

# **HSC003 module serial communication protocol**

## **Introduction**

HSC003 is a provider of serial MP3 chip, the perfect integration of hardware decoding MP3, WAV's. While software support USB / TF driver, supports FAT16, FAT32 file system. Can be accomplished by simple serial command plays the specified music, as well as how to play music and other functions, without the cumbersome underlying operating, USB card reader can be used as stable and reliable is the biggest characteristic of this product. The chip is a low-cost addition the depth of customized products, designed for the USB card reader, TF card player fixed voice playing field to develop solutions.

## **Function**

1, supports sampling rates (KHz): 8 / 11.025 / 12/16 / 22.05 / 24/32 / 44.1 / 48  
2, 24-bit DAC output, support for dynamic range 90dB, SNR support 85dB 3, fully supports FAT16, FAT32 file system, maximum support 32G U disk, TF card 4, a variety of control, serial port, AD key control mode 5, the broadcast language spots feature, you can pause a playing background music 6, the audio data is sorted by folder up 255 folders, folders can assign every 1,000 songs 7, 30 level volume is adjustable, adjustable level 5 EQ 8, connected to the computer can display the contents of the letter to be updated; 9, can be controlled through the microcontroller serial port designated player music; 10 in key mode, you can play mode options: single cycle, a cycle;

## **Applications**

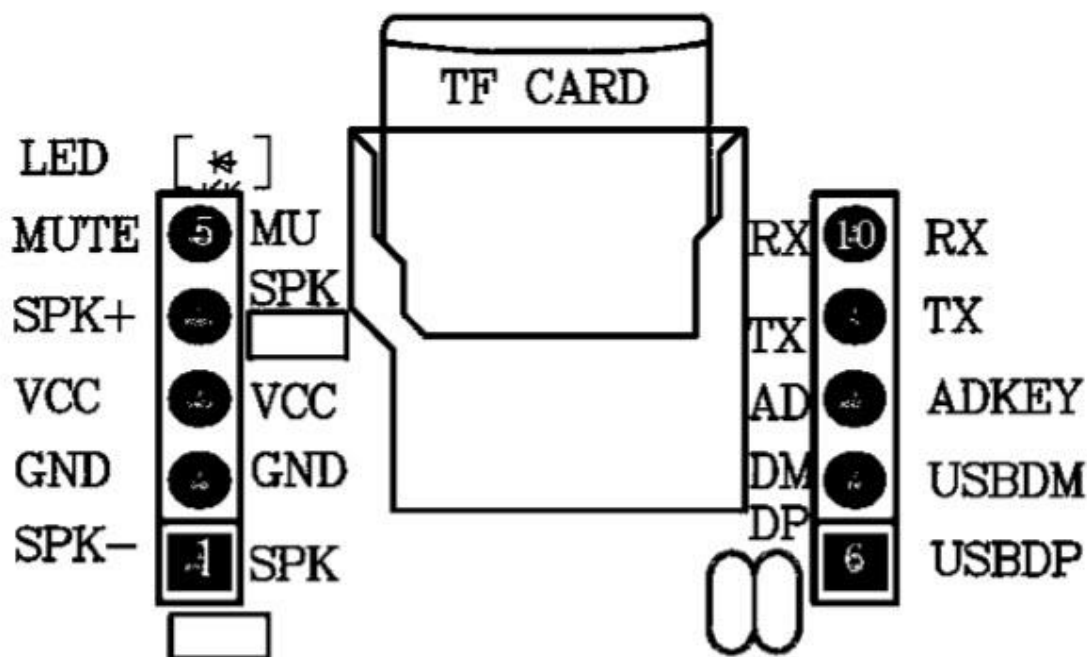
- 1, car navigation voice broadcast,
- 2, road transport inspectors, toll voice prompts;
- 3, railway stations, bus safety inspection voice prompts;
- 4, electric power, telecommunications, finance and business offices voice prompts;

- 5, into the vehicle, verify that the voice of the channel Tip;
- 6, the public security frontier inspection channel voice prompts;
- 7, multiple voice alarm or voice guidance equipment operation;
- 8, electric sightseeing bus safety with voice announcement;
- 9, electrical and mechanical equipment failure automatic alarm;
- 10, fire alarm voice prompts;
- 11, automatic broadcast equipment, broadcast regularly

