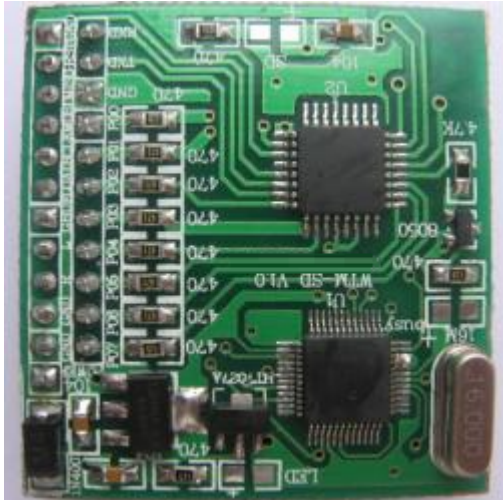


# WTM-SD CARD MODULE

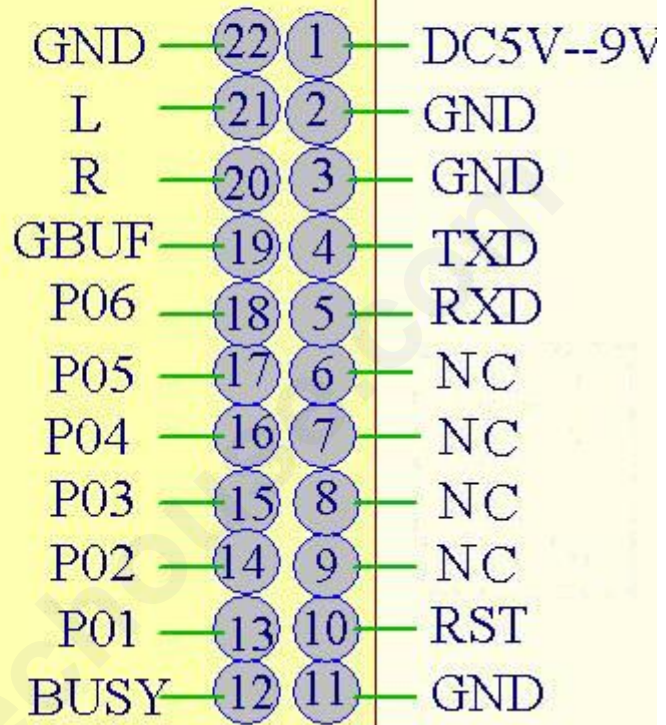


## 1、WTM-SD FEATURES

- ◆ Support MP3 format files.
- ◆ Support SD card, 1GB max.
- ◆ Change voice in SD card easily by PC.
- ◆ Four kind of control mode :Standard mode(mp3 mode), key mode, parallel mode, serial mode
- ◆ Dimension: 41mm  $\phi$  39mm

## 2、PIN DESCRIPTION

## WTM-SD



PIN	NAME	FUNCTION
1	DC5V—9V	DC 5V---9V
2	GND	GND FOR POWER
3	GND	GND FOR AUDIO
4	TXD	TRANSFER SERIAL DATA
5	RXD	RECEIVE SERIAL DATA
6	NC	NC
7	NC	NC
8	NC	NC
9	NC	NC
10	RST	NC
11	GND	GND FOR POWER

12	BUSY	BUSY SIGNAL
13	P01	I/O
14	P02	I/O
15	P03	I/O
16	P04	I/O
17	P05	I/O
18	P06	I/O
19	GBUF*	ANALOG GROUND
20	R	AUDIO OUTPUT R
21	L	AUDIO OUTPUT L
22	GND	DIGITAL GROUND

SD CARD FORMAT: FAT 16

I/O VOLTAGE :3.3V

### 3、CONTROL MODE

#### A、STANDARD MODE

P01 PLAY/PAUSE  
P02 PREVIOUS  
P03 NEXT  
P04 VOL-  
P05 VOL+  
P06 STOP

P01-----P06 natural status are HIGH, negative edge trigger

The mp3 files must be named orderly 000.mp3 , 001.mp3, 002.mp3, 003.mp3 .....

File name must be successive in numbers. If you name files as 000.mp3, 001.mp3, 003.mp3, the last file 003.mp3 will got problem while playing in standard mode.

#### B、KEY MODE

Each key corresponding a group( voice).Total 6 groups, Named 000.mp3, 001.mp3, 002.mp3 , 003.mp3, 004.mp3, 005.mp3. edge trigger.

