1. Overview

1.1 General Introduction

JQ6500 MP3 is a hardware decoder providing serial MP3 chip, perfectly integrating MP3 and WMV. Meanwhile, the software supports TF card driver, spi flash update on the computer, and FAT16, FAT32 file system. Through simple serial commands, it can execute music playing. Easy-to-use without cumbersome underlying operations, stability and reliability are the most important features of this product. Also the chip is uniquely customized as a low-cost solution for specific voice playing field.

1.2 Features

1. Supports sampling rate (KHz): 8/11.025/12/16/22.05/24/32/44.1/48
2. 24-bit DAC output; dynamic range support 90dB; 85dB SNR support
3. Supports FAT16, FAT32 file system, TF card(maximum capacity 32G), USB 32G, NORFLASH(64M bytes)
4. A variety of control modes: serial mode, AD button control mode
5. Supports inter-cut announcement by pausing the ongoing background music
6. Sort the audio data by folder; supports up to 100 folders with every folder assigned to 1000 songs
7. 30 level volume adjustable, 10 EQ adjustable
8. External spi flash if connected to the computer, can display spi flash drive to update the content
9. Play the specific music through the Microcontroller serial
10. In the button mode, you can choose play modes: pulse repetition, pulse cannot be repeated, the level of non keep recycling, maintain levels of circulating

1.3 Application

1. Voice broadcasts in vehicle navigation;
2. Road transport inspectors, toll station voice prompts;
3. Railway station, bus station security check voice prompts;
4. Power, communications, financial business hall voice prompts;
5. Vehicles access voice prompts;
6. Frontier inspection voice prompts;
7. Multi-channel voice alarms or equipment operation guide voices;
8. Electric sightseeing cars voice notices for safe driving;
9. Electromechanical equipment error auto alarms;

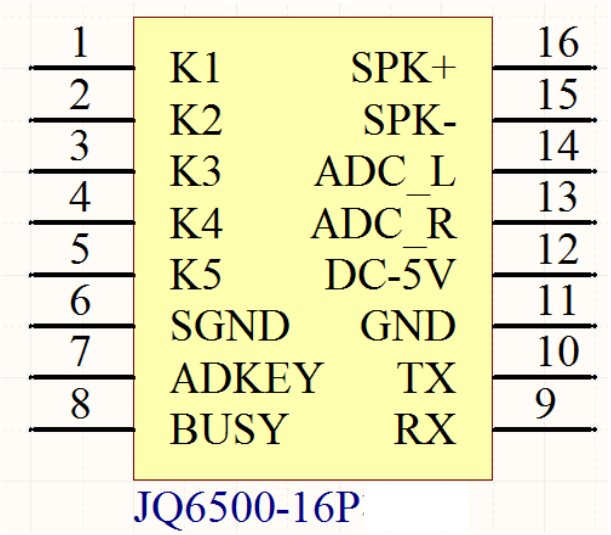
10. Fire alarms;
11. Regular broadcasts of automatic broadcast equipment.

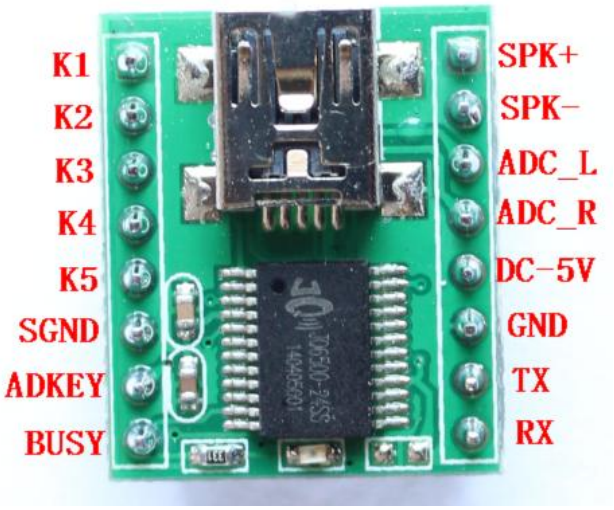
2. Parameters

2.1 Hardware Parameters

Item	Parameters
MP3 File Format	Support all bit rates 11172-3 and ISO13813-3 layer3 audio decoding
	The sampling rate support (KHZ): 8/11.025/12/16/22.05/24/32/44.1/48
	Support sound effect like Normal, Jazz, Classic, Pop, Rock,etc.
UART Interface	Standard serial port, TTL level, the baud rate can be set up
Input Voltage	power supply 3.5V-5V; optimum value 4.2V
Rated Current	20ma
Size	Standard DIP16 package
Speaker Power	8 ohm / 3 w
Operating Temperature	-40℃~80℃
Humidity	5% ~ 95%