#### **hardware parameters**

- MP3 file format:
  - 1, supports all bit rates 11172-3 and ISO13813-3 layer3 audio decoding
  - 2, sampling rate support (KHZ): 8 / 11.025 / 12/16 / 22.05 / 24/32 / 44.1 / 48
  - 3, support Normal, Jazz, Classic, Pop, Rock, etc. Sound
- USB 2.0 Interface Standard
- Standard serial UART interface, TTL level, the baud rate can be set
- Input voltage power supply at 3.3V-5.4V to 4.2V Best
- Rated current 15ma [Without U disk]
- 5. See size chip package
- Operating temperature -40 degrees to 70 degrees
- Humidity 5% to 95%

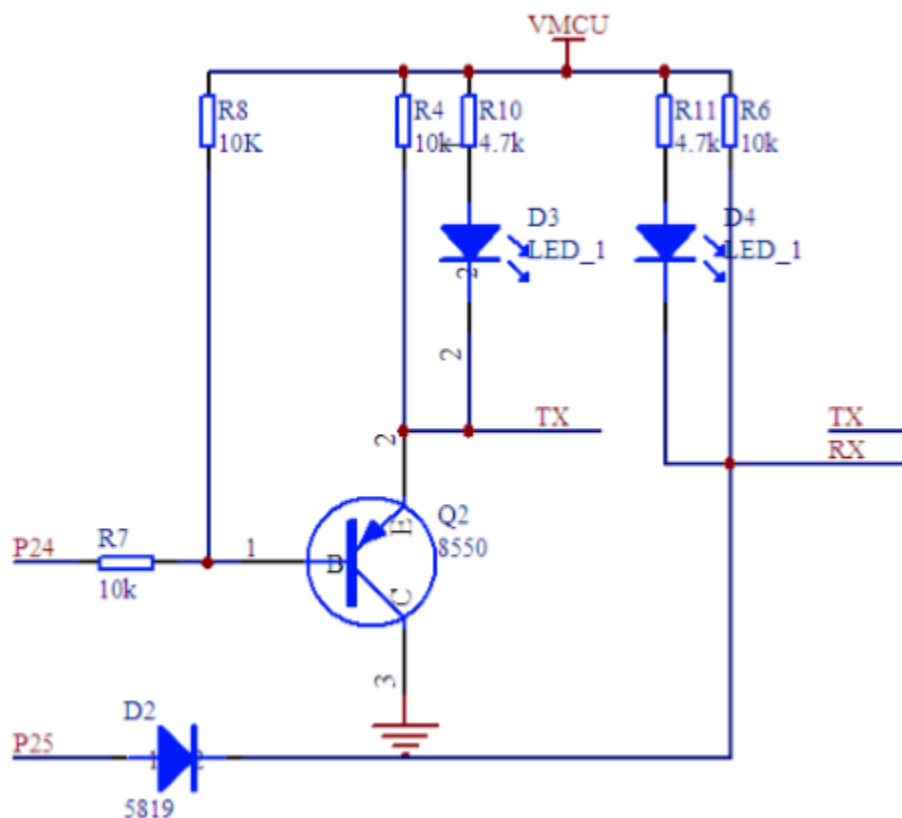
## Chip Pin Description



Number	Pin Name	Functional Description	Remark
1	DAC-OUT+	Amplifier output positive	external speaker (3W) output
2	GND	Ground	Power ground
3	VDD	Power Input	3.3V-5.4V
4	DAC-OUT-	Amplifier output negative	external speaker (3W) output
5	Mute	Play sound when low (L)	Mute control
6	USB-DP	USB-DP	USB for playing downloading music
7	USB-DM	USB-DM	USB for playing music downloads
8	ADK	button	Multiple sets of ADK keys
9	TX	UART serial data output	TTL level (3.3V)
10	RX	UART serial data input	TTL level (3.3V)

## The serial communication protocol

As a serial in the field of conventional communications control, we carried out the industrial level of optimization measures parity adding frames, retransmission, error handling, greatly enhance the stability and reliability of communication, while on the basis of extended more powerful RS485 for networking functionality, serial communication baud rate can set your own defaults to 9600 can be modified to 19,200,115,200 like. Note: Serial voltage of 3.3V with 5V IO communication to increase conversion circuit. 3.3V 5V switch circuit is shown



## Communication format

It supports asynchronous serial communication mode, the command sent by the host computer's serial port to receive

Communication Standard: 9600bps

Data bit: 1

parity bit: none

Flow control: none

Grid formula : \$S Len CMD para1 para2 \$O		
\$S	Start bit 0x7E	each command \$ feedback are beginning, that is, 0x7E
Len	After len number of bytes	Len + CMD + para1 + para2
CMD	Command word	Showing specific operations, such as play / pause, etc.
para1	Parameter 1	High byte data query (such as song number)
para2	Parameter 2	Low byte data query
\$O	End bit	End bit 0xEF

