

# CEX

*The Ultimate Audio Tool*

For the Atari

**LYNX™**

<http://www.replacementdocs.com>

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# The ultimate audio tool *for the Atari Lynx*

Welcome to *SFX*, the ultimate audio tool for your Atari Lynx. Perfect for the hobbyist developer or the curious tinkerer, this sound utility will allow you almost full control over the four audio channels available on the Lynx. You can adjust volumes, frequencies, waveforms, and more. With just a few moments of effort, you'll be hearing familiar engine hums, rumbling explosions, and computer garbles. Blend several channels together at once, tinker with them on the fly it's all possible with *SFX*!

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## *Getting Started:*

1. Insert your *SFX* cartridge in your Lynx, with the label side facing the Lynx.
2. Turn on the machine. The Atari logo appears.
3. Wait a moment, and the *SFX* title screen appears. Press A or B to enter the *SFX* utility screen, or press Option 2 to turn off the title screen sound effects.
4. Refer to the following pages for a diagram and explanation of the controls.

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**1. Joypad** - Up and down select the audio register, right and left alter the register value by  $\pm 1$ , respectively.

**2. A button** - Toggles sound on and off. The speaker icon on the right side of the screen will appear or disappear appropriately.

**3. B button** - In conjunction with the right and left joypad function, alters the register value by  $\pm 10$  (hexadecimal) instead of  $\pm 1$ .

**4. Option 1** - Selects one of the four audio channels (numbered 0-3). The current audio channel is displayed at the top of the screen.

**5. Option 2** - Resets the current audio channel to its default values. Also mutes sound on title screen.

**Reset** - Returns the program to the *SFX* title screen.

**Flip** - Disabled.

## *Hints on creating sound effects:*

*Note that all registers are represented in hexadecimal notation.*

**Volume** Simply increases or decreases the volume of the sound. Note that 7F is the loudest volume possible, and that 01 is equivalent to FF but with opposite phase. 80 is equivalent to 00 (no volume).

**Shift** Creates feedback used as a polynomial sequence generator to generate waveforms. This (and to a lesser extent the Low Shift register) can be used to create anything from a "pure" square wave to a distortion/noise waveform.

**Low Shift** The lower 8 bits of the Shift register (see above).

**Backup** Determines the base frequency of the sound. The audio hardware will preload a counter with the Backup value, count down to zero, and then reload it with Backup.

**Flags** From the most significant bit (i.e. the leftmost bit):

Bit 7 Feedback bit 7

Bit 6 Reset timer done

Bit 5 Enable integrate mode

Bit 4 Enable reload

Bit 3 Enable count

Bit 2, Bit 1, Bit 0 Clock select

7 = 'linking'

6 = 64 us

5 = 32 us

4 = 16 us

3 = 8 us

2 = 4 us

1 = 2 us

0 = 1 us

Bits 2, 1, and 0  
determine the octave  
of the sound by setting  
the timer clock speed

## *Sample Sound Effects:*

<i>Engine Hum</i>	Shift = 09, LS = 00, Backup = 70, Flags = 1E. Adjust Backup register to simulate RPMs.
<i>Machine Gun</i>	Shift = FB, LS = 00, Backup = 10, Flags = DB.
<i>Explosion</i>	Shift = 4B, LS = 00, Backup = 00, Flags = 1E. Increase Backup or decrease Volume registers for effect.
<i>Computer Garble</i>	Shift = 03, LS = 00, Backup = 10, Flags = CE. Adjust Flags with B button and joystick to simulate "data transmission."

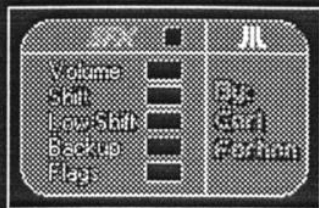
## *More Information:*

To order or find more information on new games for the Atari Lynx and Jaguar, visit the *Songbird Productions* web site located at:

<http://songbird.atari.org>

or reach *Songbird Productions* by email at [songbird@atari.org](mailto:songbird@atari.org)

## *Sample Screen Shots*



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