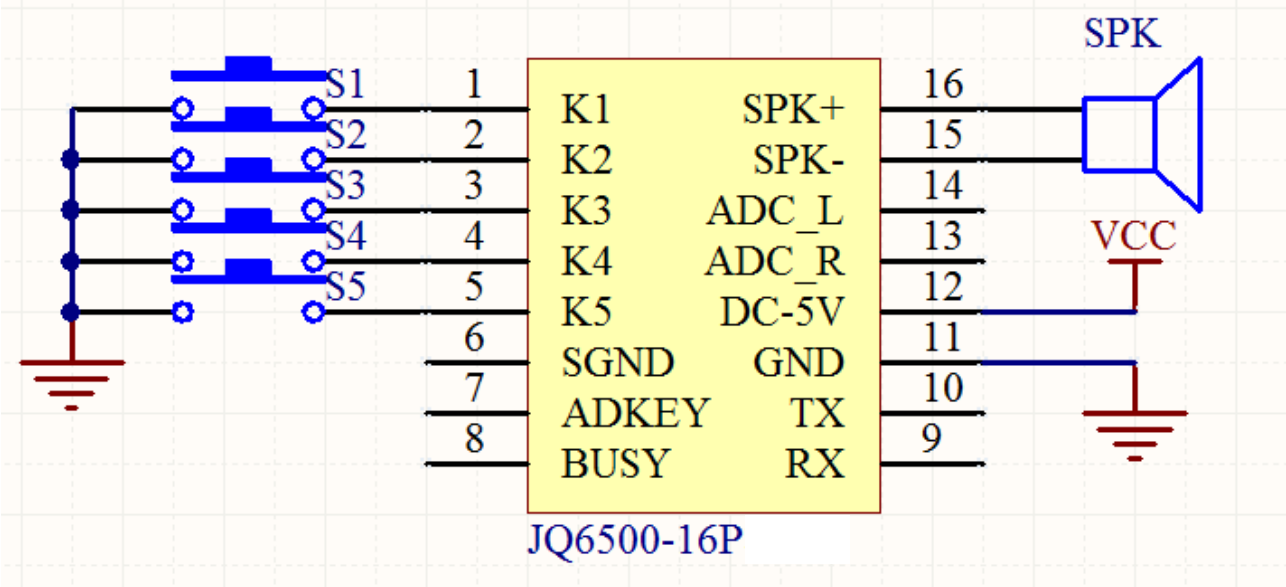
2.2 Module Pin Description





Pin No.	Pin Name	Corresponding Function	Remark
1	K1	corresponding audio Paragraph 1	grounding trigger the playback of audio Paragraph 1
2	K2	corresponding audio Paragraph 2	grounding trigger the playback of audio Paragraph 2
3	K3	corresponding audio Paragraph 3	grounding trigger the playback of audio Paragraph 3
4	K4	corresponding audio Paragraph 4	grounding trigger the playback of audio Paragraph 4
5	K5	corresponding audio Paragraph 5	grounding trigger the playback of audio Paragraph 5
6	SGND	ground	power ground
7	ADKEY	AD port	
8	BUSY	play indicator	high when there's audio output; low when no audio output
9	RX	UART serial data input	
10	TX	UART serial data output	
11	GND	ground	power ground
12	DC-5V	module power input	cannot exceed 5.2V
13	ADC_R	right channel	headphones, amplifier
14	ADC_l	left channel	headphones, amplifier
15	SPK-	speaker +	direct drive speakers below 1W/8R
16	SPK+	speaker -	

