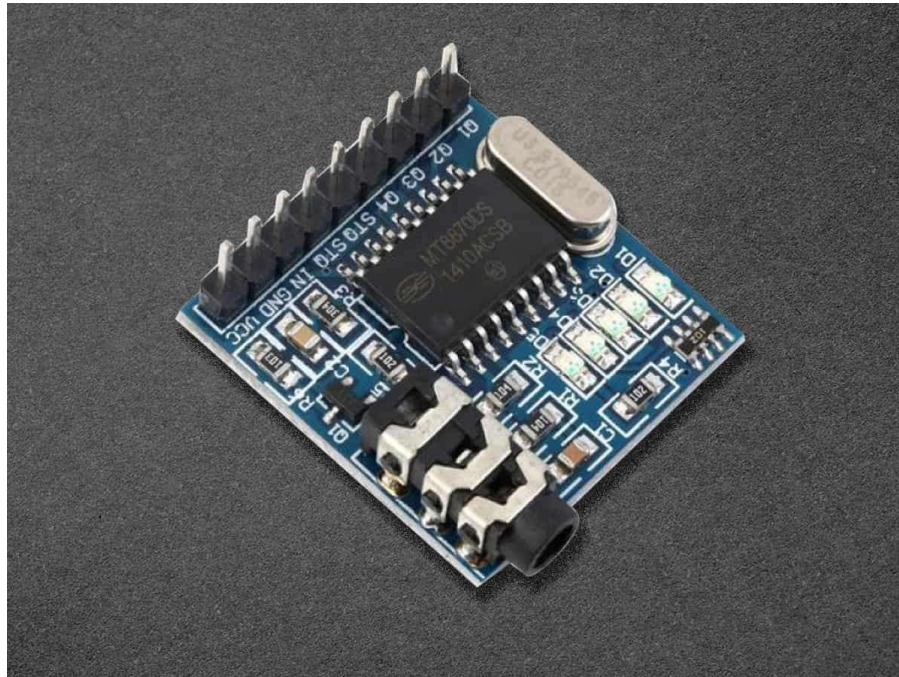


DTMF (MT8870) Interfacing with AVR ATmega16/ATmega32.

Overview of DTMF



DTMF (Dual Tone Multi-Frequency) is a telecommunication signaling technique that uses a mixture of two pure tones (pure sine waves) sounds. It is used in phones to generate dial tones.

Whenever a key is pressed, a combination of 2 sine waves (one of lower frequency and one of higher frequency) is transmitted. There are 8 different frequencies, 4 from the higher frequency range and 4 from the lower frequency range. This gives us 16 different combinations of lower and higher frequencies to transmit for 16 keys.

MT8870 is a DTMF decoder; it helps decodes the key pressed.

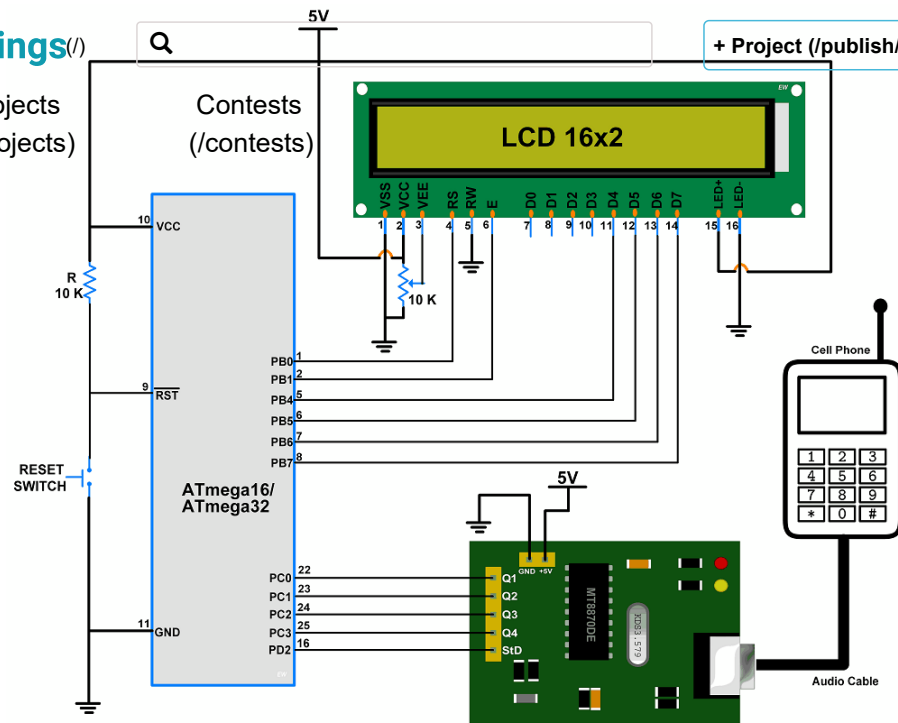
It consists of a band split filter section that helps separate the input signal into a lower frequency and a higher frequency and in turn, helps identify the key pressed.

