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UMLIFE CHILISON

UMLIFE DFPlayer Mini MP3 Player Audio Module and Speaker Instruction Manual

Model: CHILISON

1. Introduction

This manual provides detailed instructions for the UMLIFE DFPlayer Mini MP3 Player Audio Module and the accompanying 2W 8Ohm Internal Magnet Speakers. This module is designed for integration into various electronic projects, offering MP3, WAV, and WMA audio playback capabilities from TF cards or U disks. It can be controlled via I/O, serial, or AD button modes, making it suitable for use with microcontrollers like Arduino.

2. Package Contents

- 3 x DFPlayer Mini MP3 Player Audio Modules
- 5 x 2W 8Ohm Internal Magnet Speakers

3. Specifications

Feature	Description
Module Type	DFPlayer Mini MP3 Player Audio Module
Supported Audio Formats	MP3, WAV, WMA
Storage Support	TF Card (FAT16, FAT32 file system), U Disk
Sampling Rates (kHz)	8, 11.025, 12, 16, 22.05, 24, 32, 44.1, 48
DAC Output	24-bit, 90dB dynamic range, 85dB SNR
Control Modes	I/O control, Serial mode (UART), AD button control
Speaker Type	Internal Magnet Speaker
Speaker Power	2W
Speaker Impedance	8 Ohm

Feature	Description
Module Dimensions	Approximately 0.78 x 0.78 x 0.51 inches
Speaker Dimensions	Approximately 40mm (1.57in) diameter, 5mm (0.19in) thickness
Hardware Interface	USB (for data transfer to storage)
Compatible Devices	Personal Computer, Laptop, Arduino, Single-Board Computers, Other Microcontrollers