2.3 Wiring Diagram



3. Operation

3.1 Communications Directive

1. Send commands directly no need return parameters

Detailed CMD (command)	Corresponding Function	Parameters (16 bits) and the Corresponding Instruction Format
0x01	next	【7E 02 01 EF】
0x02	pre	【7E 02 02 EF】
0x03	assigned song	0-65535、SPI(0-200) 【7E 04 03 00 01 EF】 Indicates the playback of the first paragraph of music. The red font is the number of paragraphs that they can change.
0x04	volume+	【7E 02 04 EF】
0x05	volume -	【7E 02 05 EF】
0x06	assigned volume	0-30【7E 03 06 15 EF】 The red font is the volume range from 00 to 1E.
0x07	assigned EQ(0/1/2/3/4/5)	Normal/Pop/Rock/Jazz/Classic/Base 【7E 03 07 01 EF】 The red font can be changed from 00 to 05.
0x09	assigned devices(0/1/2/3/4)	U/TF/AUX/SLEEP/FLASH 【7E 03 09 01 EF】 The red font can be changed from 00 to 05.
0x0A	enter sleep mode - low power consumption	Pause 【7E 02 0A EF】

0x0C	chip reset	【7E 02 0C EF】
0x0D	play	【7E 02 0D EF】
0x0E	pause	【7E 02 0E EF】
0x0F	folders switching	1 the next folder; o the previous folder 【7E 03 0F 00 EF】The red fond can be described as 00 01.
0x10	preserve	
0x11	loop	0 1 2 3 4(ALL FOL ONE RAM ONE_STOP) 【7E 03 11 00 EF】The red font is 0001 corresponding mode: 00 for All Cycle, 01 for Single Cycle. Eg: To repeat the second song, first send 7E 03 11 01 EF and then sent 7E 04 03 00 02 EF.
0x12	specified folder file playback	01 01 The former 01 refers to the folder while the latter refers to the file. Note 1: 【7E 04 12 01 01 EF】 play the file 01 in the folder 01

For example, for next, send: 7E 02 01 EF

For previous, send: 7E 02 02 EF

For play, send: 7E 02 0D EF

2. Parameter Query

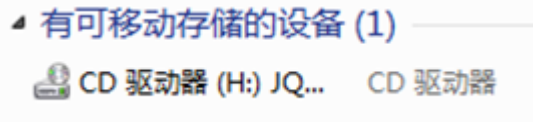
Detailed CMD (command)	Corresponding Function	Description and Command Format
0x40	Return error, request resend	
0x42	Check the current status	Three states: Play Stop Pause 【7E 02 42 EF】
0x43	Inquire the current volume	【7E 02 43 EF】
0x44	Inquire the current EQ	The return value corresponds to 012345（Normal/Pop/Rock/Jazz/Classic/Base） 【7E 02 44 EF】
0x45	Inquire the current play mode	The return value corresponds to 0 1 2 3 4(ALL FOL ONE RAM ONE_STOP) 【7E 02 45 EF】

0x46	Inquire the current software version	【7E 02 46 EF】
0x47	Check the total number of files of TF card	【7E 02 47 EF】
0x48	Inquire the total number of UDISK files	【7E 02 48 EF】
0x49	Inquire the total number of FLASH files	【7E 02 49 EF】
0x4B	Inquire the current track of TF card	【7E 02 4B EF】
0x4C	Inquire the current track of UDISK	【7E 02 4C EF】
0x4D	Inquire the current track of FLASH	【7E 02 4D EF】
0x50	Inquire the current play time	【7E 02 50 EF】
0x51	Inquire the total play time of the current track	【7E 02 51 EF】
0x52	Inquire the name of the playing song	The return value is the name of the song(SPIflsh not supported) 【7E 02 52 EF】
0x53	Inquire the total number of the current folders	【7E 02 53 EF】

