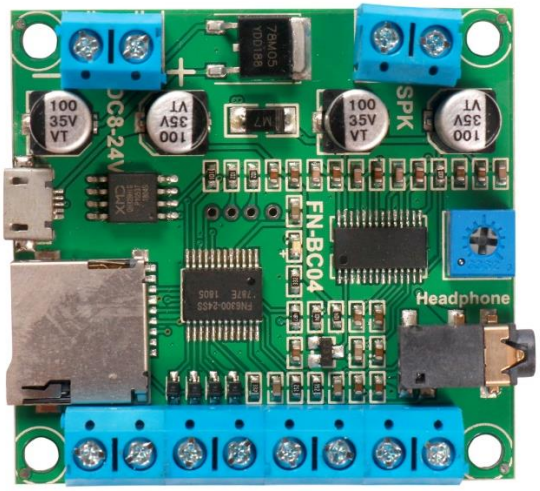
FN-BC04 MP3 Module



Description:

FN- BC04 is a high-quality MP3 sound module developed by Flyron Technology Co., Ltd. Equipped with an on- board 10W amplifier, the sound module can be controlled by 4 separate buttons hooked up to the 'one-on-one' input's terminals and by UART R232 serial port working with a MCU. Great audio output, industry-grade design and strong anti-jamming capability make it possible to be used for many different applications.

Features:

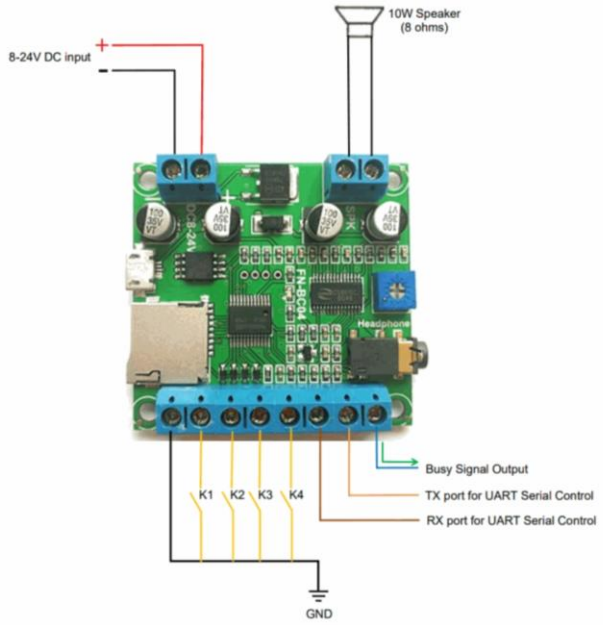
1. With high quality audio decoder, supports MP3 and WAV audio formats.
2. Sampling rates supported: 8/11.025/12/16/22.05/24/32/44.1/48(KHz).
3. 24-bit DAC output and supports dynamic range 90dB and SNR 85dB.
4. Supports one-on-one 4 button trigger control mode and RS232 serial port control mode.
5. In button control mode, it plays back 4 sounds one-on-one by negative triggering.
6. Uses micro SD card and the built-in SPI flash memory for storage device.
7. Built-in 4MB SPI flash memory by default and supports max. 16MB.
8. Supports max. 32GB micro SD card.

9. Possible to load audio files to the flash memory directly via the micro USB connecting with computer like using a USB flash drive.
10. Equipped with a mono 10 watts amplifier that can drive a 10 watts speaker directly.
11. Equipped with a 3.5mm audio jack for stereo output that can drive an earphone directly or connect with an external amplifier.
12. Adjustable sound volume with the potentiometer.
13. Wide range for power input (DC8-24V).
14. PCB size: 52mm x 49mm

Specifications:

- Working voltage: DC 8V-24V
- Working current: ≤400mA (Input: DC12V)
- Power Consumption: ≤10W
- On-board flash memory size: 4MB
- Audio format: MP3 and WAV

Pin Function:



- K1, K2, K3, and K4 are Normally Open (N.O.) manual buttons.
- TX port and RX port are used to connect with a MCU, through which serial commands are sent to control the module.
- Version 1.1 of the board did not have a Busy Signal Output. The Busy Signal Output was a spare ground instead.
- Version 2.0 The Busy port outputs a high signal when the module is playing a sound. Low signal when the module is in standby.

Mode of Operation:

- **Button Control Mode**

1. **Trigger Mode Selection:** In button control mode, there are 4 trigger modes available for users to choose according to their actual needs. Any of these trigger modes can be set/acquired through a configuration file named “read.cfg”, which comes from a text file(.txt) originally.

   Users just need to fill in a digit/parameter that corresponds to a trigger mode in a newly built text file. Save it and rename it “read.cfg”, then put it in the root directory of the micro SD card or the flash memory together with the 4 audio files.

