to modify, then hit RECORD.  Disabled outputs will playback their existing data, outputs that are enabled for recording will have their existing data overwritten.

If you'd like to start recording the scene from scratch you'll have to clear the existing scene from memory. To do so, make sure all 8 outputs are enabled for recording on the RTP, press RECORD, wait a second, press it again.  All outputs will now be cleared.

Once you are happy with your scene, go back to the BOOBOX and press SAVE.  To discard the new scene and revert to the existing one, press CANCEL.

## Section 6 – Wiring Diagrams

**Controlling a Fog Machine**

Modifying a fog machine's remote so it can be controlled by the BooBox is quite easy.  Most fog machine remotes operate with low voltage, however, there are some, especially the cheaper ones, that have a high voltage remote.  If the plug on the end of the remote looks like a large headphone jack then it is usually low voltage, otherwise you'll have to check to be sure.  Either way, Fright Ideas takes no responsibility for damage you may cause to yourself or your fog machine, proceed with caution.

These instructions are intended as a guide in the right direction, not all fog machines are the same.  Some fog machines have a "ready" LED or circuit board inside their remote, these have been left out for the sake of simplicity.

The best way to add BooBox control to your fog machine is to add another wire to the existing remote, this way you'll still have manual control of your fogger.

1.  Drill a small hole in the remote.
2.  Insert a length of two wire cable inside the hole, tie a knot inside the box for strain relief.
3.  Connect each of the two wires to either side of the fog button, leaving the existing wires in tact.
4.  Reassemble the remote.
5.  Connect the two wires on the other end of the cable to one of the BooBox's relay outputs.

Now when the relay is turned on the fog machine will be activated.

NOTE:  If you notice that sometimes the fog isn't working, it's most likely not the BooBox or the remote modification. Most cheap fog machines have small heaters in them that can't seem to stay hot.  You're fogger is probably heating up, check the "ready" LED if the remote has one.

**Wiring Diagram**
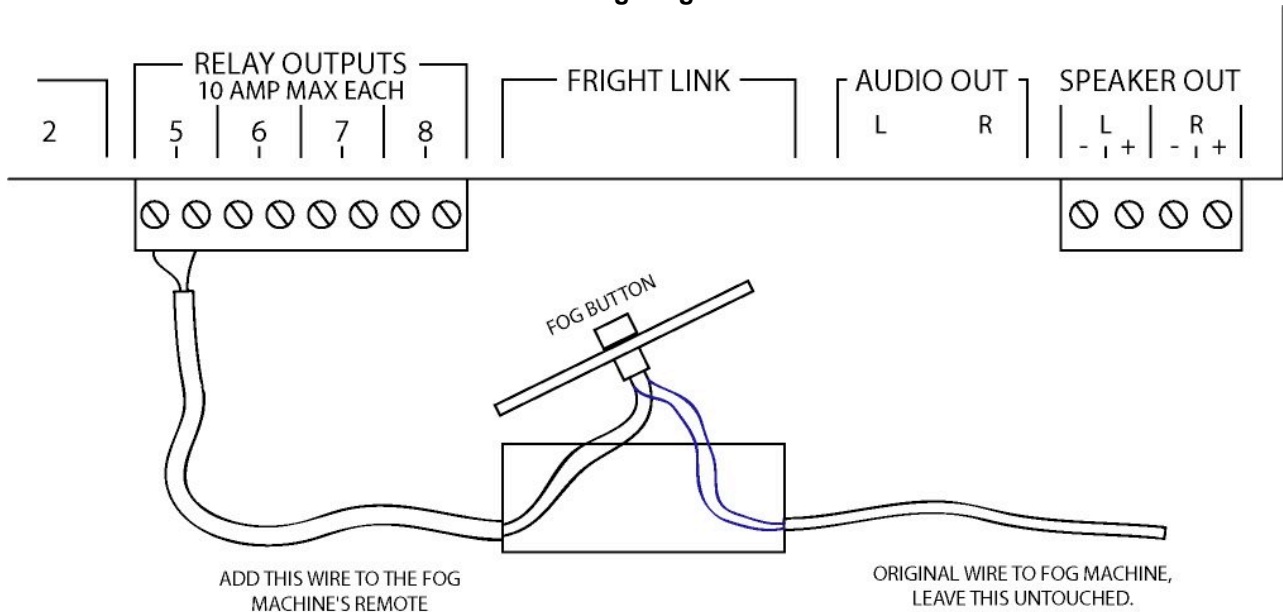
**Moving Sound Between 4 Speakers**

Up to four speakers can be connected to the relay outputs in such a way that they only use one sound channel. This works great for moving short sounds around a room, while the other channel is still free for background music.

