

Application Notes

I just want it to play a sound when the button is pressed....

Name the sound file "001.mp3" and copy it to the flash card. Insert the card into the system and it's ready to work! If you want to play different files sequentially (one per trigger), just name the rest of the files "002.mp3", "003.mp3" and so on.

I want my file(s) to loop...

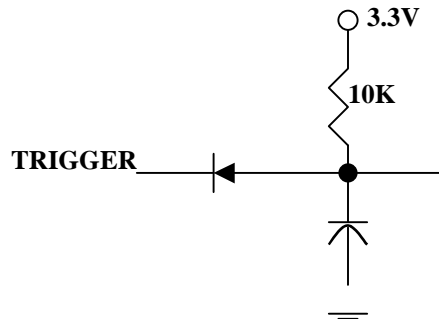
Name the sound file(s) 001.mp3, 002.mp3... and put the text "DNO" into the MODE.TXT file.

Random Play...

Random Play can be achieved by using either the DIC mode (for normally open contacts) or the DIO mode (for normally closed contacts.) The randomness is actually created by the variation in the duration of the momentary opening or closure of the contacts. For example, pressing a normally open push button in the DIC mode will apply a constant trigger to the unit, causing it to play a file. However, before the file can be played, the unit gets interrupted by the same constant trigger and tries to play the next file. This interrupting process goes on until the push button is released. At that moment, the unit is free to play whatever file it happens to land on. Random Play is not available when the unit is in the Timer Mode.

DC Voltage Triggering

The diagram below illustrates the internal circuitry of the trigger input. The input is considered OPEN when the trigger voltage is either floating or higher than 2.7V. The input is considered CLOSED when the trigger voltage is at or near zero volts (ground.) This design allows most devices with DC voltage output to be used for triggering, but there are some exceptions.



Consider the output of certain security alarms. It stays floating (no voltage) when not triggered, and rises to 12V or 24V when triggered. In both cases the trigger input is considered OPEN. Therefore, such devices cannot trigger the unit directly. An external relay must be added to ground the trigger input when the device outputs 12 or 24V.

TM21 User's Manual

Revision. 09/2011



Technical Specifications

Audio Output

Stereo/Mono CD quality

Max. Output Power

Up to 6W (MONO in Q mode) or 3W per channel with 4 Ohm load

Supported File Types

MP3 (ISO 11172-3 compliant)

Trigger Input

One input for push button, motion sensor, or DC control voltage

Max. Number of Sound Files

99

Flash Card Type

SD formatted with FAT16

SDHC formatted with FAT32

* Mini and micro SD cards are also acceptable if an adaptor is used.

Max. Flash Card Capacity

2GB for SD, 32GB for SDHC

Max. Recording Time

About 540+ hours of 128Kbps MP3 audio using a 32GB SDHC card

Supply Voltage

10 ~ 15 VDC regulated

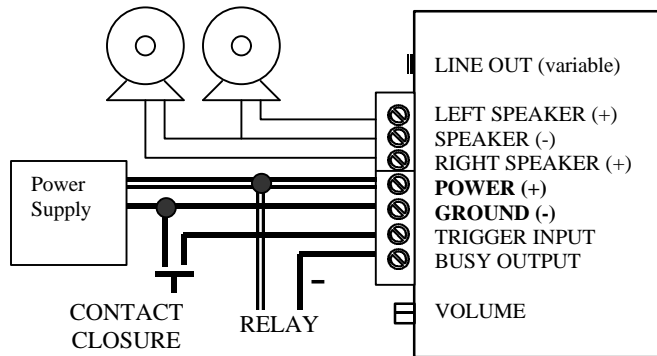
Typical Standby Current

120 mA

Physical Dimensions

4.25" x 2.75" x 1.6" (excluding mounting ears)

Typical Wiring Diagram



Line Out Jack

The output (level set by volume knob) from this 3.5mm stereo phone jack can be used to feed an external power amplifier.

Speaker Outputs

The speaker outputs are single ended. Load impedance is 4 to 8 Ohms.

Power (9 or 12 VDC) & Ground

Be sure the supply voltage is within the specifications or the unit may be damaged.

Trigger Input

Both a contact closure to GROUND or a 0VDC signal will trigger the TM21. The trigger is normally pulled high (internally) to 2.9 VDC.

Busy Output

This open collector output is activated during audio playback. Maximum load is 100 mA. This output can be used to turn on an external relay that further controls a device such as a motor or a light.

Volume Knob

Turn the knob clockwise to increase the output level. It affects both the speaker output AND the LINE OUT.

SD Card

Both SD (FAT16) and SDHC (FAT32) cards are supported. Files on the flash card should be properly numbered (see Numbering Files section). Be sure to turn the unit off before inserting the card (face up). To remove the card, push it again.

Numbering Files

Sound files must be numbered consecutively starting from 001, even if only one file is used. The 3-digit file number must be added at the beginning of the filename, e.g. "001 Anyname.mp3".

Sound files are played according to the numbering sequence. The first trigger plays file 001, the second trigger plays file 002 and etc. When the next file number is missing, the sequence restarts from 001.

System Configuration

The system can be configured for different modes of operation by adding a simple text file named MODE.TXT on the flash card. Put only three **UPPERCASE** letters in the file (as described below) and save the file as a "text document". If there is no MODE.TXT on the flash card, the system will operate in the default, DNC mode.

First Configuration Letter

The first letter should always be a "D" except for the Timer Mode (see Timer Mode section).

Second Configuration Letter

The second letter determines whether the playback is holdable or not. When holdable, the playback continues for as long as the trigger is applied. When not holdable, the playback always continues to the end of the file (whether the trigger is applied or not) unless it's interrupted by applying a new trigger.

"H" = Holdable

The playback is holdable – plays only when trigger is applied.

"T" = Interruptible

The playback is not holdable but can be interrupted by applying a new trigger.

"N" = Non-interruptible

The playback is not holdable and cannot be interrupted by applying a new trigger.

Third Configuration Letter

The third letter determines how and when the trigger is applied.

"O" = Open.

A constant trigger is applied when the contacts stay open.

"C" = Closed.

A constant trigger is applied when the contacts stay closed.

"M" = Make.

A single-shot trigger is applied at the moment when the contacts make.

"B" = Break.

A single-shot trigger is applied at the moment when the contacts break.

Fourth Configuration Letter (Q mode)

By placing a Q as the fourth character, the left channel output is inverted to create virtual surround for stereo files and a more powerful output for mono files when a SINGLE speaker is attached to the LEFT+ and RIGHT+ speaker outputs.

Timer Mode

The system can be made to automatically play at preset, fixed intervals. This is called the Timer Mode which is configured by using "Txx" for the configuration letters, where "xx" is a two digit number specifying the interval in minutes. For example, "T60" sets the interval to 60 minutes, so the system will automatically play a file every 60 minutes, starting from file 001.

Although the Timer Mode does not require manual triggering, you can still manually trigger the system when it's idle. In the idle period, the system works as if it's in the DNC mode. After the system fulfills the manual triggering, the idle period resets (restarts from the beginning).