



# **Sound Effect Generator Wizard User's Guide**

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**[www.holtek.com](http://www.holtek.com)**

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## The Sound Effect Generator Wizard Software

### Introduction

The Sound Effect Generator Wizard software is specially designed to facilitate easy use of the Holtek waveform generator flash MCU series. Its graphical user interface reduces the need to develop program codes. The program codes automatically generated by this software can be directly programmed into the Holtek waveform generator flash MCUs.

The Sound Effect Generator Wizard ensures simple generation of sound effects thus assisting designers to create prototypes and complete their projects in a minimum of time.

### System Combination

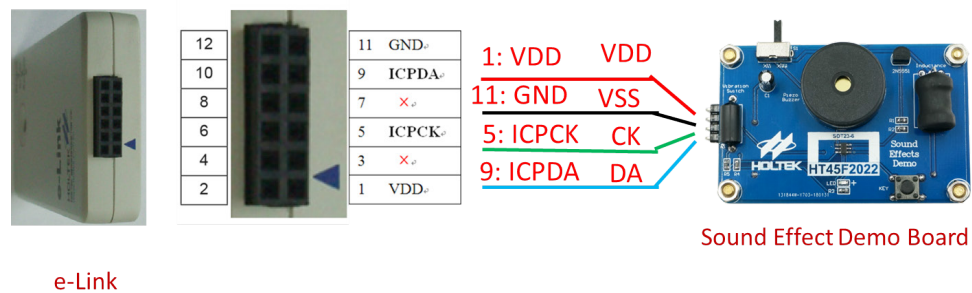
The system is mainly composed of both software and hardware:

- Software: Sound Effect Generator Wizard
- Hardware: Build your application circuit or use the Sound Effect Demo Board. When you complete the graphic setups in this software, an application circuit is generated automatically. You can then construct the hardware according to the application circuit or you can use the Sound Effect Demo Board.
  - ♦ Holtek e-Link: used to program to the MCU.

### Hardware Connection

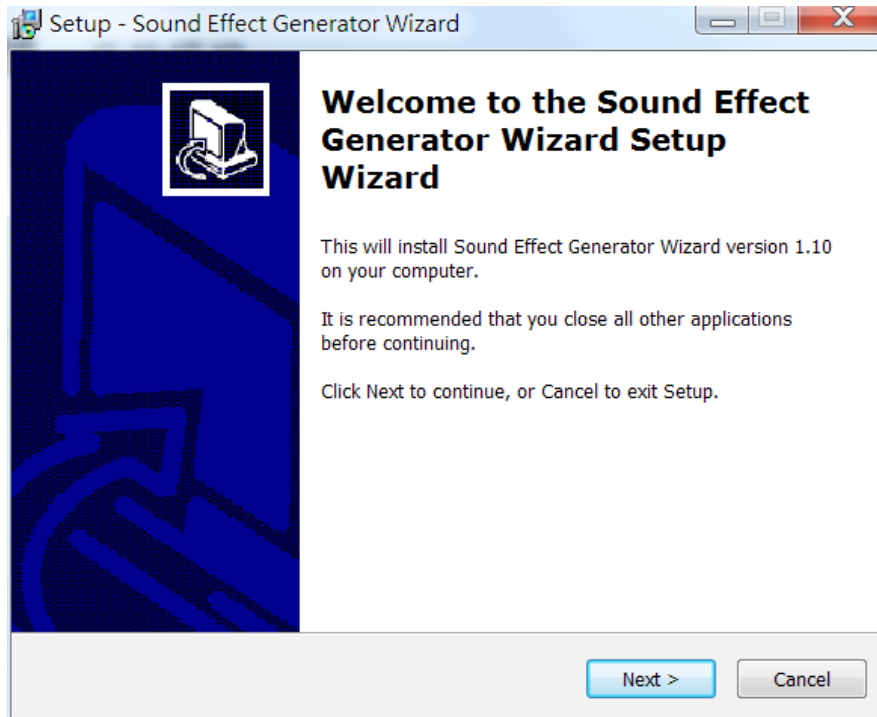
To download sound effects to the Sound Effect Demo Board, the hardware connection is shown as follows.

The e-Link connects to the Sound Effect Demo Board through the four-wire OCDS interface.