Digit in file “read.cfg”	Corresponding Trigger Mode
0	Pulse interruptible one-on-one playback
1	Level hold loop playback
2	Pulse non-interruptible one-on-one playback
3	Standard MP3 key mode playback

- **Pulse interruptible one-on-one playback:** In this mode, a single negative pulse will start playback. It is possible to interrupt the playback by pressing the same button used to activate. Once playback is interrupted, it will automatically restart the audio file immediately. It’s also possible to interrupt the playback by pressing any of the other 3

buttons. Once playback is interrupted, it will automatically start the sound that is associated with the button pressed.

- **Level hold loop playback:** In this mode, the negative pulse must be held/maintained to the sound module trigger for audio file to complete. The audio file will only playback while button, or negative pulse, is held/maintained during playback. Once the button being held, or negative pulse, is removed, the playback will be stopped/cancelled. Once the button is kept holding, when the playback of the audio file is finished, it will start to play it repeatedly (loop playback).

- **Pulse non-interruptible one-on-one playback:** In this mode, a single negative pulse will start playback. It's not possible to interrupt the playback by pressing the same button or the other buttons. Once an audio file is triggered, the audio file will not be able to be interrupted/cancelled during playback. The playback will only end when the audio file has played its entirety.
- **Standard MP3 key mode playback:** In this mode, the buttons between K1 and K4 will be functioned as Previous, Next, Play/pause, and stop respectively. In this case does not like the other 3 trigger modes above, more than 4 audio files can be placed.

2. **Audio Files Loading**

   4 audio files need to be directly stored in the root directory of the SD card or the on-board flash memory. No folders can be in the 'root directory'. The arrangements of the audio files are managed by a physical indexing sequence. In other words, the file that is to be loaded first in the storage device will be associated with input "K1". The last file to be loaded in the storage device will be associated with input "K4". To guarantee a correct 'one-on-one' order, please refer to the following steps.

   1). Build a new folder on the computer and put the 4 audio files in this new folder.

   2). Rename the audio files from 001.mp3/wav to "004.mp3/wav", and make sure they are ranked from "001.mp3/wav" to "004.mp3/wav" in order.

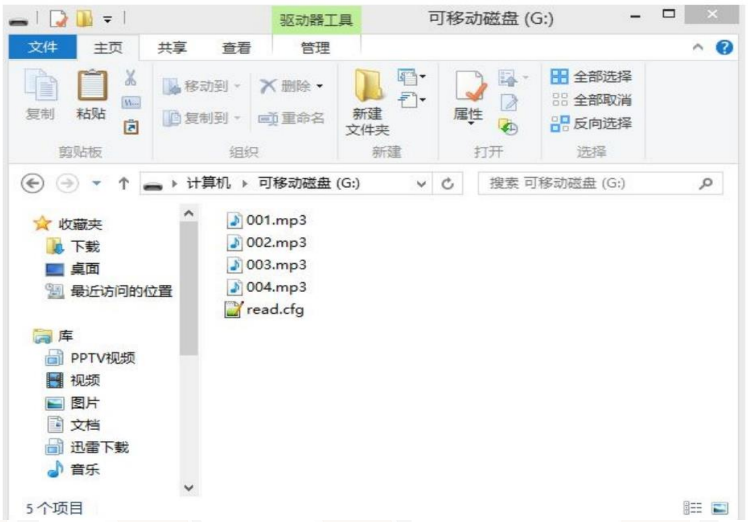
   3). Plug in your SD card on computer or connect the module with computer through the micro USB (make sure the SD card or the on-board flash memory is empty).

4). Format the SD card into FAT or FAT32 or format the on-board flash into FAT. 5). Select all the 4 audio files in the folder.

6). Right click on the first file (001.mp3/wav) and choose "Send to removable disk".

7). This should send the 4 audio files to the SD card or the on-board flash memory in a correct sequence.

8). Put the configuration file with the trigger mode needed into the root directory together with audio files as below, then refresh.



9). Safely remove the SD card and insert it into the module or disconnect the flash memory of the module from computer. 10). Apply power to the module and push any of 4 buttons to play back a corresponding sound.

Notes:

1). If the trigger mode of pulse interruptible one-on-one playback is needed, it's also workable if you don't put the configuration file. The module takes this trigger mode as the default if without a configuration file.

2). When the SD card is plugged/inserted into the module. Only audio files from the SD card will be played.

3. UART RS232 Serial Control Mode

Serial control mode is provided for users who want to use a MCU to control this module. It's more flexible and can realize many more functions to control this module via serial commands through the ports TX and RX on the module.