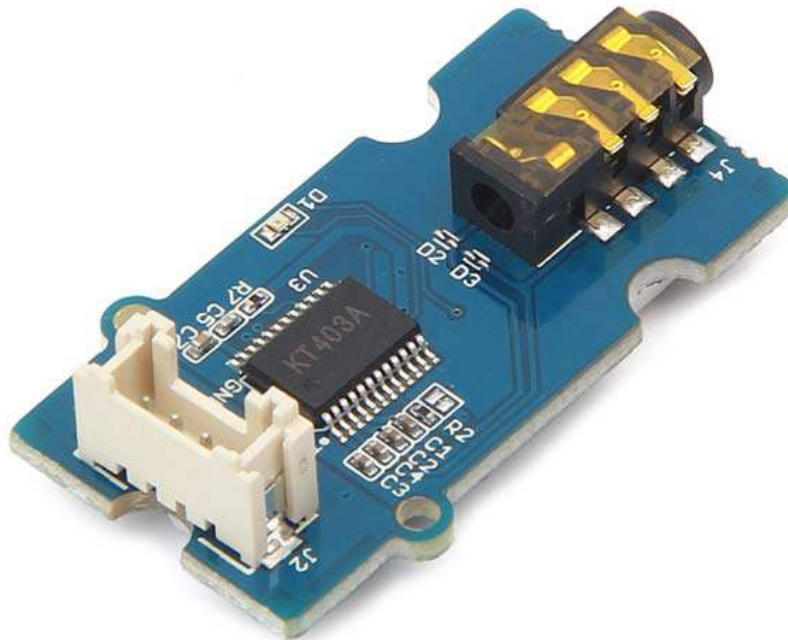


Grove - MP3 v2.0



Grove - MP3 v2.0 is a tiny-sized and compact audio module. It supports various audio file operations for an audio file of MP3, WAV and WMV format, such as random music playing, play music in specific files, and so on. With serial communication, you can use all predefined command or command combinations to do all operations on music files. This module also supports general file systems such as FAT16 and FAT32. It gets a Grove UART interface, a 3.5 mm audio jack and a micro-SD slot. With this module, you can add some noise to your silent applications.

Version

Product Version	Changes	Released Date
Grove - MP3 v1.0	Initial	April 28 2013
Grove - MP3 v2.0	Change to KT403A	Dec 15 2015

Features

- General operations on audio files
- On-board micro-SD slot and 3.5 mm audio jack
- Support sample rate of 8 / 11.025 / 12 / 16 / 22.05 / 24 / 32 / 44.1 / 48(KHz)
- 24-bit DAC output, 90 dB (at Max.) dynamic output range, signal-noise ratio at 85 dB
- MP3, WMV and WAV audio format and FAT16, FAT32 files system supported
- Embed 10 levels of equalization in total

Tip

More details about Grove modules please refer to [Grove System](#)


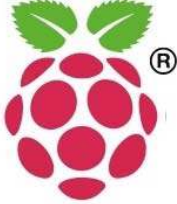



Application ideas

- Middle-level audio module for any applications.

Specifications

Parameter	Value
Input	5 V (DC)
Operating current (no signal output state)	less than 15 mA
Operating current	less than 40 mA
Chip	KT403A (datasheet)
Chip LDO output voltage	3.3 V
Chip output current	100mA(at Max.)
File formats supported	MP3, WAV, WMA
Maximum memory supported for SD card	8 GB
Sampling rate	8 / 11.025 / 12 / 16 / 22.05 / 24 / 32 / 44.1 / 48(KHz)

Platforms Supported

Arduino	Raspberry Pi	BeagleBone	Wio	LinkIt ONE
				

Caution

The platforms mentioned above as supported is/are an indication of the module's software or theoretical compatibility. We only provide software library or code examples for Arduino platform in most cases. It is not possible to provide software library / demo code for all possible MCU platforms. Hence, users have to write their own software library.