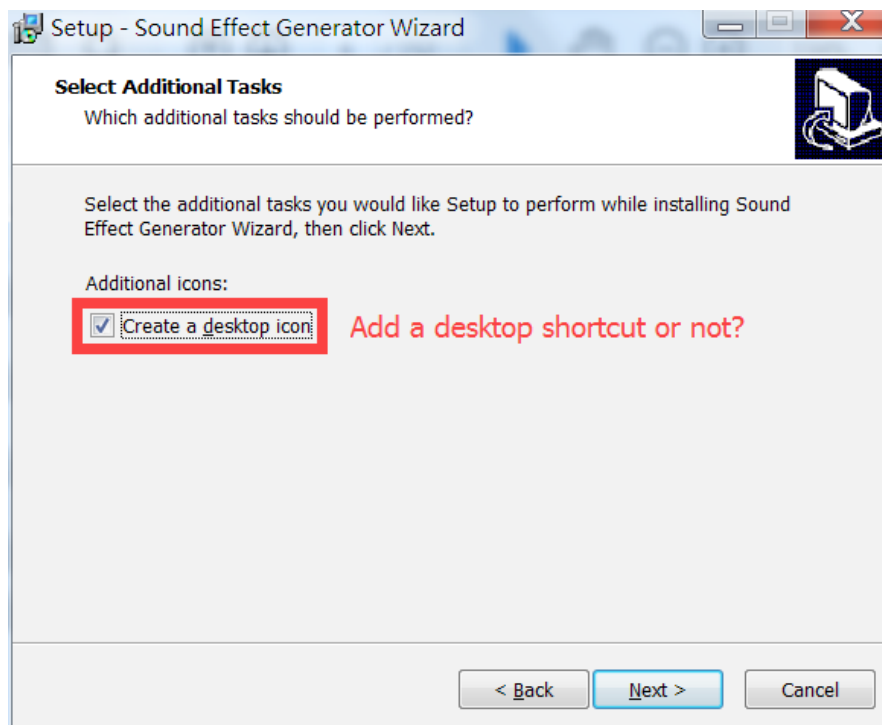


## Software Installation

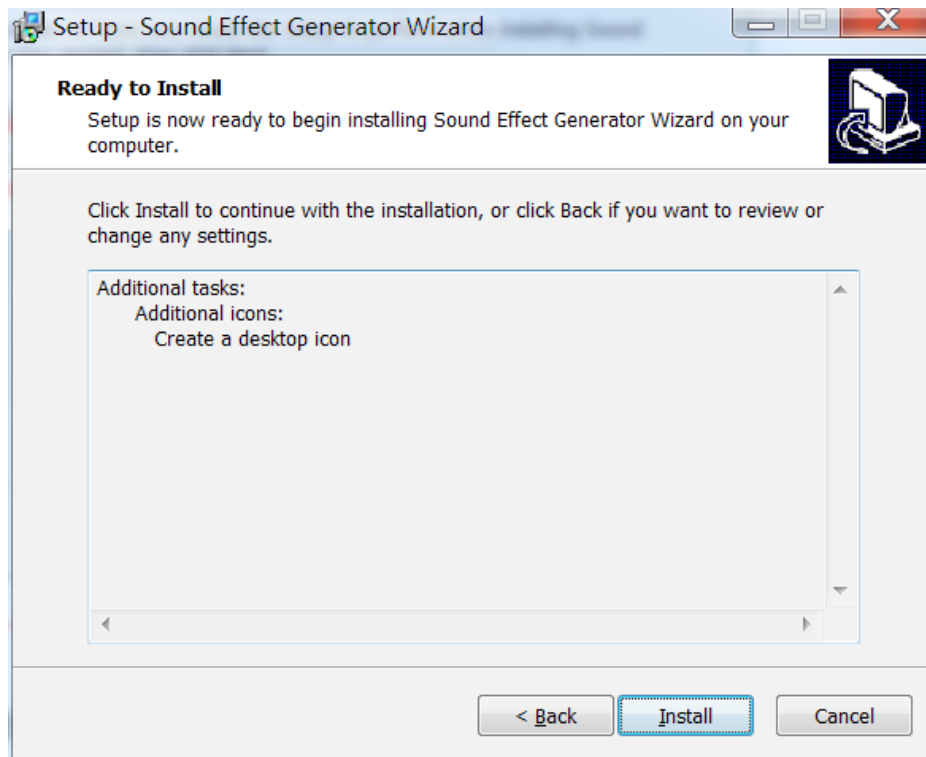
Step1. Download the Sound Effect Generator Wizard software from the Holtek website [link]  
Decompress and execute the software.



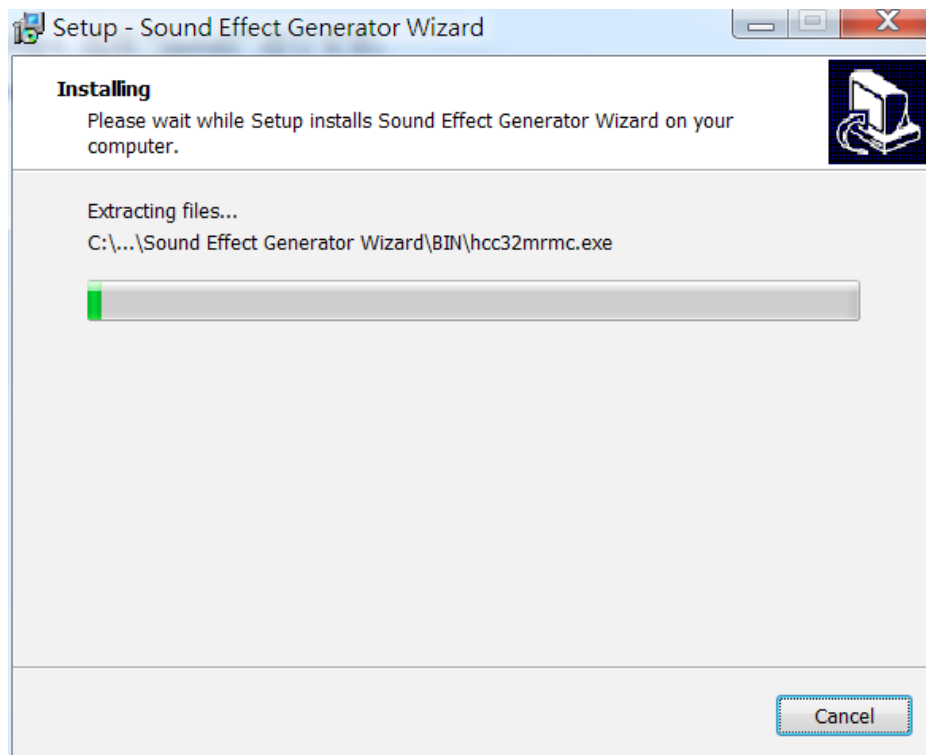
Step2. Click "Next"



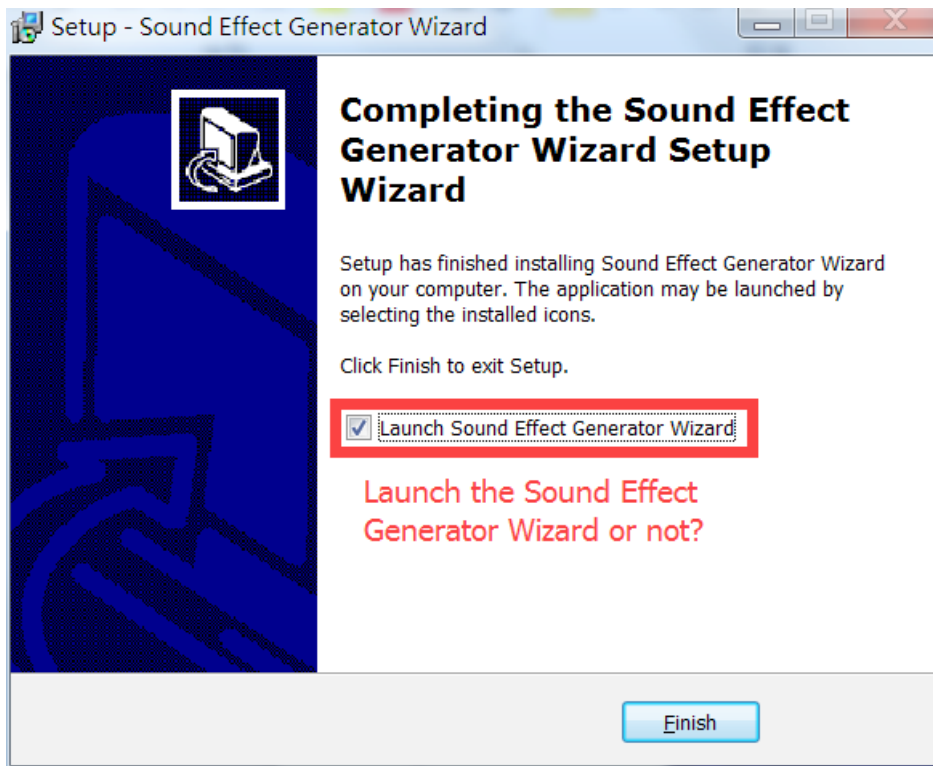
Step3. Click "Next"