P01 000.mp3  
P02 001.mp3  
P03 002.mp3  
P04 003.mp3  
P05 004.mp3  
P06 005.mp3

6 I/O natural status are HIGH, low level trigger , each I/O trigger each group of voice.

#### C、PARALLEL MODE

P01 SBT  
P02 ADDRESS S0  
P03 ADDRESS S1  
P04 ADDRESS S2

P05 ADDRESS S4

P06 ADDRESS S5

From 00H-----1FH ,total 32 addresses, corresponding 32 group of voice.

Set the pins(P02-P06) in the address you want, then the falling edge of P01 will make the device play the voice in the address.

Files name	P06 (MSB)	P05	P04	P03	P02 (LSB)	P01
000. mp3	0	0	0	0	0	Negative edge trigger
001. mp3	0	0	0	0	1	
002. mp3	0	0	0	1	0	
003. mp3	0	0	0	1	1	
004. mp3	0	0	1	0	0	
005. mp3	0	0	1		1	
006. mp3	0	0	1	1	0	
007. mp3	0	0	1	1	1	
008. mp3	0	1	0	0	0	
009. mp3	0	1	0	0	1	
010. mp3	0	1	0	1	0	
011. mp3	0	1	0	1	1	
012. mp3	0	1	1	0	0	
013. mp3	0	1	1	0	1	
014. mp3	0	1	1	1	0	
015. mp3	0	1	1	1	1	
016. mp3	1	0	0	0	0	
017. mp3	1	0	0	0	1	
018. mp3	1	0	0	1	0	
019. mp3	1	0	0	1	1	
020. mp3	1	0	1	0	0	
021. mp3	1	0	1	0	1	
022. mp3	1	0	1	1	0	
023. mp3	1	0	1	1	1	
024. mp3	1	1	0	0	0	
025. mp3	1	1	0	0	1	
026. mp3	1	1	0	1	0	
027. mp3	1	1	0	1	1	
028. mp3	1	1	1	0	0	
029. mp3	1	1	1	0	1	
030. mp3	1	1	1	1	0	
031. mp3	1	1	1	1	1	

Time series information is been added in the end of this document.

#### D、 SERIAL MODE

Standare RS232 serial communication timing as basis, baud rate 9600,made the following communication protocol . its data include start code, data length, data bit, end code.

Data format:

START CODE	DATA LENGTH	OPERATE CODE	FOLDER NAME(TENS)	FOLDER NAME(UNIT)	FILE NAME(HUNDRED)	FILE NAME(TENS)	FILE NAME(UNIT)	END CODE
7E	07	XX	XX	XX	XX	XX	XX	7E

START CODE: **7E**

DATA LENGTH: Include all bytes except start code and end code .Include DATA LENGTH bytes

OPERATE CODE:

DESCRIPTION	OPERATE CODE	DATA
PLAY(REPLAY) ADVERTISEMENT	A0H	xx xx xx xx xx
PAUSE ADVERTISEMENT	A1H	None
PLAY ADVERTISEMENT FROM PAUSE	A2H	None
STOP ADVERTISEMENT	A3H	None
ADJUST VOLUME	A4H	0—8 (0-8 levels volume)
PLAY(REPLAY)BACKGROUND MUSIC	B0H	xx xx xx xx xx
PAUSE BACKGROUND MUSIC	B1H	None
PLAY BACKGROUND MUSIC FROM PAUSE	B2H	None
STOP BACKGROUND MUSIC	B3H	None

Total 9 operate code, A0、A4、B0 with data bit follow, but others

Folder name:

Folder names must be advert00,advert01..... advert99, total 99 folders.

Take folder advert01 for example

TENS“0” ASCII code is “30H”

UNIT“1” ASCII code is “31H”

File name:

In folder advert01, file 682.mp3

HUNDRED“6” ASCII code is “36H”

TENS“8” ASCII code is “38H”

UNIT“2” ASCII code is “32H”

End code:7e

**FOR EXAMPLE:**

**Play 002.mp3 in advert01 as advertisement, then send the following 9 bytes data. Communication format :**

START CODE	DATA LENGTH	OPERATE CODE	FOLDER NAME(TENS)	FOLDER NAME(UNIT)	FILE NAME(HUNDRED)	FILE NAME(THENS)	FILE NAME(UNIT)	END CODE
7E	07	A0	30	31	30	30	32	7E