For example, if we specify the player, you need to send: 7E 04 41 00 01 EF data length of 4, 4 bytes are [04,410,001]. Not counting the start and end. Continuous Play [7E 04 41 00 01 EF] [7E 04 41 00 02 EF] [7E 04 41 00 03 EF] ... Ten-segment finished playing pause. Ten sections finished within 150MS to play continuously

### communication instructions

instructions directly transmitted, each made a correct instruction will return "OK"  
return error "err"

CMD (command)	Corresponding function	Parameter (ASCII code)
0x01	Broadcast	no
0x02	time out	no
0x03	next track	no
0x04	previous piece	no
0x05	Volume up	no
0x06	Volume reduction	no
0x07	Standby	no
0x09	normal work	no

0x0A	Fast forward	no
0x0B	Rewind	no
0x0C	PP	no
0x0D		
0x0E	STOP	no
0x0F		

and instructions (no setting instruction), for example,

play, send: 7E 02 01 EF for example,

pause, send: 7E 02 02 EF, for example,

the next song, send: 7E 02 03 EF

Parameter query system, each made a correct instruction will return "OK" return error "err"

CMD	Corresponding function	Parameter (ASCII code) (16)
0x10	Playback status inquiry	0 (STOP) 1 (PLAY) 2 (PLUS) 3 (FF) 4 (FR)
0x11	Query volume	0-30 (such as external EEPROM off memory)
0x12	Query the current EQ	0-5 (NO \ POP \ ROCK \ JAZZ \ CLASSIC \ BASS))
0x13	Discover the current play mode	0-4 (ALL \ FOLDER \ ONE \ RANDOM \ ONE STOP) (the default boot single player)
0x14	Query the version number	1.0
0x15	Discover SD card total file number	1-65535
0x16	Discover U DISK Total number of files	1-65535
0x17	Discover FLASH total number of files	1-65535
0x18	Query the current playback device	0: USB 1: SD
0x19	Current track query TF card	1-65536 (such as external EPPROM off memory)
0x1A	The current track query U DISK	1-65536 (such as external EEPROM off memory)

0x1B	The current track queries FLASH	1-200 (such as external EEPROM off memory)
0x1C	Discover the currently playing song time	Return time (in seconds)
0x1D	Query the current total time playing songs	Return time (in seconds)
0x1E	Discover the song currently playing song	Returns the name of the song (SPI internal songs can not be returned)
0x1F	Discover the current playback folder within the total number of	0-65536

Example: Read the volume is sent directly back to the volume (sixteen) 7E 02 11 EF [Note]: 1 When will the single player, put a complete stop, and return to the "STOP", the overall playing. has been playing the last song is done, play the first song, when power and memory are singles and overall broadcast, (volume, track, play mode) default maximum sound and single player. 2. Support remote control, code 00FF 3. return to "err", said instruction is not recognized

Set the system parameters (writing 8-bit HEX), each made a correct instruction will return "OK" return error "err"

CMD	Corresponding function	Parameters (8 HEX)
0x31	Set Volume	0-30
0x32	Setting EQ	0-5(NO\POP\ROCK\JAZZ\CLASSIC\BASS)
0x33	Setting cycle mode	0-4 (ALL \ FOLDER \ ONE \ RANDOM \ ONE STOP) (default boot single song playback)
0x34	Folder Switching	1 0 next folder in a folder
0x35	Switching equipment	0-4 (U / TF / AUX / IDLE / FLASH)
0x36	ADK software plus pull	1 on the next open, pull off the 0, (the default is 0)
0x37	ADK enabled	1 on, 0 off (default is 1)
0x38	Mute Level	1 is switched to high level mute Mute 0 is low (default is 1)

For example, select the volume size, send: 7E 03 31 1E EC 7E starting address 03 length, 31 instruction, 1E is 30, EF 30 volume setting end address

File Selection (write 16 HEX), each made a correct instruction will return "OK" return error "err"

CMD	Corresponding function	Parameters (16 HEX)
0x41	Select play tracks	1- largest Tracks
0x42	Specify a folder track play	High eight for the folder number, the lower eight bits of the song name
0x43	Select Stream Track	1- biggest tracks (tracks after the specified stream to continue to play the current song)
0x44	Stream Select the specified folder specified song name	1- biggest tracks (tracks after the specified stream to continue to play the current song)