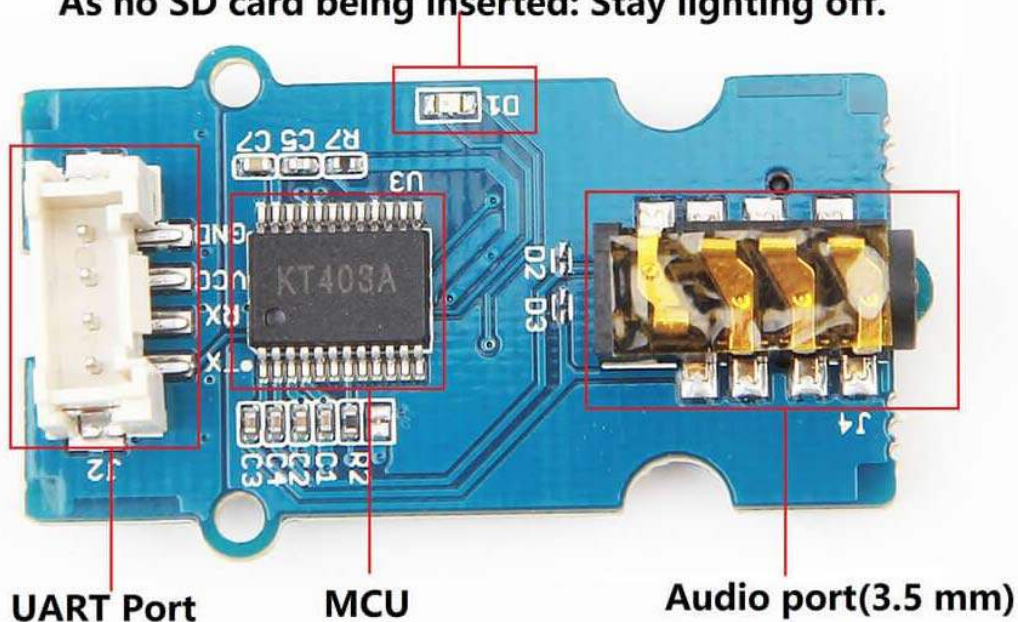
Hardware Overview

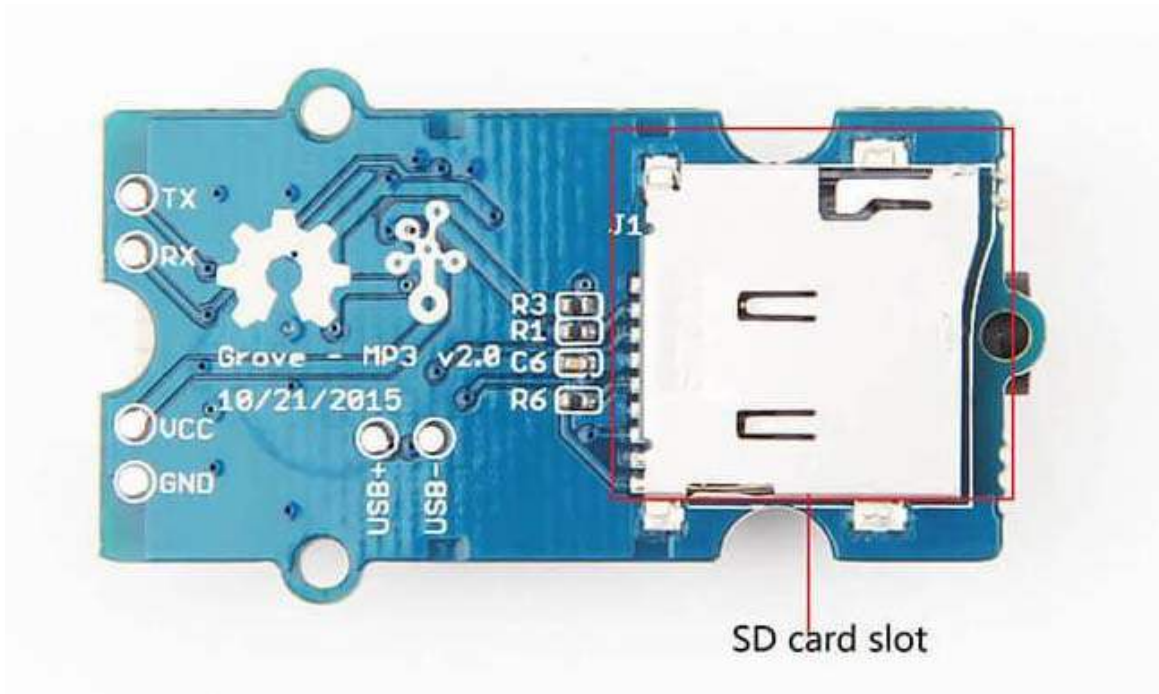
Status indicator

As SD card being inserted: Blink for playing music;

Light off at standby status; Stay lighting on for other situations;

As no SD card being inserted: Stay lighting off.





