

Description:

FN-M22P is a high-quality audio playback module, which integrates MP3 and WAV decoder together perfectly, and supports parallel port control mode, UART serial port control and key control mode. It takes a SD card or USB flash drive as the storage device, which can be chosen by users freely. It can be controlled easily via MCU commands or external push buttons. Easy to operate and high performance.

Features:

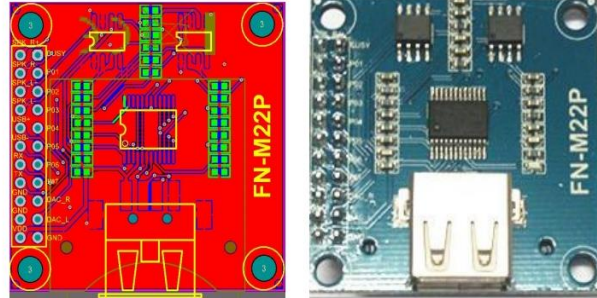
1. With high quality audio decoder, supports MP3 and WAV audio formats.
2. Sampling rates supported: 8/11.025/12/16/22.05/24/32/44.1/48(KHz).
3. 24-bit DAC output and supports dynamic range 90dB and SNR 85dB.
4. Supports multiple key control mode, parallel control mode and UART serial port control mode.
5. Possible to update audio files in the SD card via USB connecting with a PC.
6. Supports playback of 63 audio files through binary encoding in parallel mode.
7. Supports maximum 3000 audio files under the root directory of the storage device in serial mode.

8. Supports maximum 99 folders and each folder stores maximum 255 audio files in serial mode.
9. Supports combination playback (plays a group of audio files one after the other without pause) in serial mode.
10. Supports advertisement inter-cut function during playing a sound in serial mode.
11. Built-in double 3 watts amplifiers that can drive two 3 watts speakers directly.
12. Adjustable 30 levels sound volume.
13. Power input range: DC3.3-5V (5V is typical)
14. Module size: 40x40mm

Specifications:

- MP3 audio format: Supports 11172-3 and ISO13813-3 layer3 audio decoding.
Supports sampling rate (KHZ):8/11.025/12/16/22.05/24/32/44.1/48.
Supports Normal, Jazz, Classic, Pop, Rock, etc.
- USB port: Standard USB 2.0
- UART port: Standard serial port and TTL level.
- Input voltage :3.3V-5V (5V is typical, and it's better to serially connect a diode)
- Rated current 10mA(quiescent)
- Low consumption
- current <200uA
- Working temp. -40~+80°C
- Humidity 5% ~ 95%

Pin Function:



Pin No	Pin Name	Description	Note
1	VDD	Power input	3.3V-5V (5V is suggested and not higher than 5.2V)
2	GND	Ground	Power ground
3	GND	Ground	Power ground
4	TX	UART serial output	Baud rate is 9600
5	RX	UART serial input	Baud rate is 9600
6	USB+	USB- DM	USB Port (connected with a USB flash drive or connected to pc)
7	USB-	USB+ DP	
8	SPKL+	Connect speaker— for left channel	Direct drive a 3 watts speaker
9	SPKL-	Connect speaker+ for left channel	
10	SPKR-	Connect speaker— for right channel	Direct drive a 3 watts speaker
11	SPKR+	Connect speaker+ for right channel	
12	BUSY	Busy indication	High level when playing and low level when standby
13	PO1	I/O port	I/O port
14	PO2	I/O port	I/O port
15	PO3	I/O port	I/O port
16	PO4	I/O port	I/O port
17	PO5	I/O port	I/O port
18	PO6	I/O port	I/O port
19	PO7	SBT	Triggering port (SBT) used for parallel mode
20	DAC_R	Audio output right channel	Drive external earphone or amplifier
21	DAC_L	Audio output left channel	Drive external earphone or amplifier
22	GND	Ground	Audio ground

Mode of Operation:

Audio interfaces are often erroneously called sound modules. The audio interface connects a computer to other devices; and software in the computer generates sound using samples or synthesis. The functionality of the computer and I/O device plus the software is a superset of a traditional sound module.