Step4. Click "Install" to start installation

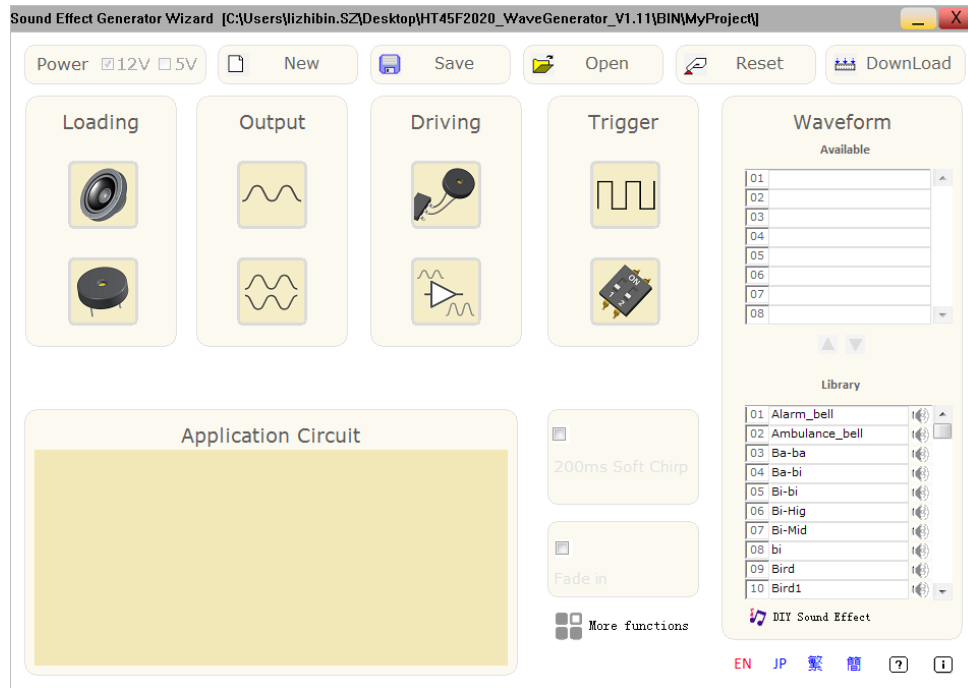


Step5. Click “Finish” to complete the installation.



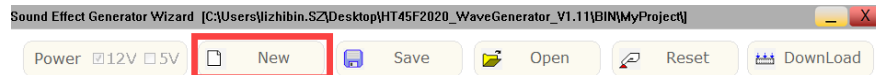
## Software Operation

### Start Sound Effect Generator Wizard



### Create a new project

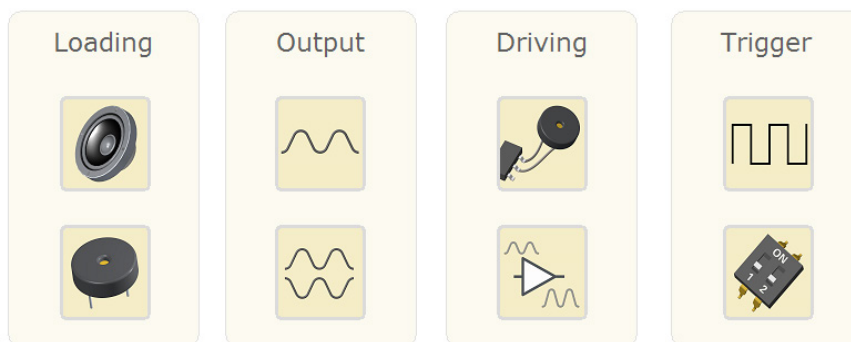
Step1. Select “New”



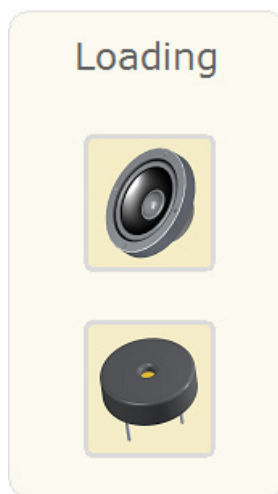
Step2. Choose a directory to store the project. When completed, the below message is shown.


**Creating a new project success**


Step3. Set the following four hardware configurations: Loading, Output, Driving, and Trigger.



- Configure “Loading”

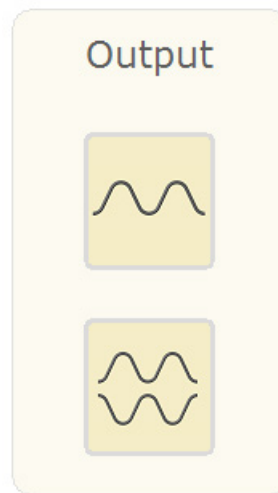


♦ If the load is a speaker, click 

♦ If the load is a piezo buzzer, click 



- Configure “Output”



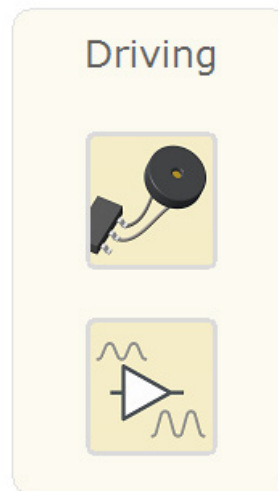
- ♦ If the output signal is single-ended, click



- ♦ If the output signal is complementary, click



- Configure “Driving”



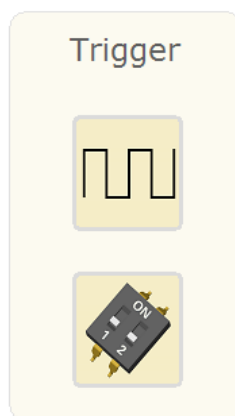
- ♦ If driving is from I/O, click



- ♦ If driving is from amplifier, click



- Configure “Trigger”



