

# USB interface MP3/WAV Recording and Playing Solution

## OTG15H

OTG15H is MP3/WAV recording and playing solution supporting USB interface. Can play and record many kinds of audio files. All components support the temperature of professional level (-40°C to 80°C), it is suitable to be used to record and play music in any places. It can be used as the updated product of DR53E.

### ◆ Features

- On-board USB interface, support U disk, USB mobile harddisk, and can connect USB card reader and internal read card chip at the same time.
- Support FAT12, FAT16, and FAT32 universal file formats of DOS or WINDOWS operating systems, completely compatible with computer.
- Support the multimedia files of MP3, WMA all levels and all code flow rate. The highest code stream is 1.44Mbps.
- It is acceptable to record MP3 with different code stream or lossless compression mode, and use standard MP3 or WAV file format. At present, capacity-price ratio is very good, non-loss recording is better for recording effect.
- Use standard I<sup>2</sup>C communication interface, it is okay for users to connect other I<sup>2</sup>C chips in parallel without adding hardware interface extra.
- I<sup>2</sup>C slave interface with interrupt output. User mainframe can first detect INT interrupt, and then operate I<sup>2</sup>C bus. Communication rate is up to 400Kbps.
- Support temperature detection function.
- Built-in T9 strokes and Pinyin input methods, and user mainframe can use simple commands to modify the recorded filename easily.
- Built-in output eliminating noise control circuit, switching is more quiet, sound effect is more excellent, and it is more suitable for the advanced professional application
- With LED display used to indicate playing status.
- Adopt single +5V power supply; inside generate +/-5V used to supply power for operational amplifier, which can get more wide dynamic range.
- Power supply, audio input and output, and communication interface are the same with DR53E's, OTG 15E can replace DR53E as updated product.



Hard & Soft Technology Co., LTD.

<http://www.HSAV.com>

Address: second floor, No.199, Longyin 2nd Road, Xixiang, Shenzhen, China

TEL: 86-0755-27951479 27950879

FAX: 86-0755-27950879-213

Technology support: [support@HSAV.com](mailto:support@HSAV.com)

Business contact: [Sales@HSAV.com](mailto:Sales@HSAV.com)



◆ Application field

- It is easy for Home audio system to be upgraded to the system supporting computer music, which can improve the grade of product.
- The places that need to take long time to record music or speech signal.
- The places that need to play music because of bad environment.
- Other places playing and recording music.

◆ Relevant technology files

- 《OTG series product U disk file format application attention 》-----hsavd306.pdf
- 《OTG series product software introduction》-----hsavd307.pdf

◆ OTG15H harddisk application format

Music files applied by OTG15H are stored in CF card. Please note when store files: support many of layers subdirectories, recorded songs only can be stored under the root directory and named as REC\_XX. MP3, as figure No.1 shown below, “XX” is number from 1 to 99, and it means OTG15H can support 99 root directory files at most.