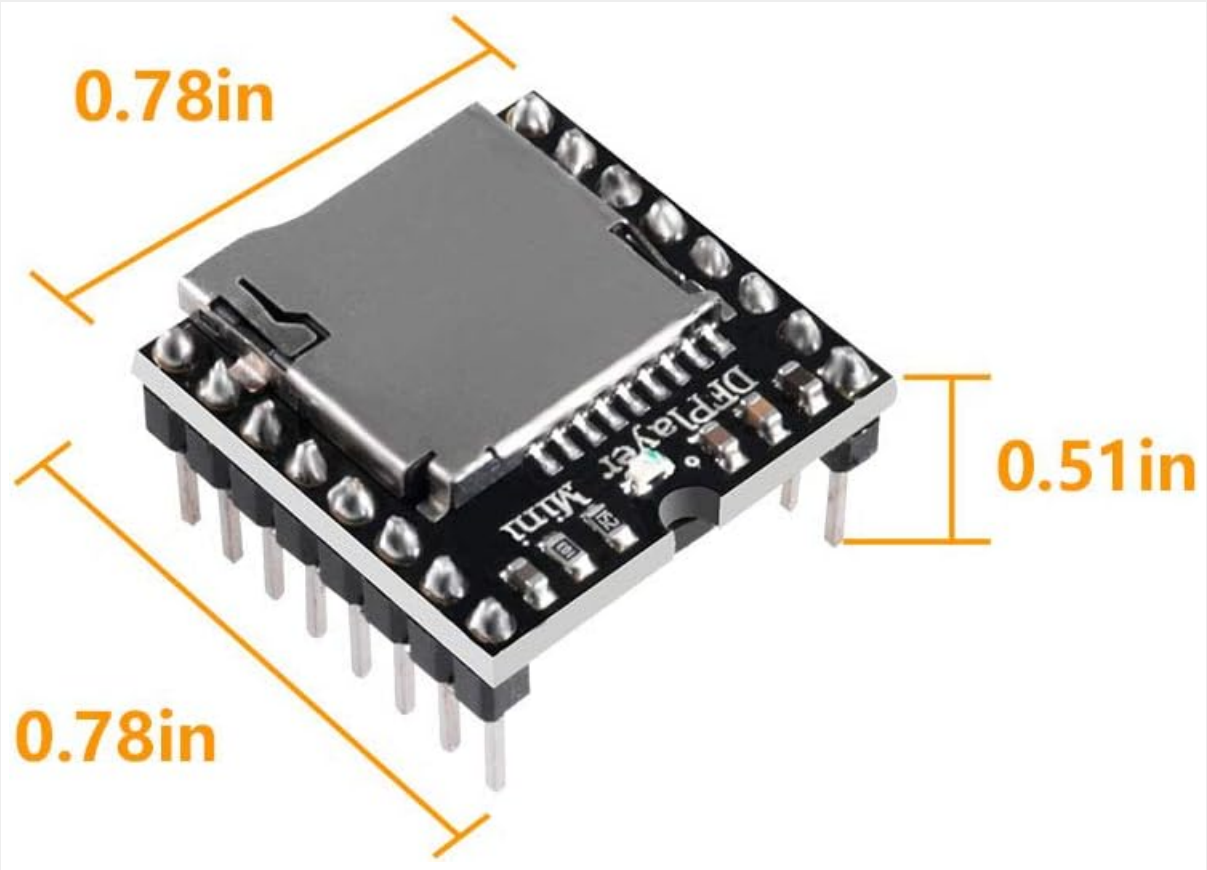

Figure 3.1: DFPlayer Mini Module with dimensions (0.78 x 0.78 x 0.51 inches).