Using this technique will require some creative sound file editing. Choose the sounds you'd like to have moving around the room – glass breaking, doors closing, voices saying "I'm over here" or "I can see you", are examples of these. Put the sounds into both channels of a stereo sound file, space them out by at least a second so you have time to turn on the appropriate relay when programming.
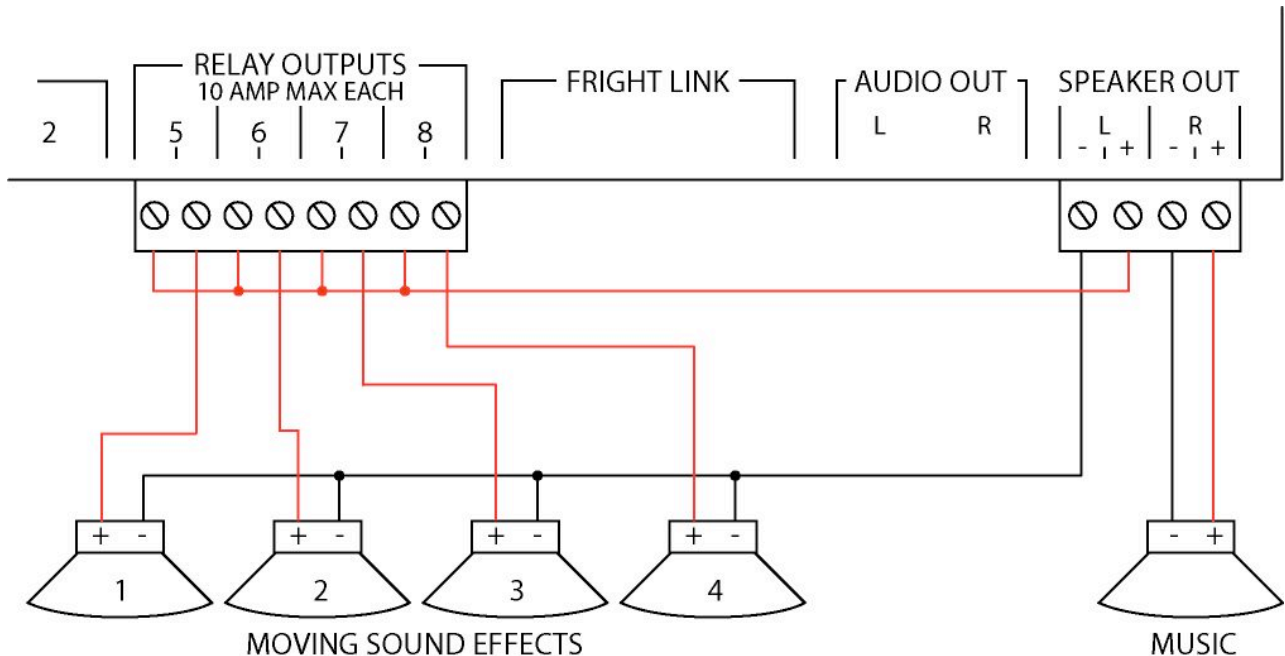
When you're ready to synchronize the outputs to the sound you'll have to turn on the appropriate relay to route the sound effect to the correct speaker. In the wiring diagram below, turning on relay 5 would route sound to speaker 1, relay 6 to speaker 2, etc.

Once you're done syncing the relays to the moving sounds you can re-edit your sound file and put background music in the right channel. The reason you shouldn't do this at first is because you need to hear the sounds play through the right speaker so you can turn on the relays at the right time. If you don't want background sound at all then you can simply disconnect the right speaker when you're done.

NOTE: Only switch speakers when there is silence in that channel, and never turn on more than one relay at a time.

If less than four speakers are required for your setup, do not connect the extra relays to the SPEAKER OUT. This way the relay contacts can still be used to trigger other devices.

**Wiring Diagram**

## Section 7 – Troubleshooting

**BooBox LCD Error Messages**

| BooBox LCD Error Messages | | |
|---|---|---|
| LCD Message | Problem | Solution |
| Card Format Incorrect | The flash card has most likely been formatted with a computer rather than a digital camera. | Format the flash card in a digital camera. |
| Bad Firmware File | Either the BOO1FIRM.BIN or RTP1FIRM.BIN file is corrupt. | Download the file from our website and copy it to the card again. |
| Card Not Initialized | A folder or file the BooBox requires on the flash card is named incorrectly, in the wrong folder, or simply missing. | Fix the card according to the *BooBox Flash Card Layout* table in this manual, or download an initialization file from our website's support section to re-initialize the card. |

## Section 8 – Specifications

| Specifications | |
|---|---|
| Trigger Inputs | Optional Trigger Power: 12-14V DC, 250mA Max. |
| Outputs | Outputs 1 & 2: 8A Max.<br>Outputs 3 & 4: 500 Watts Max. (Incandescent lights only)<br>Outputs 5 – 8: 10A each |
| Speaker Output | 24W/channel into 4 ohms @ 10% THD<br>12W/channel into 8 ohms @ 10% THD |
| Electrical and Environmental | Voltage: 110 – 125V AC, 60Hz<br>Current: 10A Max.<br>Temperature: 10° – 35° C |