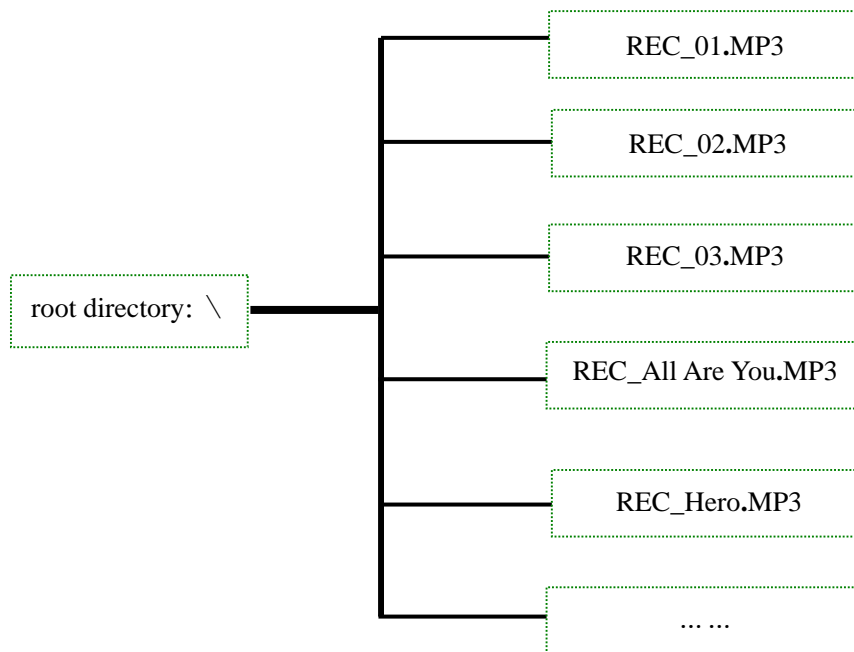


Figure No.1, the structure sketch map of the recorded file

OTG15H can play and record the music files of root directory and the first layer of