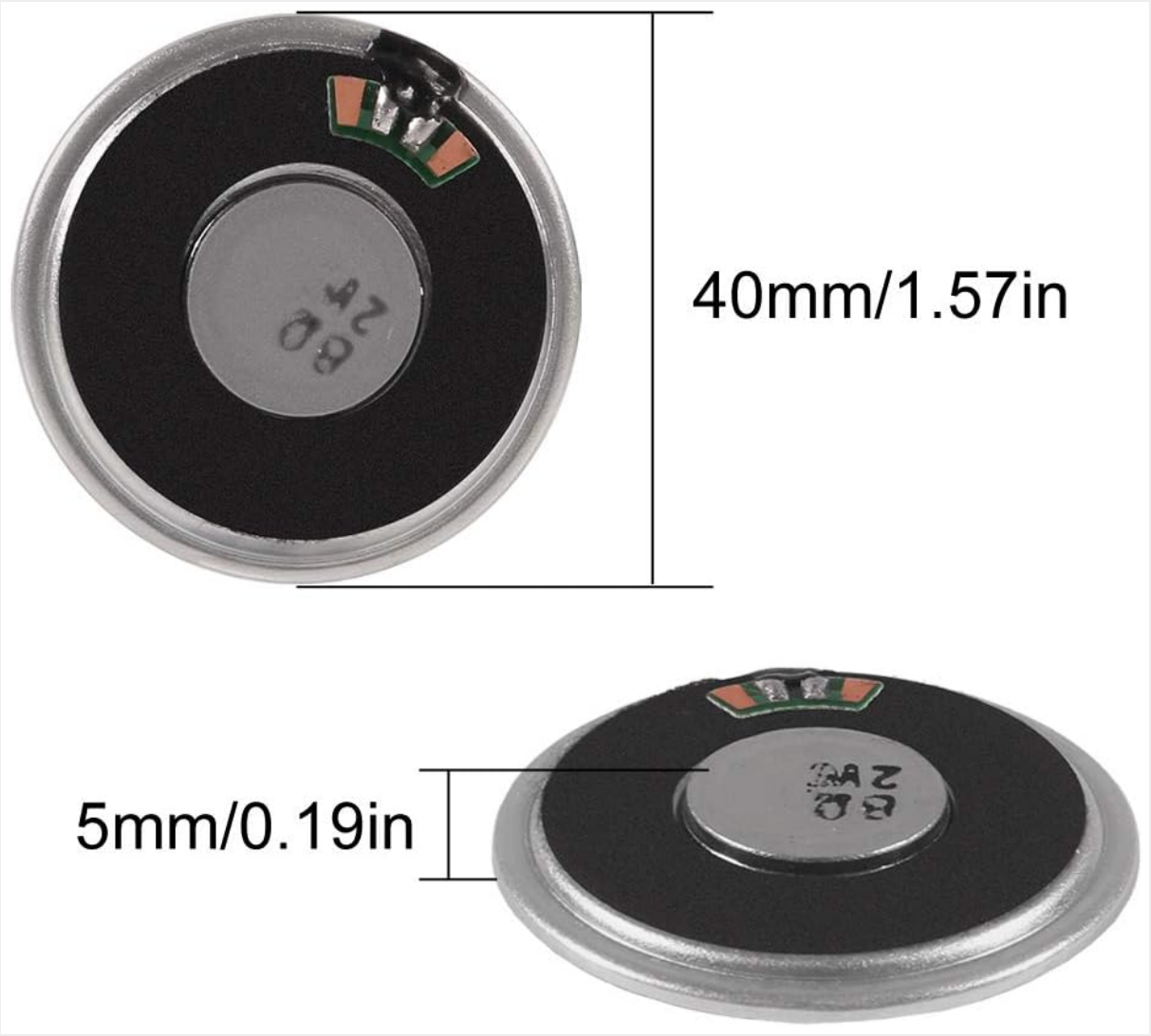

Figure 3.2: Speaker with dimensions (40mm diameter, 5mm thickness).

4. Setup

4.1 Preparing the Audio Files

1. Format a TF card (MicroSD card) or U disk to FAT16 or FAT32 file system. A 32GB card is typically supported.
2. Convert audio files to a constant bit rate (CBR) MP3, WAV, or WMA format. Variable bit rate (VBR) files may cause playback issues.
3. For playback from the root directory, name files with a 4-digit number (e.g., **0001.mp3**, **0002.mp3**).
4. For organized playback using folders, create folders named with 2-digit numbers (e.g., **01**, **02**). Inside these folders, name files with 3-digit numbers (e.g., **001.mp3**, **002.mp3**).
5. Insert the prepared TF card into the DFPlayer Mini module's slot.

4.2 Connecting the Speaker

- Connect the speaker's positive terminal to the **SPK_1** pin and the negative terminal to the **SPK_2** pin on the DFPlayer Mini module for mono audio.
- Ensure the speaker is rated for 2W and 8 Ohm impedance for optimal performance with the module's built-in amplifier.

Figure 4.1: Front (left) and back (right) view of the internal magnet speaker.

4.3 Power Supply and Microcontroller Connection

- The DFPlayer Mini requires an external power supply. Powering directly from a microcontroller's USB port may be insufficient. Ensure the small red LED on the module illuminates when powered, indicating proper power.
- Connect the module's **VCC** and **GND** pins to a stable 3.2V-5V power source.
- For serial communication with a microcontroller (e.g., Arduino):
    - Connect the module's **RX** pin to the microcontroller's **TX** pin (e.g., Arduino D1).
    - Connect the module's **TX** pin to the microcontroller's **RX** pin (e.g., Arduino D0).
    - It is recommended to place 1K Ohm resistors in series on both the RX and TX lines to protect the module and microcontroller.
    - Ensure all grounds are connected together (module, microcontroller, external power supply).
- For I/O control, connect the module's **IO_1** and **IO_2** pins to digital pins on your microcontroller. Grounding **IO_1** or **IO_2** can trigger next/previous track playback.
- For AD button control, connect buttons with appropriate resistor networks to the module's **ADKEY_1** and **ADKEY_2** pins.