It gives a 4-bit digital output. This gives 16 possible outputs for 16 different keys.

Microcontroller can read these 4 bits to detect which key has been pressed.

For more information about the MT8870 DTMF decoder and how to use it, refer to the topic **MT8870 DTMF Decoder** (<http://electronicwings.com/sensors-modules/mt8870-dtmf-decoder>) in the sensors and modules section.

Connection Diagram of MT8870 with ATmega16/32



Interfacing MT8870 DTMF Decoder With ATmega 16/32

MT8870 DTMF Tone Detection Using ATmega16/32

Here, we are going to interface the MT8870 DTMF receiver module to AVR ATmega16/ATmega32 which will receive key pressed input over a telephone line and display that decoded key on LCD16x2.

MT8870 DTMF Tone Detection Code for ATmega16/32



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<http://www.electronicwings.com>

*/

```
* ATmega16_DFMF_interfacing.c
*/

#define F_CPU 8000000UL
#include <avr/io.h>
#include <util/delay.h>
#include <avr/interrupt.h>
#include <stdbool.h>
#include "LCD16x2_4bit.h"

bool keydetect = false;


ISR(INT0_vect)
{
    keydetect = true;
    _delay_ms(50);          /* Software debouncing control delay */
}
```

Video of DTMF Tone Detection using ATmega16/32 and MT8870


Components Used

Powered By (https://www.mouser.in?utm_source=electronicswing&utm_medium=display&utm_campaign=mouser-componentslisting&utm_content=0x0)

ATmega 16
ATmega 16 X 1




(https://www.mouser.in/ProductDetail/Microchip-Technology-Atmel/ATMEGA16L-8PU?qs=%2Fha2pyFaduiGCJtTvs2wv8fVZbVAaLU7lq%2FglTS0tALAx6fMenLvg%3D%3D&utm_source=electronicswing&utm_medium=display&utm_campaign=mouser-componentslisting&utm_content=0x0)




Datasheet (/components/atmega-16/1/datasheet)

Atmega32
Atmega32 X 1



(https://www.mouser.in/ProductDetail/Microchip-Technology-Atmel/ATMEGA32-16PU?qs=aqrrBurbvGdpkmgj7RWmsQ%3D%3D&utm_source=electronicswing&utm_medium=display&utm_campaign=mouser-componentslisting&utm_content=0x0)



Datasheet (/components/atmega32/1/datasheet)

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MT8870 DTMF Decoder

MT8870 is a DTMF (Dual Tone Multi-Frequency) re...

X 1

(https://www.mouser.com/ProductDetail/Microchip-Microsemi/MT8870DS1?qs=6jAvgNDGUA8thylXPlIMbQ%3D%3D&utm_source=electronicswing&utm_medium=display&utm_campaign=mouser-componentslisting&utm_content=0x0)

Datasheet (/components/mt8870-dtmf-decoder/1/datasheet)

LCD16x2 Display

LCD16x2 Display

X 1

(https://www.mouser.com/ProductDetail/Adafruit/1447?qs=XAKIUOoRPe6ACImsjw7y7g%3D%3D&utm_source=electronicswing&utm_medium=display&utm_campaign=mouser-componentslisting&utm_content=0x0)

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ATmega16 DTMF interfacing project file

Dow (/api/download/platform-attachment/171)id


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nload-orm-attachment/172\)
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2019-04-25 14:46:44

How to display more one character dtmf on lcd?

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lokeshc

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2019-04-25 15:59:59

Exactly not getting you want to say? Will you please elaborate

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ikautsar2212

(/users/ikautsar2212/profile)
2019-05-30 20:17:11

I mean, i need to print on lcd more than one character of dtmf. For example, when i press "#01". The microcontroller send that character to lcd. So that LCD shown that character was i pressed.

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