Front. Cur. Trends. Engg. Tech. SI:1, pp. 45 – 46 (2016)
OPEN ACCESS **ISSN: *2456 – 1185*** Available online: www.fctet.in

Note on RECENT TECHNOLOGIES

An International Open Access Journal
Published by ACET

Modern E- Aid to Dementia patients

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Abstract: There can estimated 46.8 million people worldwide living with dementia in 2015.And this number is expected to almost double every 20 years.Every year over 9.9 million new cases of dementia is note,implying one new case every 3.2 seconds.These people have difficulty in performing their daily chores as they tend to forget the location of items that they daily use.Our device eliminates the need for these people to remember the location of the items that are daily in use.The key idea is to use Multi channel RF transmitter and receiver. RF module operates in the frequency range which varies between 30 KHz and 300 GHz.The project requires RF remote that is interfaced to microcontroller(of 8051 family)on transmitter side which sends ON/OFF signals to the receiver.At the receiver side a micro speaker is made to produce a sound and the receiver setup is attached to all the items that are daily in use.Thus the micro speakers connected with receiver section can be turned ON/OFF by operating remote switches on transmitter wirelessly.

Keywords: *RF transmitter and receiver, RF module, 8051 microcontroller*

1 .INTRODUCTION

The RF module, as the name suggests, operates at Radio Frequency. The corresponding frequency range varies between 30 kHz & 300 GHz. In this RF system, the digital data is represented as variations in the amplitude of carrier wave. This kind of modulation is known as Amplitude Shift Keying (ASK). Transmission through RF is better than IR (infrared) because of many reasons. Firstly, signals through RF can travel through larger distances making it suitable for long range applications. Also, while IR mostly operates in line-of-sight mode, RF signals can travel even when there is an obstruction between transmitter & receiver (Fig. 1). Next, RF transmission is more strong and reliable than IR transmission. RF communication uses a specific frequency unlike IR signals which are affected by other IR emitting sources. This RF module comprises of an RF Transmitter and an RF Receiver. The transmitter/receiver (Tx/Rx) pair operates at a frequency of 434 MHz An RF transmitter receives serial data and transmits it wirelessly through RF through its antenna connected at pin4. The transmission occurs at the rate of 1Kbps - 10Kbps.The transmitted data is received by an RF receiver operating at the same frequency as that of the transmitter. The RF module is often used alongwith a pair of encoder/decoder. The encoder is used for encoding parallel data for transmission feed while reception is decoded by a decoder. HT12E-HT12D, HT640-HT648, etc. are some commonly used encoder/decoder pair ICs

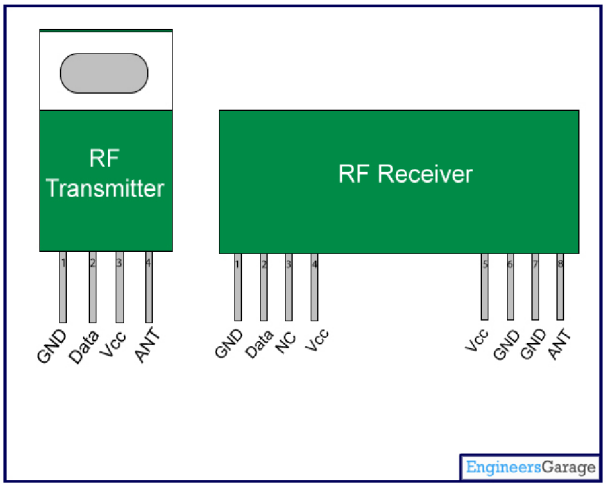

Fig 1. RF transmitter & receiver

2. PIN DESCRIPTION

RF Transmitter

Pin No	Function	Name
1	Ground (0V)	Ground
2	Serial data input pin	Data
3	Supply voltage; 5V	Vcc
4	Antenna output pin	ANT

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RF Receiver

Pin No	Function	Name
1	Ground (0V)	Ground
2	Serial data output pin	Data
3	Linear output pin; not connected	NC
4	Supply voltage; 5V	Vcc
5	Supply voltage; 5V	Vcc
6	Ground (0V)	Ground
7	Ground (0V)	Ground
8	Antenna input pin	ANT