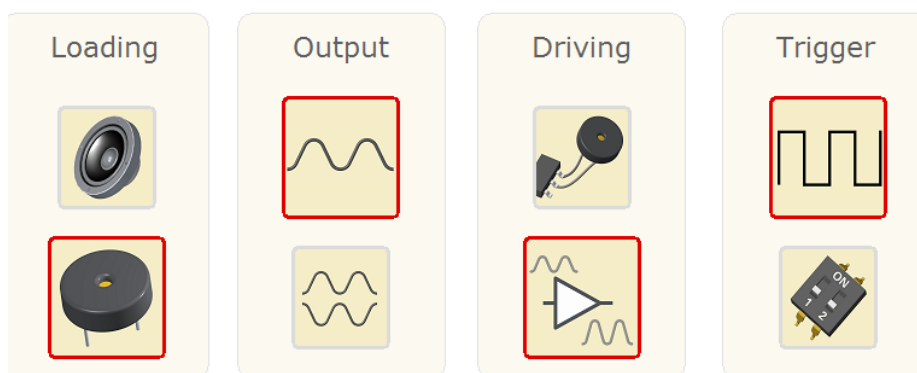
- ♦ If a button is used to switch sounds, click



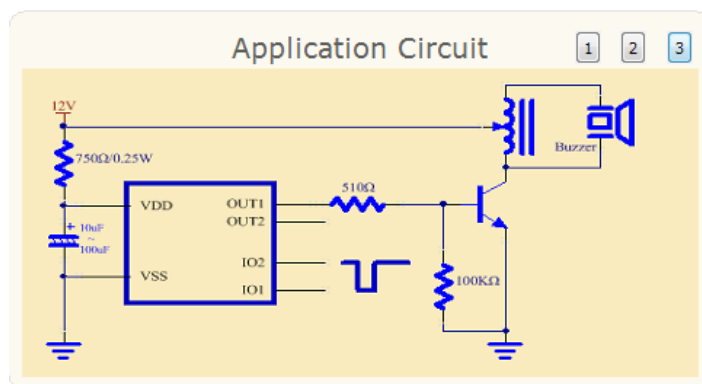
- ♦ If a DIP switch is used to switch sounds, click



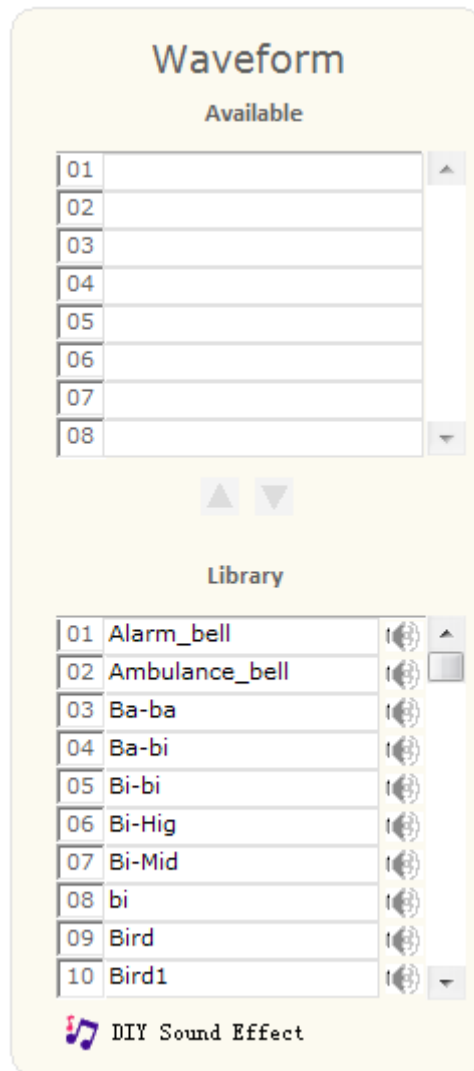
- If the Sound Effect Demo Board is used, configure as shown below.



- ♦ The associated application circuit is generated automatically.



Step3. Select the sounds after completing the configuration.



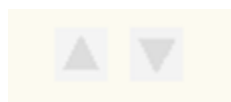
The screenshot shows a software window titled "Waveform" with a yellow background. It contains two main sections: "Available" and "Library".

**Available Section:** A list of 8 empty slots, numbered 01 to 08, for selecting sounds. Below the list are two small triangular buttons (up and down) for navigating between lists.

**Library Section:** A list of 10 sound effects, numbered 01 to 10. Each entry consists of a number, a text label, and a small speaker icon. The list is scrollable, with a scrollbar on the right. The sounds are: Alarm\_bell, Ambulance\_bell, Ba-ba, Ba-bi, Bi-bi, Bi-Hig, Bi-Mid, bi, Bird, and Bird1.

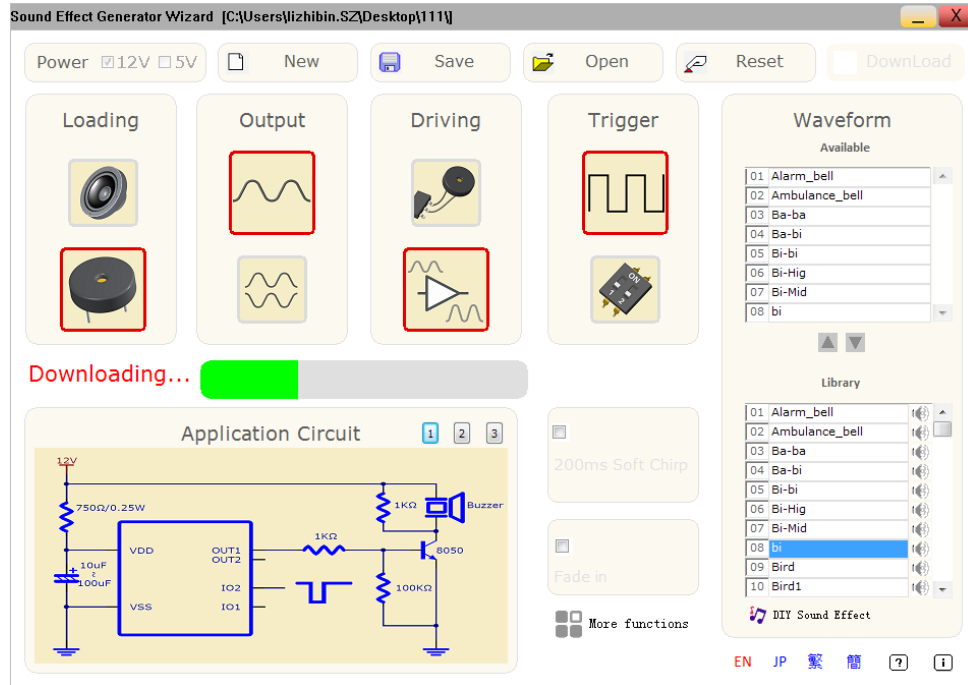
At the bottom of the window, there is a small musical note icon followed by the text "DIY Sound Effect".