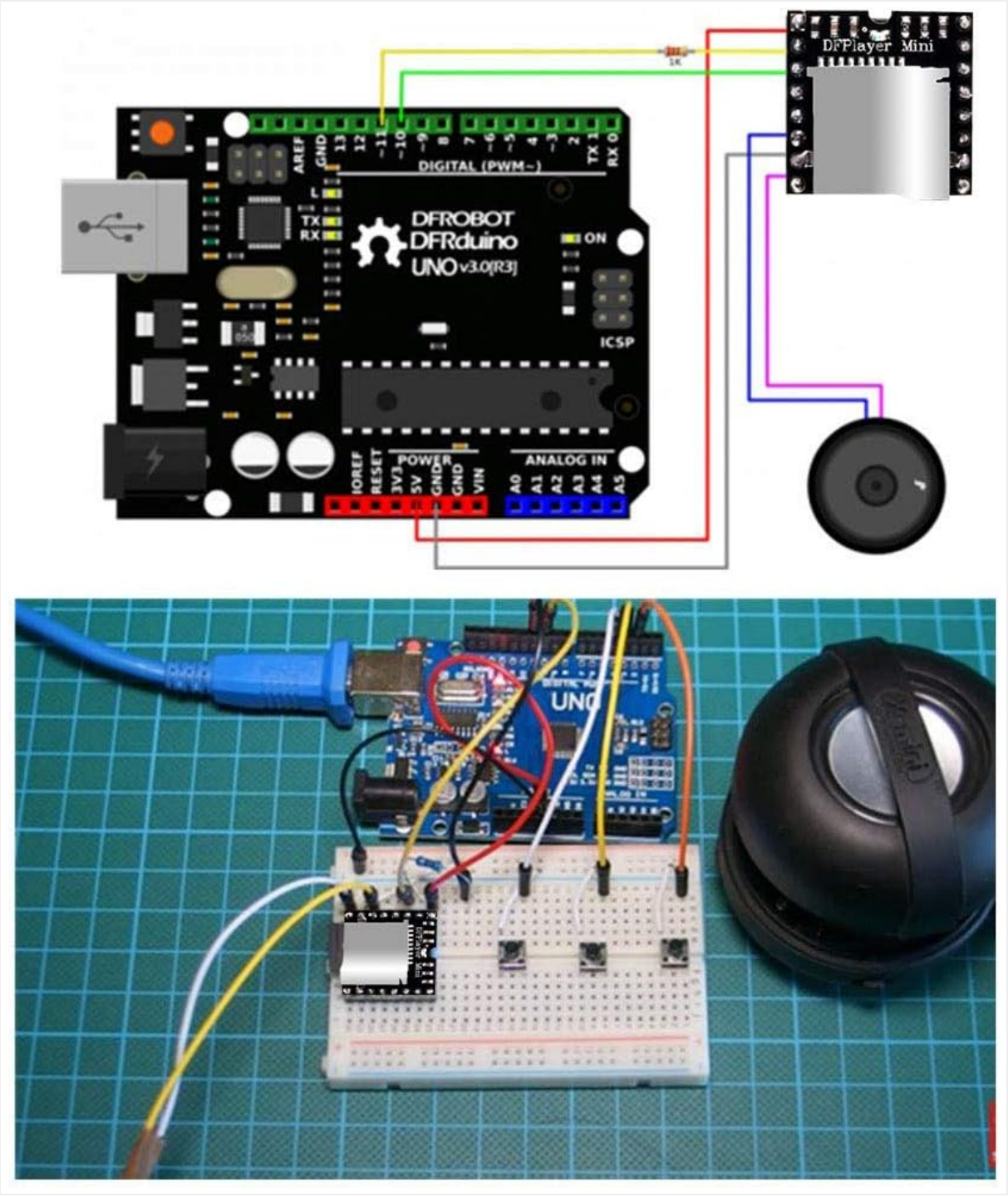

Figure 4.2: Example wiring diagram showing DFPlayer Mini connected to an Arduino UNO and a speaker.

5. Operating Instructions

5.1 Standalone Operation

The DFPlayer Mini can operate in a basic standalone mode. By grounding specific I/O pins, you can trigger playback of tracks. For example, momentarily grounding the **IO_1** pin might play the next track, and **IO_2** the previous. Longer grounding of these pins can adjust volume. Refer to the DFPlayer Mini datasheet for specific pin functions in standalone mode.

