Timer (idle) Mode

The system can be made to automatically play at preset, fixed idle intervals. This is called the Timer Mode which is configured by using “Txx” for the configuration letters in the MODE.TXT file, where “xx” is a two digit number specifying the idle interval in minutes. For example, “T30” sets the idle interval to 30 minutes, so the TM21 will automatically start playing a file 30 minutes after the last one ended, starting from file 001. In Timer Mode you can still manually trigger the system when it is idle since the TM21 functions as if it was in DNC mode. Upon the completion of a button-activated file, the idle period is reset.

Application Notes:

Looping MP3 files

Name the sound file(s) **001.mp3, 002.mp3**… and put the text “**DNO**” into the MODE.TXT file.

Random Play Mode

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.

Battery Mode

When operating from a battery, move the jumper on the circuit board from J1 to J2 and connect the TRG (trigger) and the BSY (busy) terminals together. In this mode, the board is powered down until triggered. Note: In this mode there will be some noise generated by the amplifier when it is powered ON and OFF. Also, only DNC mode is supported.

TM21 User’s Manual

Revision. 2021/02

F/W 1.6

Technical Specifications

Max. Output Power

6W per channel with 12V power and 4 Ohm load, 10%THD
8W (MONO in Q mode) 12V power and 8 Ohm load, 10% THD

Supported File Types

MP3 (MPEG-1 LEVEL 3 up to 44.1KHz, 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

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

Supply Voltage

10 ~ 15 VDC regulated

Typical Current

120 mA in standby and average during usage is 200mA

Physical Dimensions (excluding mounting wings) (W x D x H)

80mm x 73mm x 30 mm
3.1’’ x 2.75’’ x 1.3”

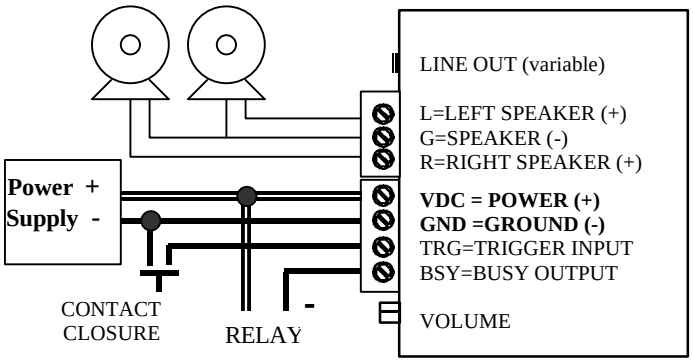
Physical Dimensions (including mounting wings) (W x D x H)

95mm x 92mm x 30 mm
3.7’’ x 3.2’’ x 1.3”

Mounting wings on the side of the TM21

Hole size: 1/8” (3.8mm)
Center to center distance between holes: 3-7/16” (86.7mm)

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.

VDC is the DC Power (10 to 15 VDC)

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

GND is the GROUND

TRG (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.

BSY (Busy Output)

This open collector output from a transistor 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 (D)

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

***Second Configuration* Letter (H, I or N)**

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

"H" = Holdable

The playback only plays when a trigger is provided.

"I" = Interruptible

The playback can be interrupted by a new trigger.

"N" = Non-interruptible

The playback cannot be interrupted by a new trigger.

Third Configuration Letter (O, C, M or B)

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

"O" = Open.

A constant trigger is provided when the trigger is HIGH (open).

"C" = Closed.

A constant trigger is provided when the trigger is LOW (grounded).

"M" = Make.

A single trigger is provided when trigger is LOW (grounded).

"B" = Break.

A single trigger is provided when the trigger goes from LOW to HIGH.

Fourth Configuration Letter (Q mode)

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

Background Music (firmware 1.3 or higher)

If there is a file called "000.mp3" on the flash card, the player will automatically loop this file but can be interrupted by a trigger.

Terminate Mode (firmware 1.5)

If the mode.txt file consists of "DT" then a button press while the audio is playing will terminate the audio file.