- Double-click the sound in the “Library” to add it to the “Available” list.
  - ♦ You may also click the Up/Down triangle icon to add/remove a sound to/from the “Available” list.

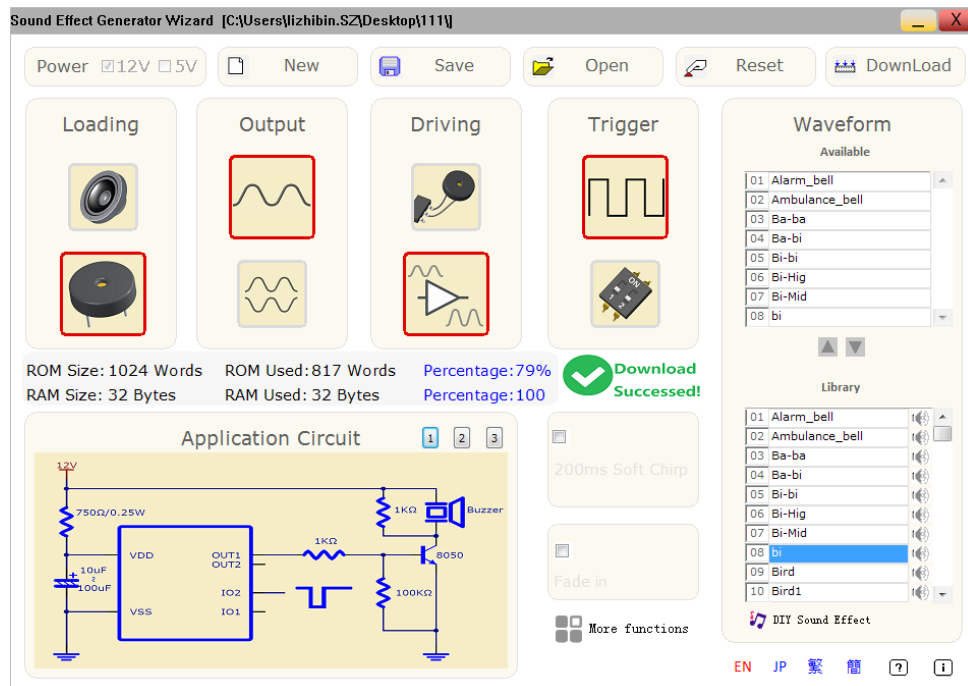


Step4. Click “DownLoad” to start programming the Holtek waveform generator flash MCU.

- Ensure that the hardware connection is correct before downloading.



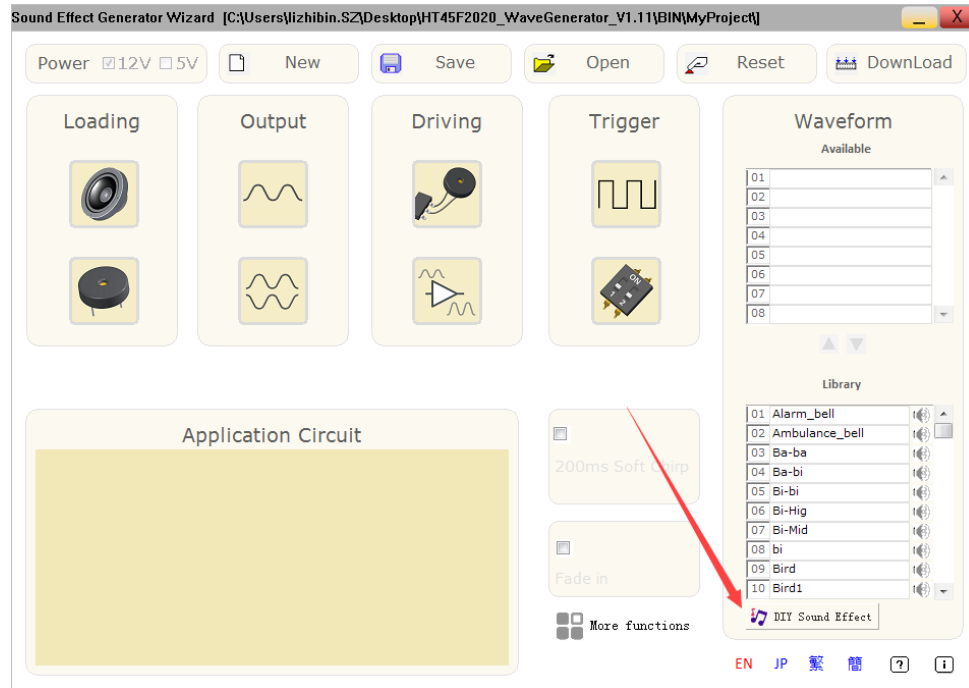
- If successful then the display will be as follows:



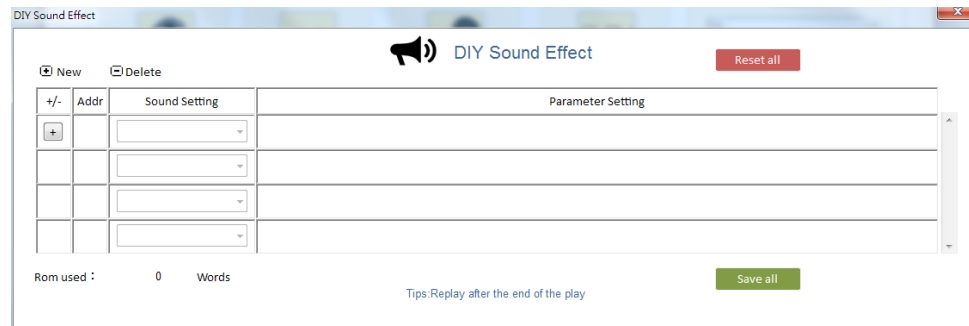
## Design Your Own Sound Effect

### Use “DIY Sound Effect”

Start the software and click “DIY Sound Effect”