directory, and every layer of directory can support 255 music files at most, as figure No.2 shown below.

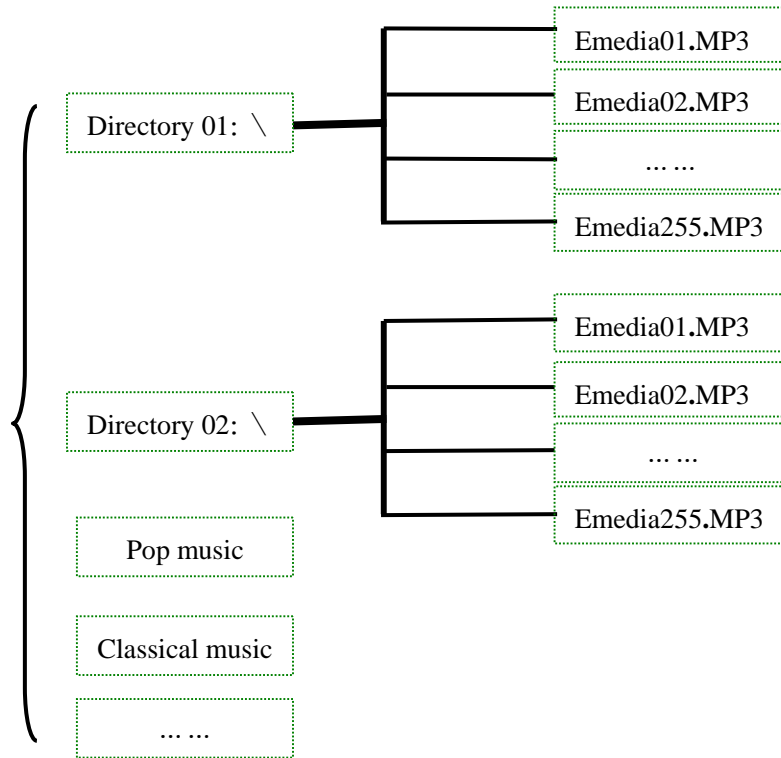
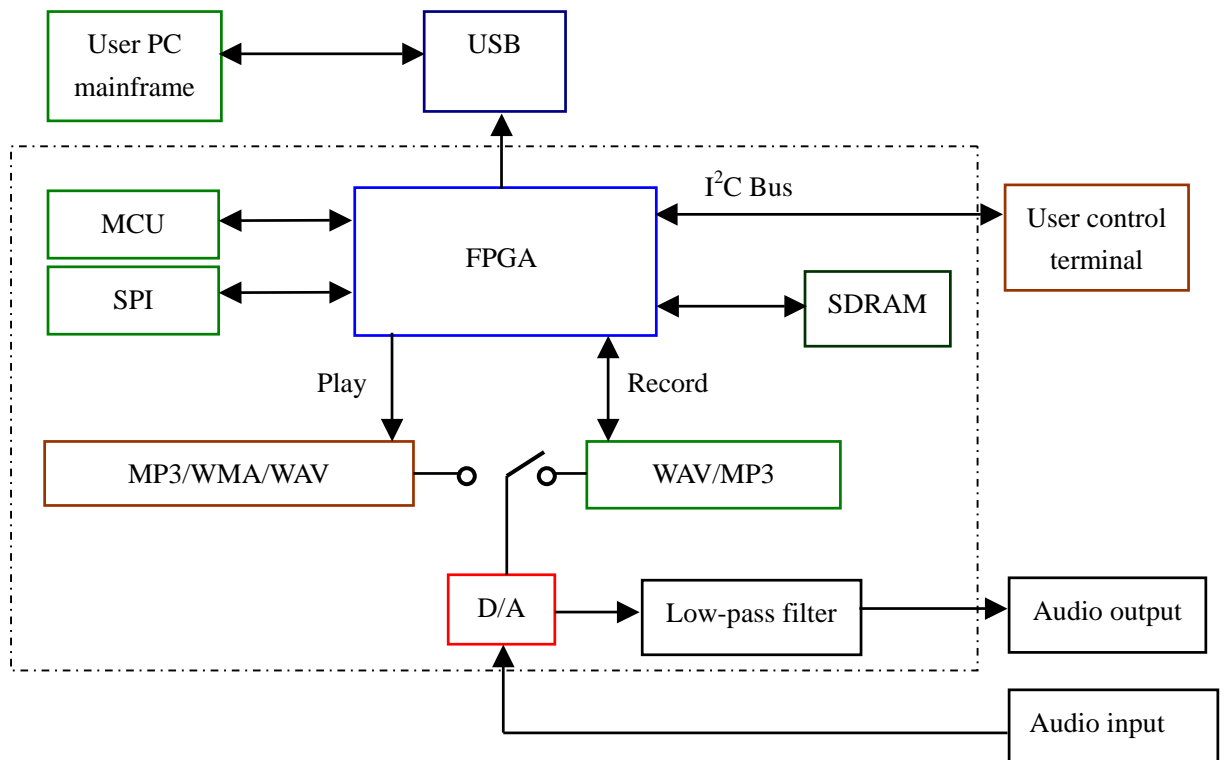


