

Triggering audio playback

Playback is triggered via the trigger inputs. All inputs are internally pulled up and, if left unconnected, have a voltage of 3.3V (logic "1"). 5V signal is tolerated and also seen as logic "1". Logic "0" is ground.

Each input directly triggers a corresponding file: T1 = File 001, T2 = File 002,, T8 = File 008. A trigger is valid when the input is shorted to the ground for at least 50ms. The triggers are prioritized from T1 (the highest) to T8 (the lowest). However, it does not mean a higher priority input can interrupt a lower one. It only means that if multiple triggers are applied at the same time, the highest priority wins.

Playback Modes

The LB-8A will play files in one of four modes:

Non-interruptible Playback

The file is played once per trigger. The playback is not interruptible except by the system reset. Looping is possible by applying a constant trigger on the input.

Interruptible Playback

The file is played once per trigger if not interrupted. Any input (including itself) can interrupt the playback later. Looping is possible by applying a constant trigger on the input.

Holdable Playback

The file is played for as long as the input is triggered, looping if necessary. It is not interruptible except by the system reset.

Script Playback (default)

(See the Script Playback Mode section for descriptions & configuration).

Trigger Modes

Triggers are by default activated via contact closure where closure pulls the trigger to ground activating the related audio file or script command. The four available trigger modes are as follows:

Close Contact (default)

Input is continuously triggered when it's at 0V (ground).

Open Contact

Input is continuously triggered when it's left open or at 3.3V/5V.

Make Contact

Input is triggered one time as it goes from 3.3V/5V to 0V.

Break Contact

Input is triggered one time as it goes from 0V to 3.3V/5V.

Note: An LB-8A cannot have a mix of trigger modes across its trigger inputs. Eg T1 cannot be set in contact closure mode with triggers T2 to T8 functioning via open contact. Trigger modes are configured in script playback.

Script Playback Mode

By default the LB-8A comes preloaded with a .txt file called 'MODE'. This file tells the LB-8A to play files as per the triggered audio playback (trigger 1 plays file 001 etc..) with the addition of activating the busy output while the audio file is played. The contents of this file is displayed below:

```
DS
N001=BN,F001,BF,J000
N002=BN,F002,BF,J000
N003=BN,F003,BF,J000
N004=BN,F004,BF,J000
N005=BN,F005,BF,J000
N006=BN,F006,BF,J000
N007=BN,F007,BF,J000
N008=BN,F008,BF,J000
END
```

The above can be customised to suit many different applications by using script commands.

Note: DS isn't a script command, but it tells the system to enter the Direct Script mode. DS can be followed by a third letter to change the trigger polarity for all triggers.

DS or DSC = Close Contact
DSO = Open Contact
DSM = Make Contact
DSB = Break Contact

Rather than playing a single sound file, the Script Playback mode executes a script of commands for each trigger. Written in the configuration file using plain text, the script consists of multiple lines each containing the commands for a particular trigger in the following format:

Xnnn=[Command1],[Command2]...
Here "nnn" is the trigger number and "X" is one of the following:

N - Non-interruptible

Execution of this trigger is not interruptible.

I - Interruptible

Execution of this trigger can be interrupted by any trigger other than itself.

H - Holdable

Execution of this trigger continues for as long as the trigger is applied, repeating itself if necessary. The execution stops immediately when the trigger is removed.

There are 8 direct triggers (001 ~ 008, corresponding to T1 ~ T8). In addition to the direct triggers, there are also indirect triggers. An indirect trigger can be activated only by jumping from another trigger using the Jump command. There are 991 indirect triggers (009 ~ 999).

These are the script commands:

Fnnn - play File #nnn

Example: F168 plays file #168.

Wnnnnn - wait nnnnn units of 0.1 second

Maximum value for nnnnn is 65535 (6553.5 seconds).

Example: W00020 = wait 2 seconds.

Note: W00000 = wait forever.

Jnnn - jump to trigger #nnn

Example: J007 jumps to trigger 007.

BF - turn off the Busy output

Use this command to turn the Busy output off.