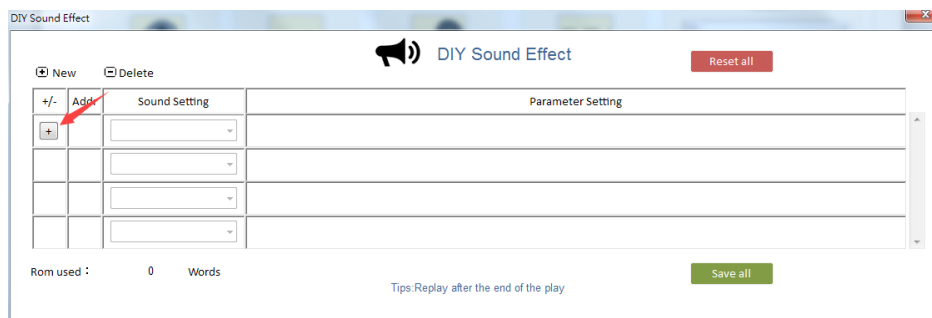


The DIY Sound Effect pop-up window is as follows.



## Create Your Own Sound Effect

Step1. Click “+” to add a new sound effect setting.



DIY Sound Effect

New Delete

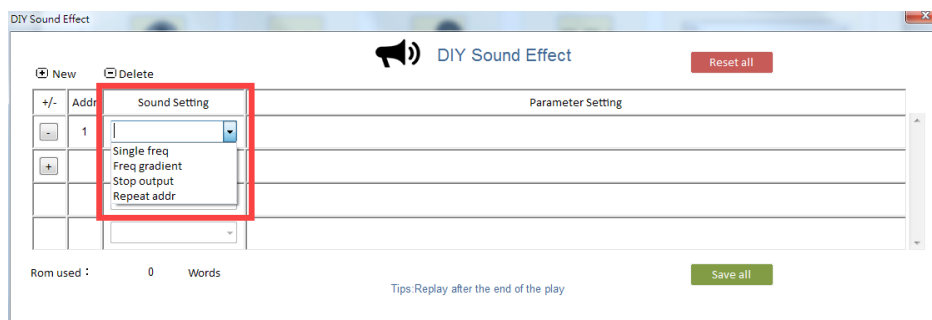
+/-	Addr	Sound Setting	Parameter Setting
+			

Rom used : 0 Words

Tips:Replay after the end of the play

Save all

Step2. There are four Sound Setting options:



DIY Sound Effect

New Delete

+/-	Addr	Sound Setting	Parameter Setting
	1	Single freq	

Rom used : 0 Words

Tips:Replay after the end of the play

Save all

- Single freq.: set the frequency and the play time length.

+/-	Addr	Sound Setting	Parameter Setting
	1	Single freq	Freq setting: 500 Hz Play time: 250 ms <small>Range 200Hz ~ 20KHz</small> <small>Range 0.5ms ~ 4000ms</small>

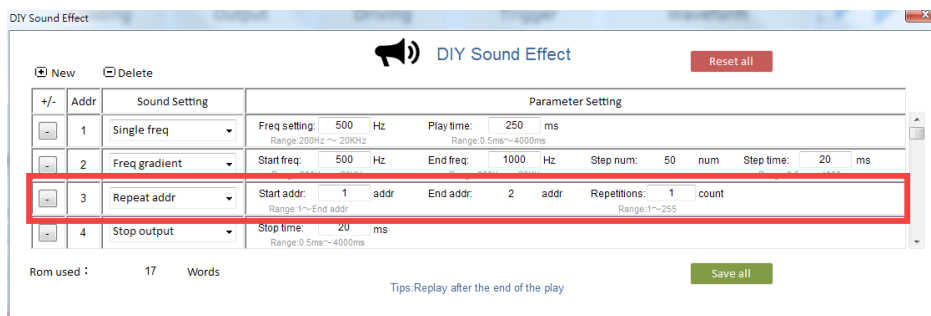
- Freq. gradient: set the start frequency, end frequency, frequency step number and the time duration for each frequency step.

+/-	Addr	Sound Setting	Parameter Setting
	1	Freq gradient	Start freq: 500 Hz    End freq: 1000 Hz    Step num: 50 num    Step time: 20 ms <small>Range 200Hz ~ 20KHz</small> <small>Range 200Hz ~ 20KHz</small> <small>Range 0.5ms ~ 4000ms</small>

- Stop output: set the time duration after the sound ends playing.

+/-	Addr	Sound Setting	Parameter Setting
	1	Stop output	Stop time: 20 ms <small>Range 0.5ms ~ 4000ms</small>

- Repeat addr: set the start address, end address, and repeat counts.



DIY Sound Effect

New Delete

+/-	Addr	Sound Setting	Parameter Setting
	1	Single freq	Freq setting: 500 Hz    Play time: 250 ms <small>Range 200Hz ~ 20KHz</small> <small>Range 0.5ms ~ 4000ms</small>
	2	Freq gradient	Start freq: 500 Hz    End freq: 1000 Hz    Step num: 50 num    Step time: 20 ms <small>Range 200Hz ~ 20KHz</small> <small>Range 200Hz ~ 20KHz</small> <small>Range 0.5ms ~ 4000ms</small>
	3	Repeat addr	Start addr: 1 addr    End addr: 2 addr    Repetitions: 1 count <small>Range 1 ~ End addr</small> <small>Range 1 ~ 255</small>
	4	Stop output	Stop time: 20 ms <small>Range 0.5ms ~ 4000ms</small>

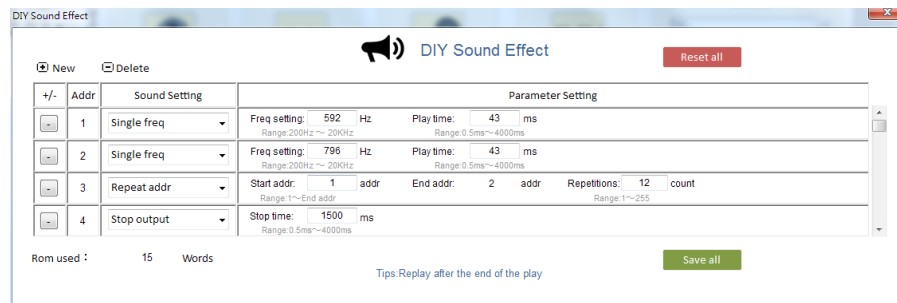
Rom used : 17 Words

Tips:Replay after the end of the play

Save all

Step3. Example: design a telephone ringtone

- The telephone ringtone is composed of 592Hz and 796Hz ringing alternately with a duration time of 43ms each. It rings repeatedly for 13 times and then stops for 1.5s.