- Key Control and Parallel Control Modes:**

Settings of Key Function:

1. This module has 6 keys/buttons function assignment, and this can be set different many functions through a configuration file named “read.cfg”, which comes from a text file(.txt) originally. Users just need to fill in a digit/parameter to a corresponding function in a newly built text file. Save it and rename it “read.cfg”, then put it in the root directory of the USB flash drive or the SD card. See below.



2. Parameters of Configuration File

Digit in file “read.cfg”	Corresponding Function Mode
0	Pulse interruptable one-on-one playback
1	Electric level holding one-on-one playback
2	Pulse uninterruptable one-on-one playback
3	Standard MP3 key mode playback
4	Plays 6 sound files one-one-on in folder 01
5	Plays a sound when the key is pressed and plays another sound when the key is released
6	Plays sound files in the root directory of the storage device based on parallel control
7	Plays specified sound files in folder 01 based on parallel control

Notes:1). A storage device can put only one configuration file in the root directory of the storage device. It is allowed not to put this configuration file if you just use UART serial control mode only.

2). Digits 0-5 are used for settings of key control mode while 6-7 for settings of parallel control mode. When the digit is any of 0-5, key control function is valid and parallel control is invalid, and when the digit is any of 6-7, vice versa.

- **Key Control Mode**

1. **Pulse interruptible one-on-one playback.**

Key	Short press	Long press(keep pressing)	Release
S1	Plays 1 st sound		
S2	Plays 2 nd sound		
S3	Plays 3 rd sound		
S4	Plays 4 th sound		
S5	Plays 5 th sound		
S6	Plays 6 th sound		

Note: The digit is 0 in the configuration file for this function mode.

2. **Electric level holding one-on-one playback.**

Key	Short press	Long press(keep pressing)	Release
S1		Plays and loops 1 st sound	Stop
S2		Plays and loops 2 nd sound	Stop
S3		Plays and loops 3 rd sound	Stop
S4		Plays and loops 4 th sound	Stop
S5		Plays and loops 5 th sound	Stop
S6		Plays and loops 6 th sound	Stop

Note: The digit is 1 in the configuration file for this function mode.

- **Parallel Control Mode**

Plays sound files in the root directory of the storage device:

1. **I/O ports for parallel control**

I/O Port	P01	P02	P03	P04	P05	P06	P07
Function	A0	A1	A2	A3	A4	A5	SBT

Note: SBT is the triggering port.

2. Corresponding triggering

Corresponding Sound	Address Pins(I/O ports)						Hexadecimal Value
	A0	A1	A2	A3	A4	A5	
Plays 1 st sound	0	1	1	1	1	1	0x01
Plays 2 nd sound	1	0	1	1	1	1	0x02
Plays 3 rd sound	0	0	1	1	1	1	0x03
Plays 4 th sound	1	1	0	1	1	1	0x04
.....	
Plays 20 th sound	1	1	0	1	0	1	0x14
Plays 21 st sound	0	1	0	1	0	1	0x15
.....	
Plays 63 rd sound	0	0	0	0	0	0	0x3F

Note: 0 represents low level while 1 represents high level.

- Serial Control Mode**

Supports asynchronous serial communication mode, via which accept serial commands sent by upper PC. Communication Standard: 9600 bps

Data bits : 1

Checkout: none

Flow Control: none.

Format: \$S	Ver.	Number	Command	Feedback	Param_MSB	Param_LSB	Check_MSB	Check_LSB	\$O
\$S			Start byte 0x7E						
Ver.			Version byte, 0xFF by default						
Number			Number of bytes from version info to Check_LSB, typically 0x06 (checksum not counted)						
Command			Command byte						
Feedback			0x01: Need feedback--send confirmation back to MCU; 0x00: No need feedback						
Param_MSB			Most significant byte of parameter						
Param_LSB			Least significant byte of parameter						
Check_MSB			Most significant byte of checksum						
Check_LSB			Least significant byte of checksum						
\$O			End byte 0xEF						