BN - turn on the Busy output

Use this command to turn the Busy output on.

END

Always add the word END at the end of the entire script. You may add any comments for your own reference after END.

Important Notes

- All command letters must be in upper case.
- Script lines must be separated by carriage returns (the Enter key).
- A script line is limited to 128 characters, excluding '=' and ','. If more space is needed, use the Jump command.
- Note that the Busy output will not turn on/off automatically in the Script mode. It must be specifically turned on/off with the BN and the BF commands.
- Upon powerup or reset, the system will automatically execute script 000 if it exists.

File name assignment

Sound files on the SD card must be assigned a unique file number for identification purpose. The file number must be a three digit number within the following range 001 ~ 008.

The file number can be added to the beginning of the original filename if required, e.g. "001TIGER.WAV". Note that if you want to store the maximum number of files on the flash card, you should keep the filenames (including the file number) within 8 characters and use numbers and capital letters only.

After editing the configuration file, be sure to save it as a "plain text file", "ASCII text file", or simply "text file". The system will not work if the configuration file is not created in the correct format.

Script Examples

8 non-interruptible messages triggered by contact closure plus background music.

```
DS
I000=F101,F102,F103,J000
N001=BN,F001,BF,J000
N002=BN,F002,BF,J000
N003=BN,F003,BF,J000
N004=BN,F004,BF,J000
N005=BN,F005,BF,J000
N006=BN,F006,BF,J000
N007=BN,F007,BF,J000
N008=BN,F008,BF,J000
END
```

A variation on the script supplied as standard with the addition of background music playing. The example above plays BGM files 101,102,103 then repeats. The BGM files therefore need to be renamed 101,102,103 etc. BGM file format should be the same as the message files. When a triggered message has finished broadcasting, the background music plays again from the first BGM file.

8 messages activated by contact closure while held, last 4 messages 'one shot'.

```
DS
H001=BN,F001,BF
H002=BN,F002,BF
H003=BN,F003,BF
H004=BN,F004,BF
H005=BN,F005,BF,W00000
H006=BN,F006,BF,W00000
H007=BN,F007,BF,W00000
H008=BN,F008,BF,W00000
END
```

Closing contact to trigger the message. Message would be "one shot" on messages five, six, seven and eight. Busy switch output is closed while the message is active.

Repeating message with 5 second intervals interrupted by emergency message.

```
DS
N001=BN,F001,W00050,BF,J000
I002=BN,F002,W00300,BF,J000
END
```

Example of DIY Store. Only messages 1 and 2 are used. Both contacts are normally open. No BGM plays. Message one is a non-interruptible emergency message. The message plays whilst the contact is closed, waits five seconds and repeats.

Message two is an information message and plays whenever the contact is closed. It is interruptible (by message one). The message will play, wait for thirty seconds, then repeat. The busy contact output is on for both messages.

Trouble Shooting Guide

The LB-8A plays no sound at all...

- a. File numbers are not assigned properly.
- b. The system is in the wrong mode due to missing or incorrect configuration file.
- c. If the SD card has been inserted while the unit is powered, the system may not work. To fix this problem, turn the power off for a few seconds to reset and try again.
- d. Some SD cards, especially if they have been used in digital cameras, need to be reformatted with the FAT32 file system.
- e. The output volume may have been set too low, try turning it up.

The LB-8A plays a wrong File...

- a. File numbers are not assigned properly.
- b. The system is in the wrong mode due to missing or incorrect configuration file.

The LB-8A plays trashy sounds...

It's probably due to unsupported file formats such as 16-bit resolution or ADPCM coding. Re-digitize or convert the file into a supported format. The following software can be used to convert the file to the required format:

<http://audacity.sourceforge.net/>

<http://www.wavosaur.com/>

<http://www.online-convert.com/>

Playback speed is too slow/fast.

Unsupported sampling rates may result in wrong playback speed. Re-digitize or convert the file into a supported sampling rate.

The LB-8A plays a popping/bursting noise every once in a while...

The speed of the flash card is too slow. Use a faster flash card or convert the file to a lower sampling rate.