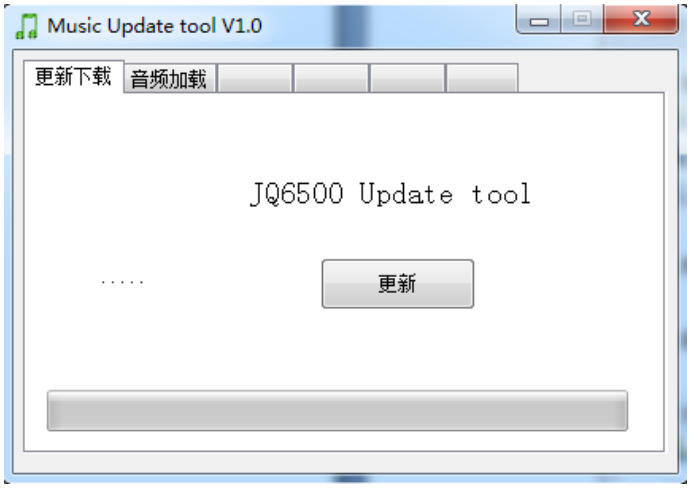
Example: To read the volume, sent [7E 02 43 EF], it'll directly return to volume (16 bits)

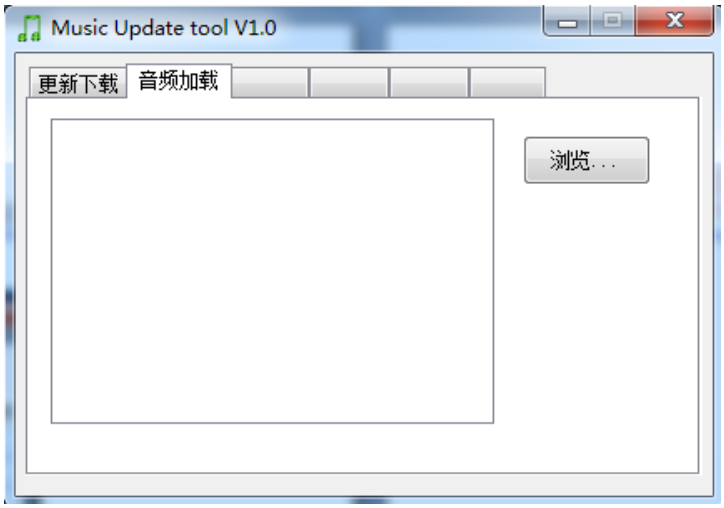
ADKEY resistance function: 0R PLAY 3.3K for Next, V + 6.2K for Pre, V-9.1K for mode switching.
Note 1: The folders inside USB and TF card must be named 01 02...99; the files inside the folders must be named 001 002 003....

4. Instructions on Voice Update

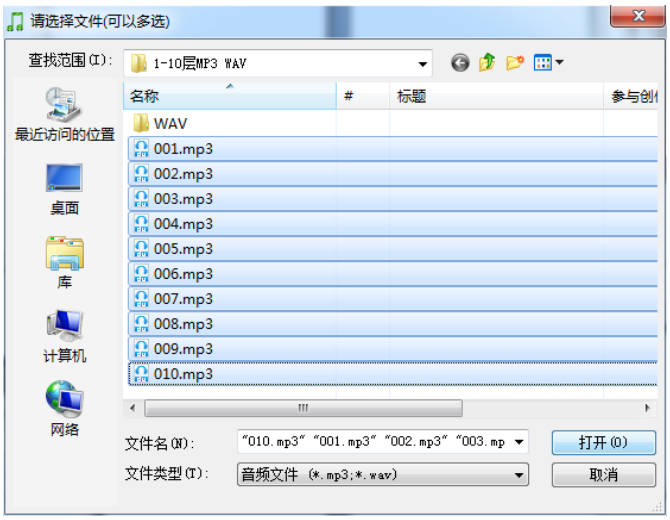
Connect the MINI USB of the module to the computer. Open "My Computer", double-click the "CD Drive" 

, and you will see an update content of PC software, as shown below:

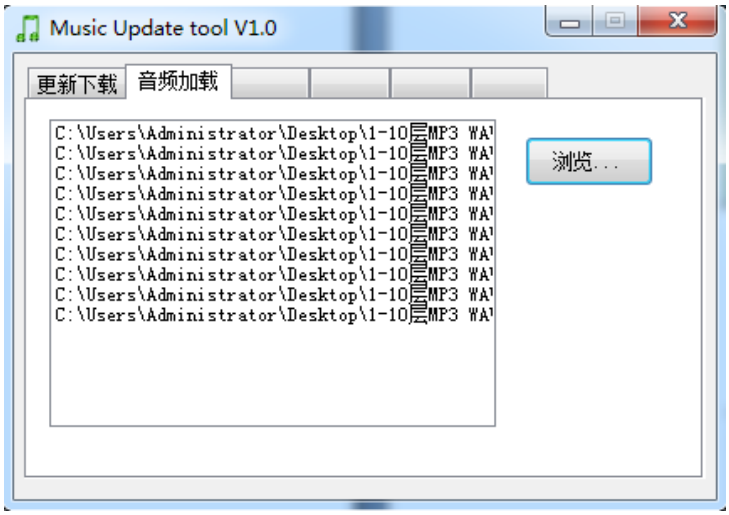




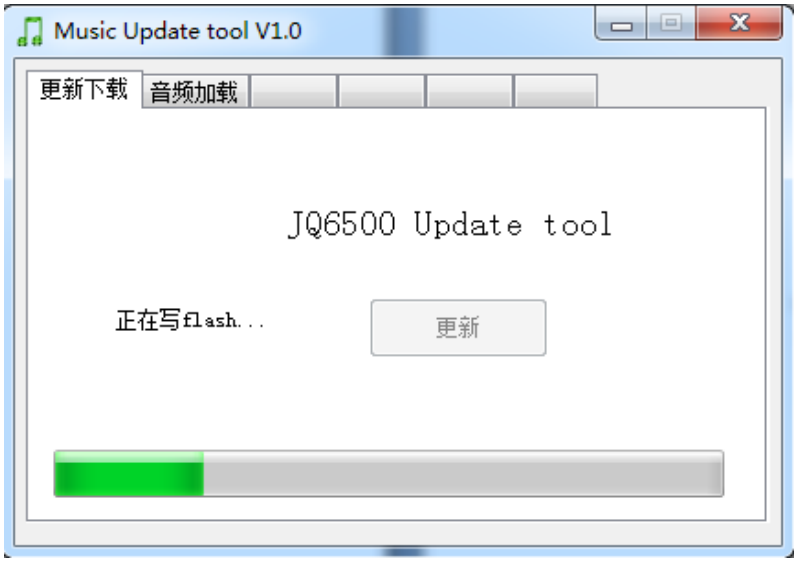
Select "Audio loading" - Click "Browse".



Choose the audio, click the "Open".

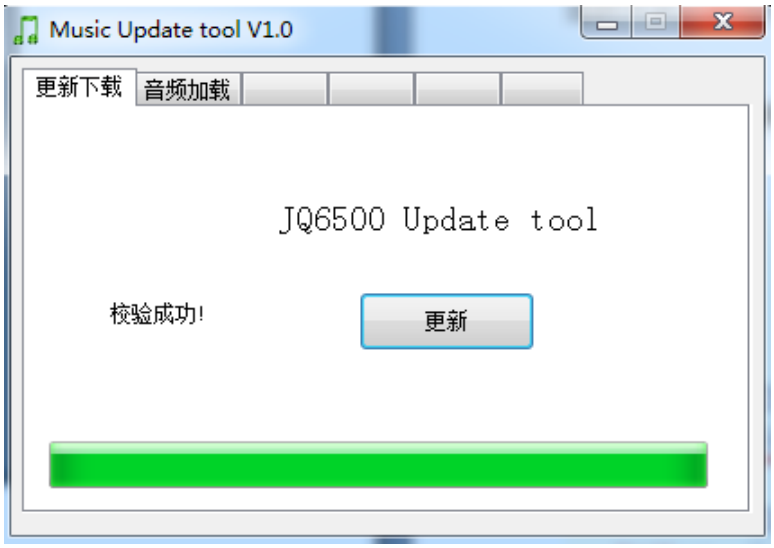


The audio is added to the PC software.



Select "update download" tab, click update;

Audio writing is shown in picture.



The picture means that the voice has been downloaded to the spi flash in the module.