Getting Started

Note

If this is the first time you work with Arduino, we firmly recommend you to see [Getting Started with Arduino](#) before the start.

Play With Arduino

Hardware

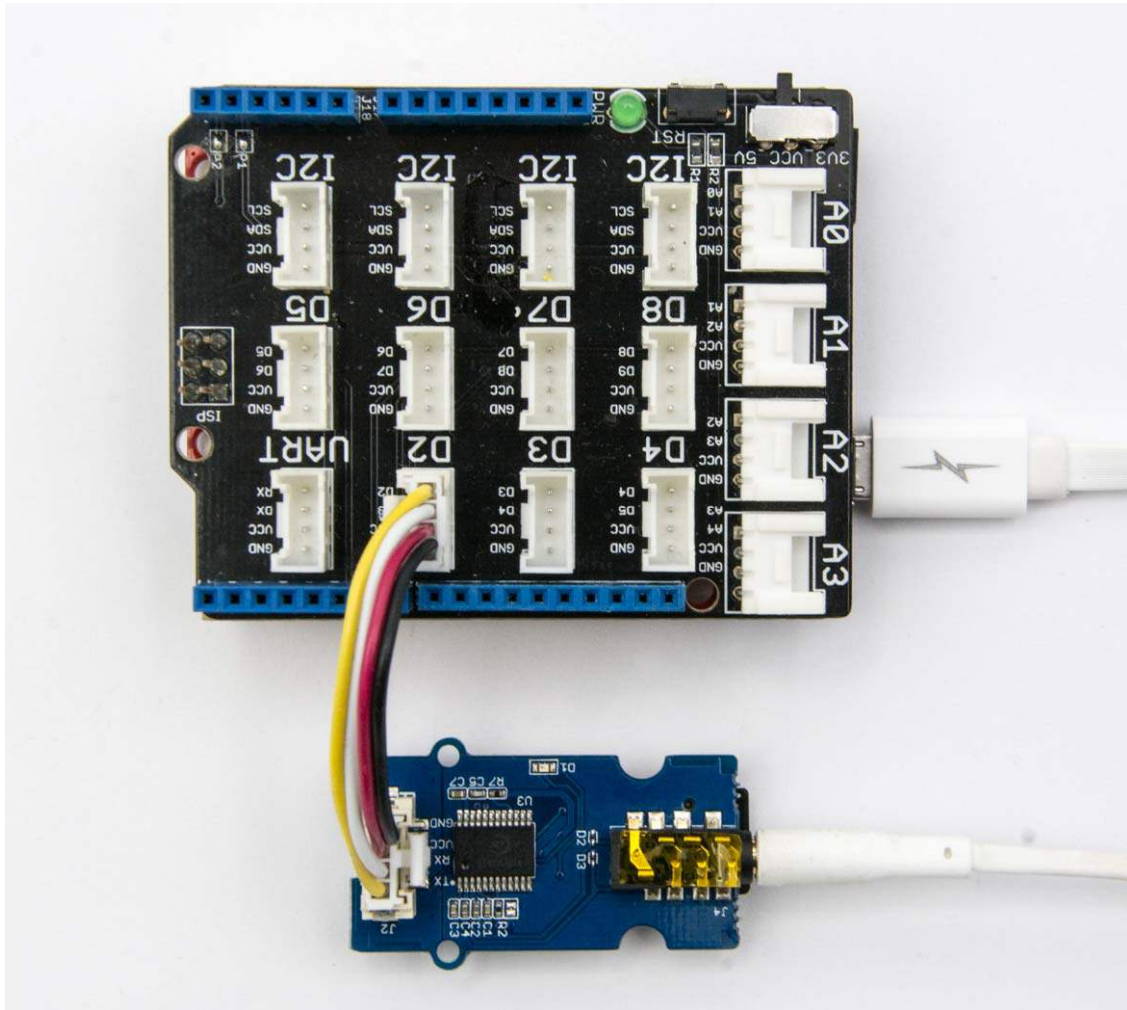
- **Step 1.** Prepare the below stuffs:

Seeduo V4.2	Base Shield	Grove - MP3 v2.0
		

Note

We need SD card with music inside and Headset/earphone or stereo with 3.5 mm audio jack as well.

- **Step 2.** Connect Grove-MP3 v2.0 to port D2 of Grove-Base Shield.
- **Step 3.** Plug Grove - Base Shield into Seeduino.
- **Step 4.** Connect Seeduino to PC via a USB cable.



Note
 If we don't have Grove Base Shield, We also can directly connect Grove-MP3 v2.0 to Seeduino as below.

Seeduino	Grove-MP3 v2.0
5V	Red
GND	Black
D3	White
D2	Yellow

Software

- **Step 1.** Download the [Grove-MP3 v2.0](#) from Github.
- **Step 2.** Refer [How to install library](#) to install library for Arduino.
- **Step 3.** Copy the code into Arduino IDE and upload. If you do not know how to upload the code, please check [how to upload code](#).

Here is the code.

```
1/*
2 * MP3_Play_Test.ino
3 * A quick start example for Grove-Serial MP3 Player V2.0
4 * Note: The MP3 chip of Grove-Serial MP3 Player V2.0 is different from Grove-Serial MP3 Player
5V1.0
6 * Description: This demo let you can send instruction 1-8 to control the Grove-Serial MP3 Player, via
7the serial port.
8 *
9 * Copyright (c) 2015 seeed technology inc.
10 * Author   : Wuruibin
11 * Created Time: Dec 2015
12 * Modified Time:
13 *
14 * The MIT License (MIT)
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31 * LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING
32FROM,
33 * OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN
34 * THE SOFTWARE.
35 */
36
37
38#include <SoftwareSerial.h>
39#include <MP3Player_KT403A.h>
40
41static uint8_t recv_cmd[8] = {};
42
43
44// Note: You must define a SoftwareSerial class object that the name must be mp3,
45//      but you can change the pin number according to the actual situation.
```

```

46 SoftwareSerial mp3(2, 3);
47
48 void setup()
49 {
50   mp3.begin(9600);
51   Serial.begin(9600);
52
53   while(!Serial);
54
55   Serial.println("Grove - Serial MP3 Demo");
56   Serial.println(
57     "Input command:\r\n\r\n"
58     "P[ ] play music by default index\r\n"
59     "Pm[ ] play music in MP3 folder by index\r\n"
60     "Pf[ ][ ] play music by specify folder and index\r\n"
61     "p Pause\r\n"
62     "R Resume\r\n"
63     "N Next\r\n"
64     "L Previous\r\n"
65     "I Loop\r\n"
66     "I Increase volume\r\n"
67     "D Decrease volumern\r\n");
68
69   delay(100);
70
71   SelectPlayerDevice(0x02); // Select SD card as the player device.
72   SetVolume(0x0E); // Set the volume, the range is 0x00 to 0x1E.
73 }
74
75 void loop()
76 {
77   uint8_t len = 0;
78   uint8_t i;
79
80   if(Serial.available())
81   {
82     char chr = '\0';
83     while(chr != '\n') // Blockly read data from serial monitor
84     {
85       chr = Serial.read();
86       // Serial.print(chr);
87       recv_cmd[len++] = chr;
88     }
89   }
90
91   if(len > 0)
92   {
93     // Print reveiced data
94     // Serial.print("Received cmd: ");
95     // for(i = 0; i < len; i++) {
96     //   Serial.print(recv_cmd[i]);
97     //   Serial.print(" ");
98     // }
99     // Serial.println();
100
101     switch (recv_cmd[0])