5.2 Serial Control (with Microcontroller)

For advanced control, use the serial communication mode. This allows a microcontroller to send commands to the DFPlayer Mini to play specific tracks, adjust volume, set playback modes, and more. Libraries are available for popular microcontrollers like Arduino to simplify this process.

- **Initialization:** After powering on, initialize the serial communication between your microcontroller and the DFPlayer Mini.
- **Playing Tracks:** Send commands to play a specific track number (e.g., "play track 1", "play track in folder 01, track 001").
- **Volume Control:** Send commands to set the volume level (0-30).
- **Playback Control:** Commands for pause, resume, next track, previous track, loop, and stop are available.
- Consult the official DFPlayer Mini documentation or relevant microcontroller library examples for a complete list of serial commands and their usage.

5.3 AD Button Control

The AD button control mode allows for simple button-based interaction without complex serial programming. By connecting buttons with specific resistor values to the ADKEY pins, different functions (e.g., play/pause, next, previous, volume up/down) can be triggered. This mode uses analog voltage levels to detect button presses.

6. Maintenance

- **Handling:** Handle the module and speakers with care to avoid physical damage to components or solder joints.
- **Environment:** Keep the module and speakers in a dry environment, away from moisture, dust, and extreme temperatures.
- **Cleaning:** If necessary, gently clean the module with a soft, dry brush or compressed air. Avoid using liquids or harsh chemicals.
- **Storage:** When not in use, store the components in anti-static bags to prevent electrostatic discharge damage.

7. Troubleshooting

- **No Power / Module LED Not Lit:**
  - Ensure the power supply is providing sufficient voltage (3.2V-5V) and current.
  - Verify all power connections (**VCC** and **GND**) are secure and correctly polarized.
  - Use an external power supply; microcontroller USB power may be insufficient.
- **No Sound / Distorted Sound:**
  - Check speaker connections to **SPK_1** and **SPK_2**. Ensure they are not shorted and are correctly wired.
  - Verify the speaker impedance (8 Ohm) and power rating (2W) match the module's output.
  - Ensure the volume is not set to zero via software commands or AD button control.
  - Check the audio files on the TF card for corruption or incorrect format (e.g., VBR MP3s can be problematic; convert to CBR).
- **Serial Communication Issues (with Arduino/Microcontroller):**
  - Double-check **RX** to **TX** and **TX** to **RX** connections.
  - Ensure 1K Ohm resistors are in series on both serial lines to prevent damage and improve signal integrity.
  - Verify that all **GND** connections are common.
  - Confirm the correct serial library is being used (e.g., *DFPlayer Mini MP3 by DFRobot* or *AltSoftSerial* for specific pins).
  - Check baud rates in your code match the module's requirements (typically 9600).

- Ensure the TF card is properly formatted (FAT16/FAT32) and audio files are named correctly (e.g., **0001.mp3** or **01/001.mp3**).
- Some modules may have firmware variations; if persistent issues occur, try different libraries or consult community forums for specific module versions.

- **SD Card Not Detected / Files Not Playing:**
  - Ensure the TF card is fully inserted into the slot.
  - Verify the TF card is formatted to FAT16 or FAT32.
  - Check that audio files are in supported formats (MP3, WAV, WMA) and named according to the specified conventions (e.g., 4-digit numbers in root, 3-digit numbers in 2-digit folders).
  - Try a different TF card, as some cards may have compatibility issues.

8. Warranty and Support

This product is manufactured by UMLIFE. For technical support or inquiries regarding your DFPlayer Mini MP3 Player Audio Module and Speakers, please contact the seller, Umlife US, through the platform where the purchase was made. Please refer to your purchase documentation for specific return and warranty policies, which typically include a 30-day return/replacement period.
Manufacturer: UMLIFE
Seller: Umlife US