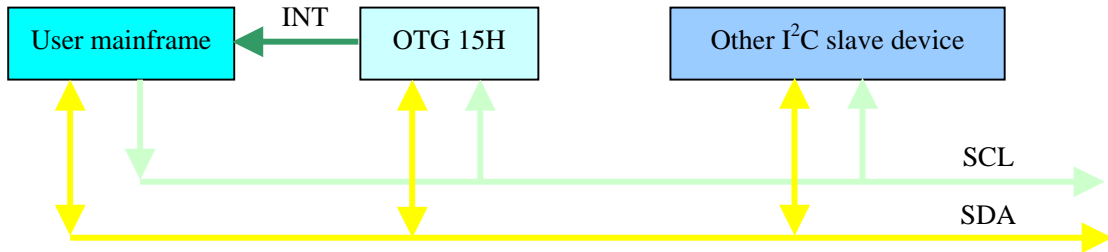
Figure No.2, the file structure sketch map when playing and recording file

#### ◆ OTG15H Internal structure Block Diagram



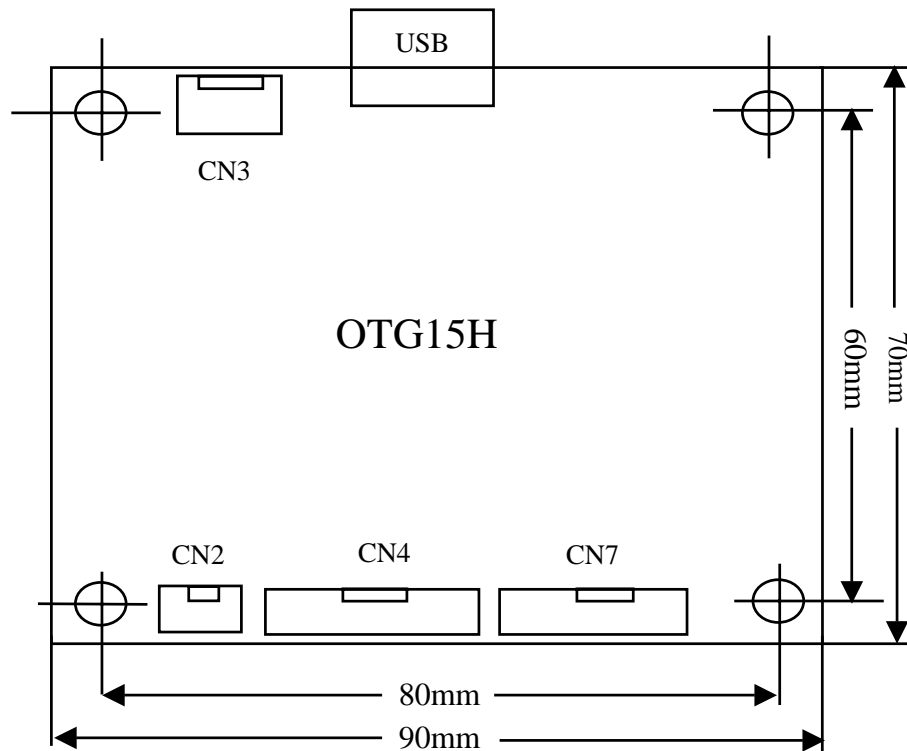


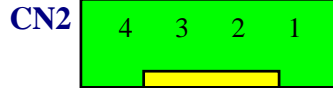
Note: OTG15H can play MP3/WMA/WAV audio files, but only can record WAV/MP3 files. USB interface can directly play audio files in U disk. USB interface connects user computer mainframe, there is no problem to realize equal communication between user computer and U disk, at this moment, user computer mainframe can copy audio files in U disk, and U disk also can copy audio files in user computer mainframe.



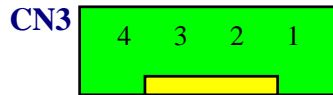
User mainframe and OTG15H communication block diagram

◆ OTG15H dimension diagram and interface instruction

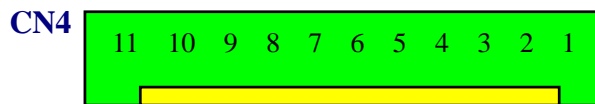




Program upgrade and expanding serial interface, user can skip over it in general.

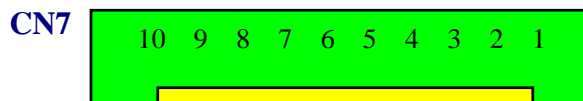


1. **GND** Ground wire input/output.
2. **UD+** External USB serial data D+ input/output.
3. **UD-** External USB serial data D- input/output.
4. **+5V** +5V input.



Singlechip serial expansion interface

1. **GP8** Expansion singlechip I/O port P8, standard bi-directional port, with internal pull-up resistor.
2. **GP7** Expansion singlechip I/O port P7, standard bi-directional port, with internal pull-up resistor.
3. **GP6** Expansion singlechip I/O port P6, standard bi-directional port, with internal pull-up resistor.
4. **GP5** Expansion singlechip I/O port P5, standard bi-directional port, with internal pull-up resistor.
5. **GP4** Expansion singlechip I/O port P4, standard bi-directional port, with internal pull-up resistor.
6. **GP3** Expansion singlechip I/O port P3, standard bi-directional port, with internal pull-up resistor.
7. **GP2** Expansion singlechip I/O port P2, standard bi-directional port, with internal pull-up resistor.
8. **GP1** Expansion singlechip I/O port P1, standard bi-directional port, with internal pull-up resistor.
9. **GP0** Expansion singlechip I/O port P0, standard bi-directional port, with internal pull-up resistor.
10. **GND** Ground wire input/output
11. **VCC** Power supply input/output



I<sup>2</sup>C communication bus interface.

1. **HCLK** Bit clock synchronous signal input of I<sup>2</sup>C communication bus.
2. **HDAT** I<sup>2</sup>C communication bus data signal input/output.
3. **THNT** I<sup>2</sup>C communication bus interrupt output.
4. **+5V** +5V input.
5. **LOUT** Left channel audio signal output.
6. **ROUT** Right channel audio signal output.
7. **DGND** Digital ground wire input.
8. **LIN** Left channel audio signal input.
9. **RIN** Right channel audio signal input.
10. **AGND** Analog ground audio input/output..

**◆ Electrical specifications**

<b>Items</b>	<b>Minimum</b>	<b>Normal</b>	<b>Maximum</b>
Service Voltage	4.5V	+5V	+5.5V
working current ( +5V ) (not including U disk)	260mA	280mA	300mA
Output level 1KHz@0dB	-1dB	2V	+1dB
frequency response 20Hz ~ 20KHz	--	+/-1dB	--
Signal-to-noise @0dB(CCIR)	88dB	90dB	93dB
Working temperature	-40°C		80°C