```

```

102 {
103     case 'P':
104         if(recv_cmd[1] == 'm')
105             {
106                 /**
107                  * Play music in "MP3" folder by index
108                  * example:
109                  * "Pm1" -> ./MP3/0001.mp3
110                  */
111                 PlayMP3folder(recv_cmd[2] - '0');
112                 Serial.print("Play ");
113                 Serial.write(recv_cmd[2]);
114                 Serial.println(".mp3 in MP3 folder");
115             }
116         else if(recv_cmd[1] == 'f')
117             {
118                 /**
119                  * Play specify folder and music
120                  * example:
121                  * "Pf11" -> ./01/001***.mp3
122                  */
123                 SpecifyfolderPlay(recv_cmd[2] - '0',recv_cmd[3] - '0');
124                 Serial.print("Play ");
125                 Serial.write(recv_cmd[3]);
126                 Serial.print("xxx.mp3");
127                 Serial.print(" in folder ");
128                 Serial.write(recv_cmd[2]);
129                 Serial.println();
130             }
131         }
132     else
133         {
134             /**
135              * Play music by default index
136              * example:
137              * "P1" -> ./***.mp3
138              */
139             SpecifyMusicPlay(recv_cmd[1] - '0');
140             Serial.print("Play xxx.MP3 by index ");
141             Serial.write(recv_cmd[1]);
142             Serial.println();
143         }
144     // Serial.println("Specify the music index to play");
145     break;
146     case 'p':
147         PlayPause();
148         Serial.println("Pause the MP3 player");
149         break;
150     case 'R':
151         PlayResume();
152         Serial.println("Resume the MP3 player");
153         break;
154     case 'N':
155         PlayNext();
156         Serial.println("Play the next song");
157         break;

```



```

158     case 'L':
159         PlayPrevious();
160         Serial.println("Play the previous song");
161         break;
162     case 'l':
163         PlayLoop();
164         Serial.println("Play loop for all the songs");
165         break;
166     case 'I':
167         IncreaseVolume();
168         Serial.println("Increase volume");
169         break;
170     case 'D':
171         DecreaseVolume();
172         Serial.println("Decrease volume");
173         break;
174     default:
175         break;
176 }
177
178 // clean data buffer
179 for(i = 0; i < sizeof(recv_cmd); i++) {
180     recv_cmd[i] = '\0';
181 }
182 }
    delay(100);

    // printReturnedData();
}

```

- **Step 4.** We will see the info at COM terminal as below.

The screenshot shows a terminal window titled "COM8" with a "Send" button. The terminal content displays the following text:

```

Grove - Serial MP3 Demo
Input command:

P[ ] play music by default index
Pm[ ] play music in MP3 folder by index
Pf[ ][ ] play music by specify folder and index
p Pause
R Resume
N Next
L Previous
l Loop
I Increase volume
D Decrease volumern
Resume the MP3 player

```

At the bottom of the terminal window, there are several controls: a checked "Autoscroll" checkbox, a "Newline" dropdown menu, a "9600 baud" dropdown menu, and a "Clear output" button.

Note

For advanced programming, you can [download](#) datasheet of chip KT403A.

- **Step 5.** Please key in the related command to play the music.

Resources

- **[Eagle&PDF]** [Grove-MP3_v2.0_Schematic files](#)
- **[Librarie]** [Grove-Serial MP3 Player V2.0 Libraries](#)
- **[Datasheet]** [KT403A Datasheet](#)

Projects

Arduino Based Security Project Using Cayenne: Arduino based Home Security Project. SMS/email alerts when intruder detected. Personalized messages for authorized personnel.

Leaf Piano: We made a piano using a touch sensor, as well as leaves for piano keys.

Tech Support

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