For example, choose to specify a song, send: 7E 04 41 00 08 EF 7E starting address 04 length, 41 command, 00 08 Section 8, EF continuous playback end address, send: 7E 04 41 00 01 EF 7E 04 41 00 02 EF 7E 04 41 00 03 EF 7E 04 41 00 04 EF 1,2,3,4 song playback, continuous playback up to 10. Play the specified folder, the folder name must be 01-99 document, within the overall track name must be changed to 1-255.MP3 / WAV playback after power hair, the song, the next song, you can play, the default player SPI FLASH, did not bring the player to have a SPI FLASH device, boot, insert set, the system will automatically switch to the insert mode setting, send instructions or play button play

**As shown, specify the folder name:**

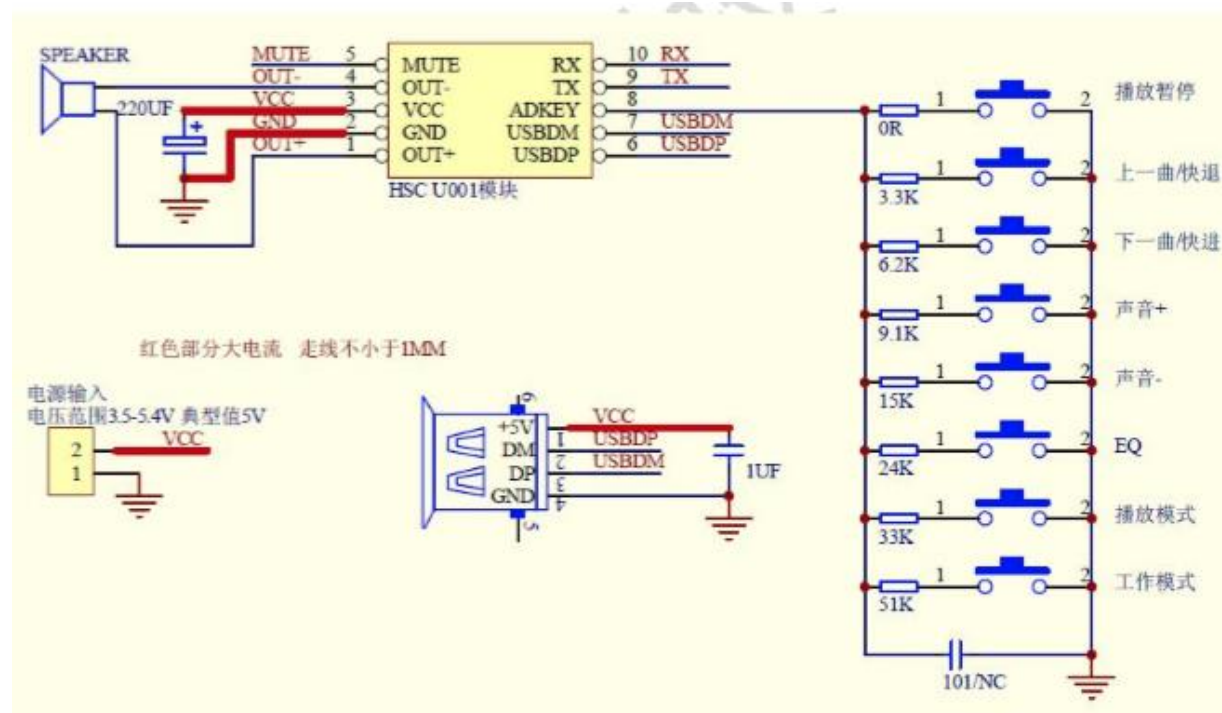




地址(D)	I:\01			
	名称	大小	类型	艺术家
音乐任务	001一楼到了.mp3	7 KB	MP3 格式声音	
全部播放	002.mp3	3 KB	MP3 格式声音	
联机购买音乐	003.mp3	3 KB	MP3 格式声音	
	004.mp3	3 KB	MP3 格式声音	
	005.mp3	3 KB	MP3 格式声音	
	006.mp3	3 KB	MP3 格式声音	
文件和文件夹任务	007.mp3	3 KB	MP3 格式声音	
	008.mp3	3 KB	MP3 格式声音	
其它位置	009.mp3	3 KB	MP3 格式声音	
	010十楼到了.mp3	3 KB	MP3 格式声音	
详细信息	011.mp3	31 KB	MP3 格式声音	

Stream specified folder within a file name, too, such as: in-stream 010 to the tenth floor .MP3 sent: 7E 04 44 01 0A EF as: Stream 001 on the first floor to the .MP3 sent: 7E 04 44 01 01 EF

## Schematic



## The chip package

### 1. Module 10PIN 2.54mm (wide)