+/-	Addr	Sound Setting	Parameter Setting
-	1	Single freq	Freq setting: 592 Hz Range: 200Hz ~ 20KHz Play time: 43 ms Range: 0.5ms ~ 4000ms
-	2	Single freq	Freq setting: 796 Hz Range: 200Hz ~ 20KHz Play time: 43 ms Range: 0.5ms ~ 4000ms
-	3	Repeat addr	Start addr: 1 addr Range: 1 ~ End addr End addr: 2 addr Repetitions: 12 count Range: 1 ~ 255
-	4	Stop output	Stop time: 1500 ms Range: 0.5ms ~ 4000ms

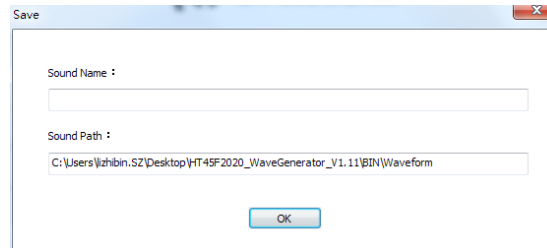
Rom used : 15 Words

Tips: Replay after the end of the play

Save all

Note that after the sound effect is played once, it starts automatically again from the beginning by default.

- Click  after which the pop up window below will be shown.




Save

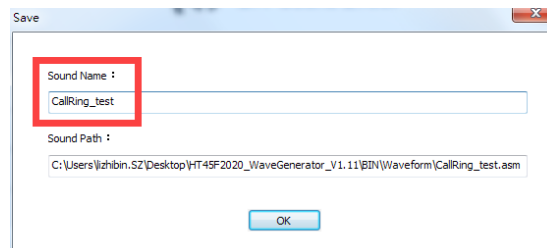
Sound Name :

Sound Path :

C:\Users\zhbin.SZ\Desktop\HT45F2020\_WaveGenerator\_V1.11\BIN\Waveform

OK

- Enter the name in the Sound Name field, for example, CallRing\_test. Then, click  to save the sound.



Save

Sound Name :

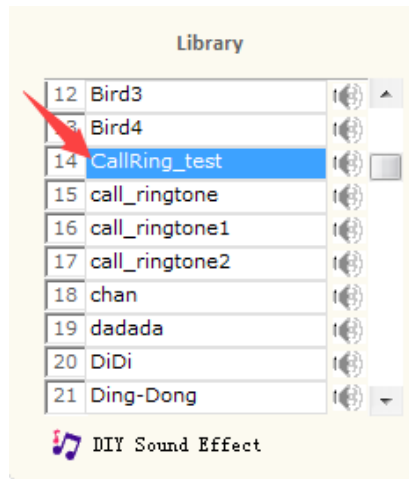
CallRing\_test

Sound Path :

C:\Users\zhbin.SZ\Desktop\HT45F2020\_WaveGenerator\_V1.11\BIN\Waveform\CallRing\_test.asm

OK

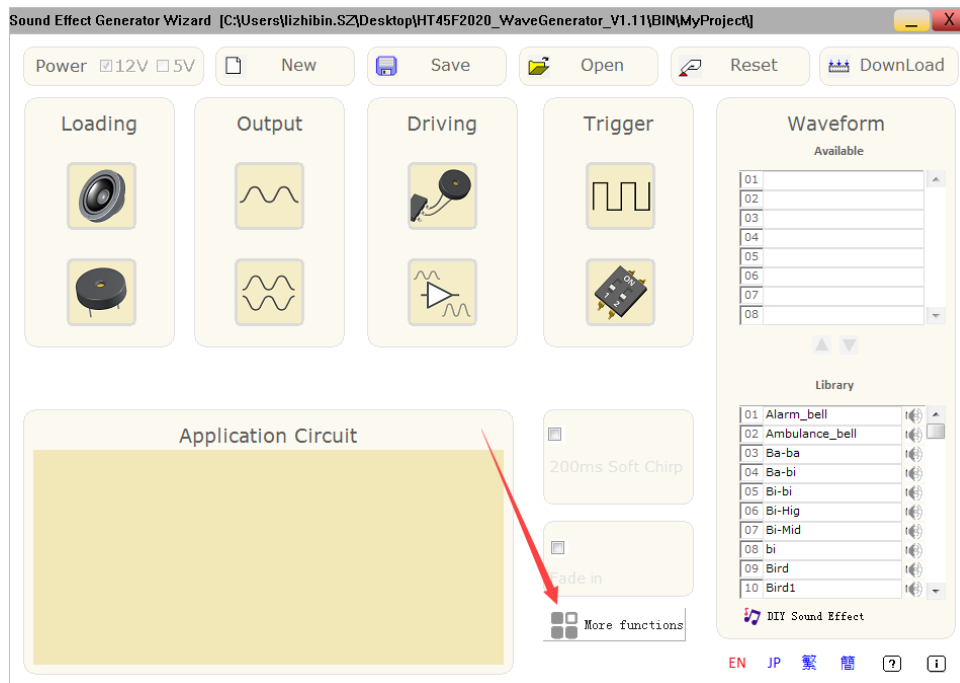
- Close the DIY Sound Effect window, the created “CallRing\_test” sound is alphabetically listed in the Library menu.