**Play 032.mp3 as background music in folder advert02, then send data as follow:**

STAR T COD E	DATA LENGTH	OPERATE CODE	FOLDER NAME(TENS)	FOLDER NAME(UNIT)	FILE NAME(HUNDRED)	FILE NAME(THENS)	FILE NAME(UNIT)	END CODE
7E	07	B0	30	32	30	33	32	7E

**When the background music is playing, insert 009.mp3 in folder advert01 as advertisement. After the advertisement**

**Is Played over, the background music will replay from the pause.**

START CODE	DATA LENGTH	OPERATE CODE	FOLDER NAME(TENS)	FOLDER NAME(UNIT)	FILE NAME(HUNDRED)	FILE NAME(THENS )	FILE NAME(UNIT)	END CODE
7E	07	A0	30	31	30	30	39	7E

**Pause the advertisement, will send the data:**

START CODE	DATA LENGTH	PAUSE CODE	END CODE
7E	02	A1	7E

**Replay from the pause, send data:**

START CODE	DATA LENGTH	REPLAY(FROM PAUSE) CODE	END CODE
7E	02	A2	7E

**Stop to play, send data:**

START CODE	DATA LENGTH	STOP CODE	END CODE
7E	02	A3	7E

**Volume adjustment,from 00H to 08H , 8 levels volume,00H is lowest,08H is highest**

**Level 8 volume data:**

STATD CODE	DATA LENGTH	ADJUST CODE	VOLU ME	END CODE
7E	03	A4	08	7E

**Level 2 volume data:**

STATD CODE	DATA LENGTH	ADJUST CODE	VOLU ME	END CODE
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7E	03	A4	02	7E
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### Files in SD card.

In Standard mode(mp3 mode), key mode, parallel mode , only can read advert01 folder.

In serial mode, can read folder advert00,advert01..... advert99

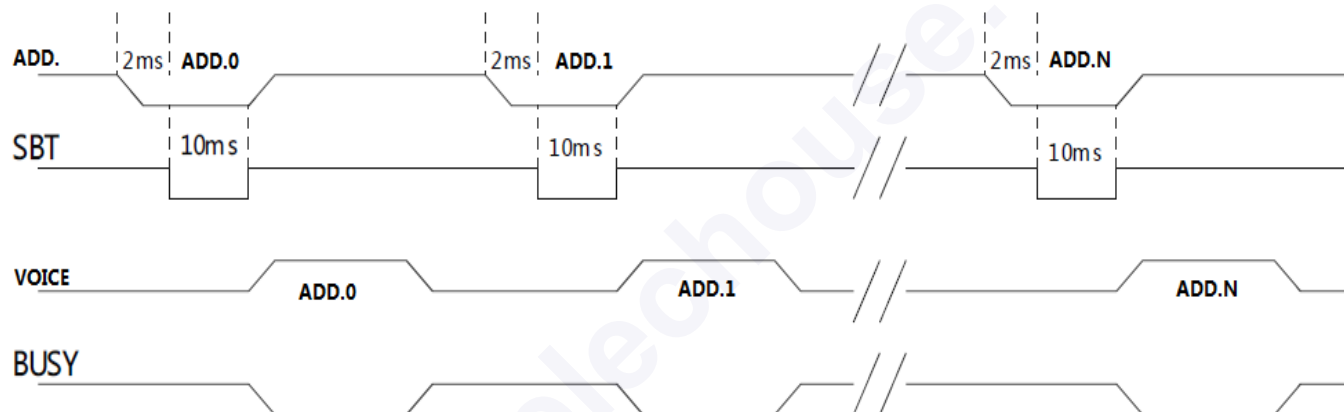
Files name in folders must be 001.mp3 ,002.mp3 ,003.mp3 ,.....999.mp3

### How to choose modes

If choose Standard mode(mp3 mode) or key mode or parallel mode , we can new a “.txt” file in advert01 folder,open it and input 1 or 2 or 3(1 means standard mode, 2 means key mode, 3 means parallel mode) . then save and exit . Then rename this file as “cof.mp3” .

### Time Series Information of Parallel Mode

Set the address via P02~P06, then trigger pin SBT to play. STB is triggered by negative pulse.



SBT pulse should be 2ms later after the address setting is done. And SBT negative pulse should be at least 10ms.