

# HauntMaven.com - Wolfstone's Haunted Halloween Site



[http://wolfstone.halloweenhost.com/ThunderAndLightning/clstod\\_ThunderOnDemand.html](http://wolfstone.halloweenhost.com/ThunderAndLightning/clstod_ThunderOnDemand.html)

## Thunder On Demand

There are many ways to simulate lightning, but our favorite uses a thunder sound track, and something like a color organ to synchronize lightning flashes to the sound.

This works fine for an ambient atmosphere of a lightning storm.

But, sometimes for emphasis, you want the crash of thunder and bolt of lightning at a precisely timed spot. Think "Frau Blucher" in "Young Frankenstein".



## The Design Process

I could just tell you how I decided on the design for the ultimate thunder on demand unit. But there may be some value in disclosing how I got to this point, because knowing the process might help you with similar problems of your own.

So, here are the steps I went through in my mind...

- The thunder storm sound track is good at providing something that "runs on automatic" to provide assorted background sounds, plus the occasional thunder crash.
- But it sure would be nice if I could cause a thunder crash at will.
- This could be accomplished if I had two sources of sound: one for the assorted background sounds of the storm, and one that added the thunder crashes when I wanted them.

It would be acceptable if the background sounds included occasional thunder crashes that happened unbidden. In fact, it's a good thing, because you don't have to keep pushing a button.

- The simplest way to get the second sound track would involve a digital sound chip, with a thunderclap recorded on it. These units are easily triggered by a switch closure. Just mix the sound chip output with the ordinary sound track.

You could record your own thunderclap on a sound chip, or just scavenge a sound chip from various Halloween props, like the "Thunder Staff".

I actually built one of these and like it.

- But using a single recorded chip means that your on-demand thunderclap always sounds the same. It's not terrible, but it might be recognized if somebody stays near your haunt long enough to hear it two or three times.
- So, maybe you want two or three sound chips, each with a different thunderclap on it. Then use some sort of circuit to play them, randomly or in sequence.
- But you would probably want to play them at occasional intervals, too. So you don't need to keep pushing the button.
- We've gotten rather complex and expensive, with multiple sound chips, timers, sequencers, etc. Wouldn't it be nice if we could just have a CD full of thunderclaps, and just play them when desired?

## Wireless Control

A key component of Thunder On Demand is wireless remote control. This gives you the ability to be anywhere, doing anything, and you just press a button to get a thunderclap and lightning.

We use wireless X-10 equipment.

- You carry a small wireless remote control box.
- When you push a button, it sends a radio signal to a base station.
- The base station hears the radio signal and generates a carrier-current X-10 signal.
- The carrier-current signal triggers a relay module, which closes contacts.
- The contact closure triggers the effect.

What you get is a button that you can carry with you, that closes a switch elsewhere, with no wires dragging behind you.

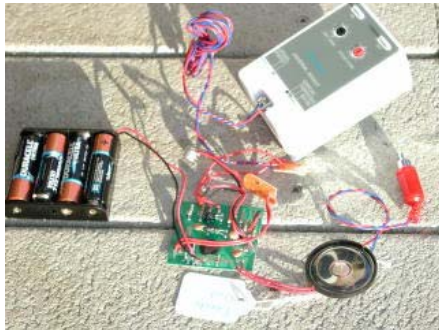
We used this PalmPad in 2001, with a masking tape label for each effect.



In subsequent years, one of the buttons was labeled "Thunder".

## System #1

I actually built a thunder on demand circuit back in 2000, at the same time that I added sound to the giant spider. But I forgot about it and didn't get around to using it until 2002.



The [Radio Shack recordable sound board](#) is the green thing in the center. The X-10 relay module is in the upper right. The wire from the sound board terminates in a male RCA plug on the right that connects to the mixer on the sound system.

Note that the use of an X-10 module for triggering means that thunderclaps can be triggered via wireless radio remote control by using the Palm Pad.



Instead of using a recordable sound board, I could have just hooked into an existing product. This "thunderbolt" plays a thunder sound and flashes lights in the ends.



Inside is a small control board that could easily be used.

## System #2

I came up with this idea in 2001 and haven't built this one yet, but the design appeals to me.

Here's the outline of the solution:

- Make a custom CD with a dozen thunderclap tracks on it.
- Each thunderclap track starts out with a thunderclap and is padded at the *end* with a minute or two of silence.
- If you just play the CD all the way through and then repeat, you here a series of thunderclaps, each one a minute or two apart. The silence at the end of each track provides separation between crashes.
- But if, in the middle of the silence, you press the "next track" button, the CD player immediately goes to the next track - which starts with a thunderclap.
- All you need to do to get thunder on demand, is to wire up the CD player to remotely press the "next track" button!
- This isn't terribly difficult. All you need to do is carefully open up the CD player and solder some wires in parallel with the "next track" switch. Then bring those wires out to a switch or relay.

In our case, we would use an X-10 relay module.

## Commercial Solutions

For the 2002 Halloween season, I saw for the first time a remote thunder/lightning on demand system offered commercially.

Take One makes a variety of Halloween decorations, available through retail stores. They make a "Wireless Thunder Lightning Machine", \$39.99 at [Spencer Gifts](#) (October 2002).



This product contains a sound chip with a single sampling of thunder, and a built-in strobe with two xenon lamps.

This unit is battery-operated and very portable.

The unit is operated by a wireless remote control. The remote can be activated by push-button or "motion sensor" that detects changes in ambient light. There is also a setting where it runs continuously.

There is no perceptible connection between the light flashes and the sounds. When triggered, the sound is played, and the twin strobe lamps fire whenever they feel like it.

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