3. HT12E AND HT12D DECODER

HT12E has a transmission enable pin which is active low. When a trigger signal is received on TE pin, the programmed addresses/data are transmitted together with the header bits viaan RF or an infrared transmission medium. HT12E begins a 4-word transmission cycle uponreceipt of a transmission enable. This cycle is repeated as long as TE is kept low. As soonas TE returns to high, the encoder output completes its final cycle and then stops. CCOCNVHT12E has a transmission enable pin which is active low. When a trigger signal is receivedon TE pin, the programmed addresses/data are transmitted together with the header bits via (Fig. 2 & 3).

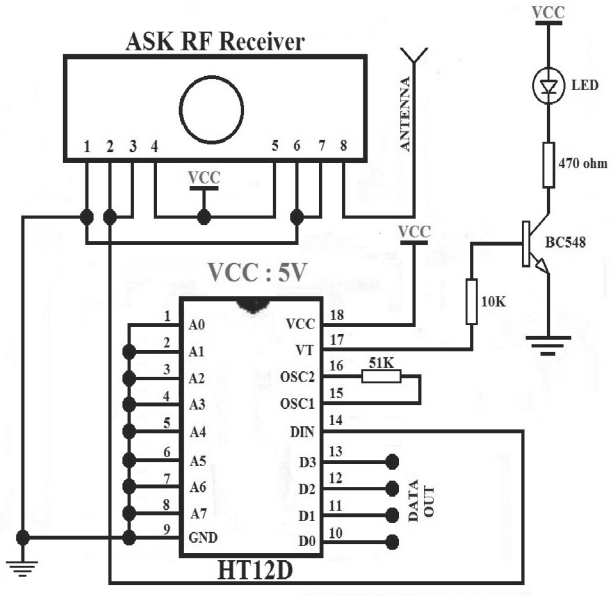

Fig 2. Block diagram of HT-12D decoder

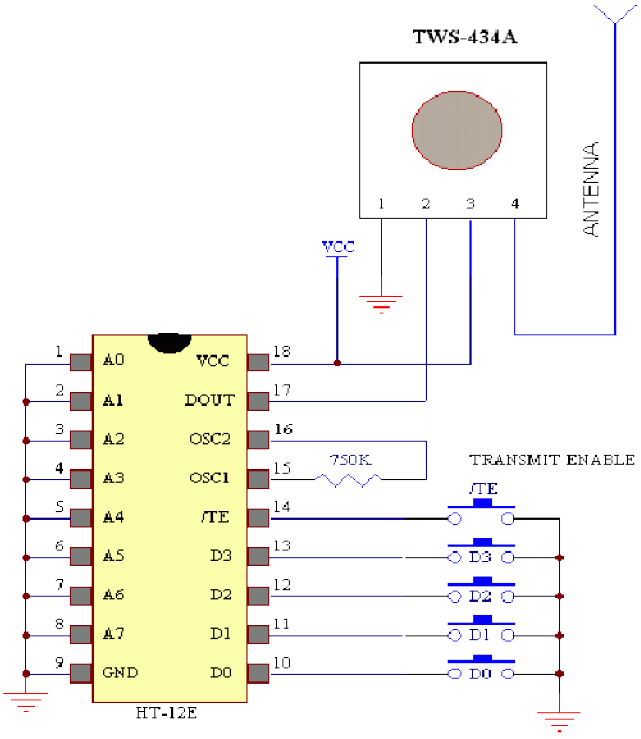

Fig 3. HT-12E block diagram

4. CONCLUSION

Assistive technology can have considerable benefits for people with dementia, but it also has some potential negative aspects, and there is a risk that it can be misused. It is important that assistive technology is always used for the right reasons. It should be primarily for the benefit of the person with dementia to enhance their independence, safety and daily living. In practice it will often also benefit the carer, but it is important that the person's needs are put first. It is also important that they are clear about the purpose of the technology and how they might benefit from it. The percentage of younger patients will grow, Gould predicted, and stronger caregivers may have to be hired to help care for the influx.