## More Function Settings

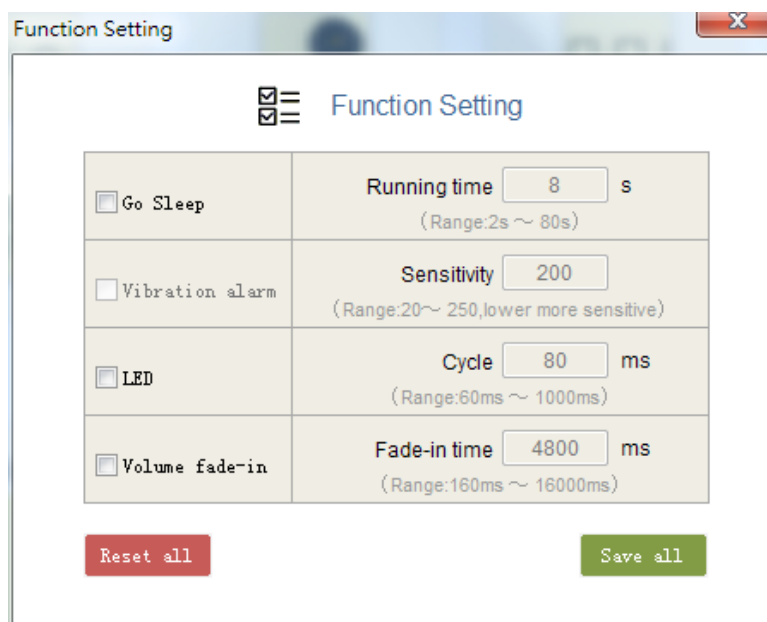
### Open “More Functions”

Click “More functions”.





The Function Setting window will then pop up.



The screenshot shows a window titled "Function Setting" with a close button (X) in the top right corner. Inside the window, there is a title bar with a menu icon and the text "Function Setting". Below this, there is a table with four rows of settings:

<input type="checkbox"/> Go Sleep	Running time <input type="text" value="8"/> s (Range:2s ~ 80s)
<input type="checkbox"/> Vibration alarm	Sensitivity <input type="text" value="200"/> (Range:20~ 250,lower more sensitive)
<input type="checkbox"/> LED	Cycle <input type="text" value="80"/> ms (Range:60ms ~ 1000ms)
<input type="checkbox"/> Volume fade-in	Fade-in time <input type="text" value="4800"/> ms (Range:160ms ~ 16000ms)

At the bottom of the window, there are two buttons: "Reset all" (red) and "Save all" (green).

## Function Settings

- Go Sleep: Set the sound effect playing duration in a range of 2 to 80 seconds. After this duration the MCU will enter the sleep mode.

<input checked="" type="checkbox"/> Go Sleep	Running time <input type="text" value="8"/> s (Range:2s ~ 80s)
--	---

- Vibration alarm: Set the sensitivity of the vibration sensor on the Sound Effect Demo Board. The sensitivity level is from 20 to 250, with the lower number representing higher sensitivity. When a vibration is detected, the MCU will be woken up and start playing the current sound effect. This function should be used with the "Go Sleep" function.

<input checked="" type="checkbox"/> Vibration alarm	Sensitivity <input type="text" value="200"/> (Range:20~ 250,lower more sensitive)
---	--

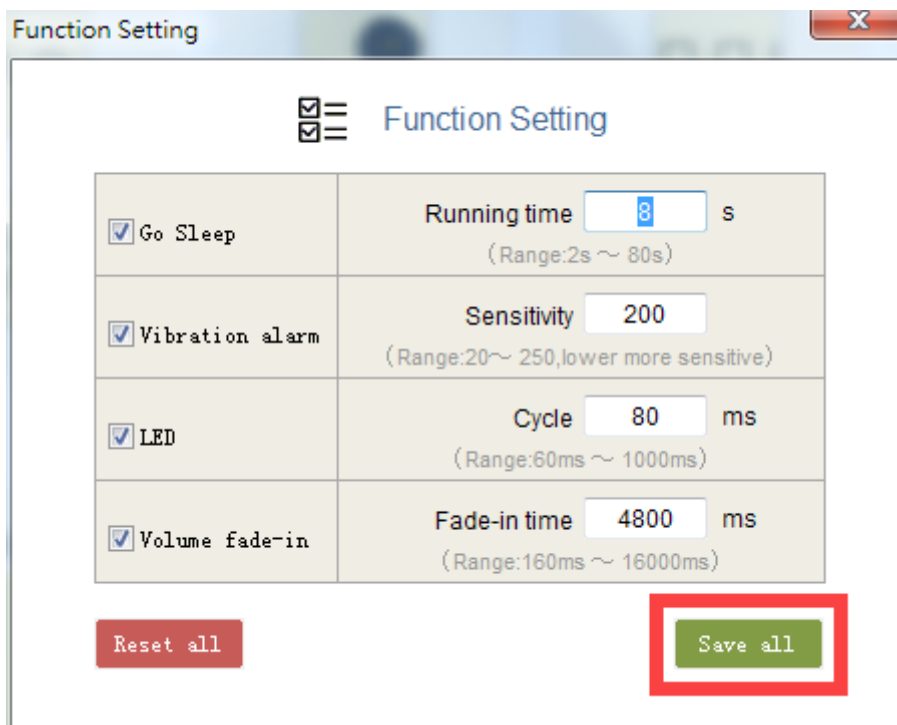
- LED: Set the LED on the Sound Effect Demo Board to flash along with the playing sound effect. The flash cycle time ranges from 60 to 1000 ms.

<input checked="" type="checkbox"/> LED	Cycle <input type="text" value="80"/> ms (Range:60ms ~ 1000ms)
---	---

- Volume fade-in: Set the time period for the sound to increase gradually. The fade-in time ranges from 160ms to 16 seconds.

<input checked="" type="checkbox"/> Volume fade-in	Fade-in time <input type="text" value="4800"/> ms (Range:160ms ~ 16000ms)
--	--

Click “Save all” to store the settings.



The image shows a screenshot of the 'Function Setting' dialog box. It has a title bar with a close button (X). Inside, there's a header with a list icon and the title 'Function Setting'. Below this is a table with four rows of settings, each with a checked checkbox on the left and a control on the right. At the bottom, there are two buttons: 'Reset all' and 'Save all'. The 'Save all' button is highlighted with a red rectangular border.

Function Setting	
<input checked="" type="checkbox"/> Go Sleep	Running time <input type="text" value="8"/> s (Range:2s ~ 80s)
<input checked="" type="checkbox"/> Vibration alarm	Sensitivity <input type="text" value="200"/> (Range:20~ 250,lower more sensitive)
<input checked="" type="checkbox"/> LED	Cycle <input type="text" value="80"/> ms (Range:60ms ~ 1000ms)
<input checked="" type="checkbox"/> Volume fade-in	Fade-in time <input type="text" value="4800"/> ms (Range:160ms ~ 16000ms)

Reset all      Save all

Now the waveform generator MCU can be programmed (the “DownLoad” function) and verified along with the sound effect functions.

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