

Voice Enabled Smart Home Management System

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Introduction

In this present era everything is automatized right from home to industrial area. A home automation system integrates electrical devices in a house with each other, as this project better suit for the physically challenged people. In order to do the regular activities without having others help. The most common thing that they need to do are switching ON/ OFF the loads without much human involvement wherever they are required by using user defined voice commands to switch ON/OFF different electrical devices.

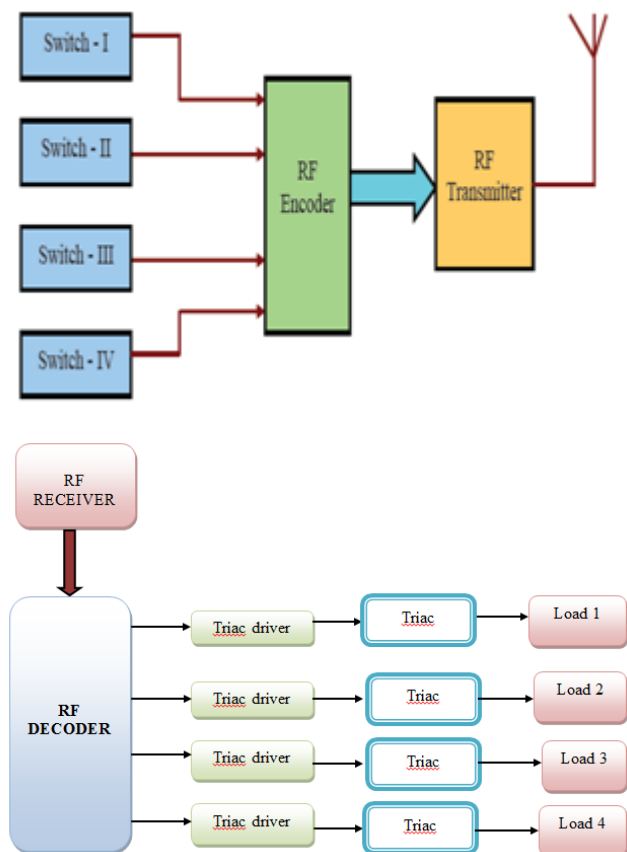
Existing system

Controlling industrial / home appliances is a very interesting and useful project. This project is designed to control up to four electrical appliances. This project used popular RF encoder and decoder IC's. Four Switches are connected to the RF Encoder. This encoded data is transmitted through a RF transmitter module. In the receiver side, the RF receiver module receives the encoded data and decodes using an RF Decoder. This decoded output data is given to triac driver. Loads are driven through triacs. Up to 7A load can be connected to these loads.

In this project 433 MHz RF transmitter and receiver modules are used. These are ideal for remote control applications where low cost and longer range is required. The transmitter operates from a 1.5-12V supply, making it ideal for battery-powered applications. The transmitter employs a SAW-stabilized oscillator, ensuring accurate frequency control for best range performance. The manufacturing-friendly SIP style package and low-cost make the STT-433 suitable for high volume applications.

This project uses regulated 5V, 750mA power supply. 7805 three terminal voltage regulator is used for voltage regulation. Bridge type full wave rectifier is used to rectify the ac output of secondary of 230/18V step down transformer.

TRANSMITTER:



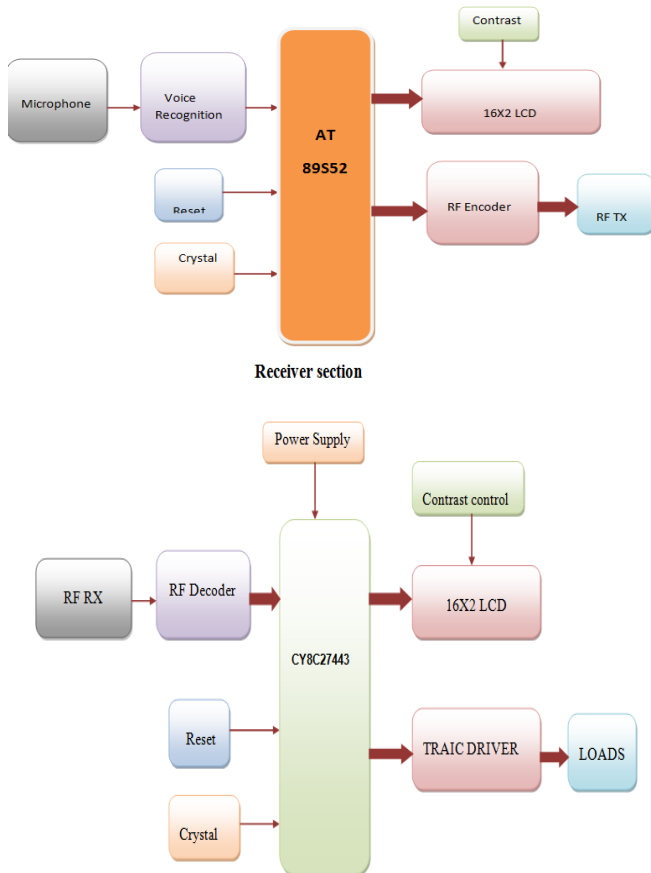
Draw back

Here the user need to press the switch to make the load in on condition. Physically challenged people cannot do this.

Proposed system

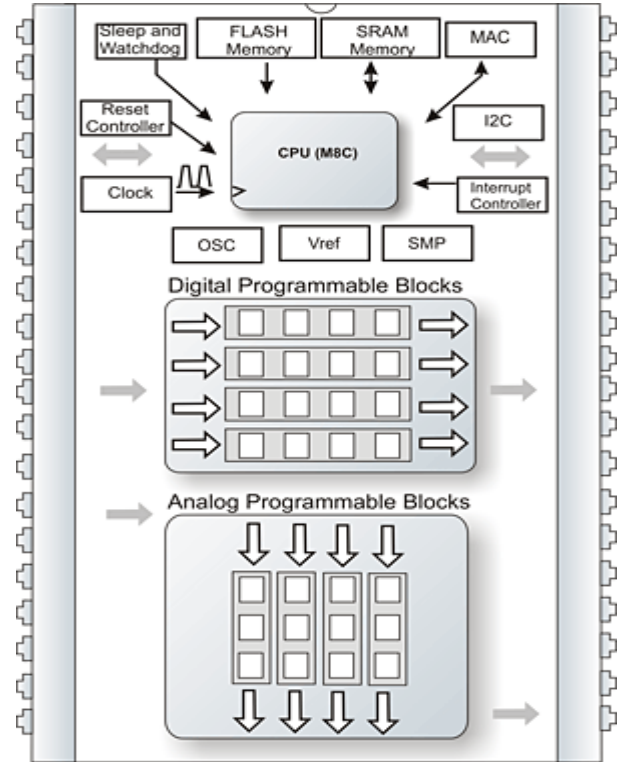
The theme of this project is to control different devices by giving voice commands. One such implementation is home Automation using speech Recognition. By giving different commands various appliances can be controlled automatically. If voice command is received successfully by corresponding device an acknowledge will be coming in the form of beep sound from buzzer. In this way activation of buzzer depends on the voice command received by particular device. The project is built around AT89S52 microcontroller and PSOC receiver. Voice Recognition module is interfaced with microcontroller to drive the load.

The voice recognition module is placed on transmitter unit. The signal will be encoded and transmitted by 434MHZ RF transmitter module. The receiver unit decodes the RF signal and performs the task of controlling the load.



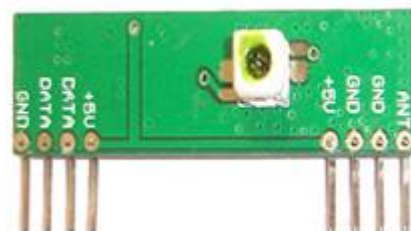
System overview

PSoC microcontrollers are based on 8-bit CISC architecture. Their general structure with basic blocks is presented in the following image:



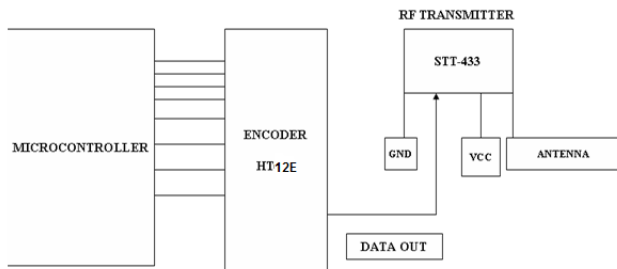
Radio frequency (RF) is a frequency or rate of oscillation within the range of about 3 Hz to 300 GHz. This range corresponds to frequency of alternating current electrical signals used to produce and detect radio waves. Since most of this range is beyond the vibration rate that most mechanical systems can respond to, RF usually refers to oscillations in electrical circuits or electromagnetic radiation

Flow chart for RF communication

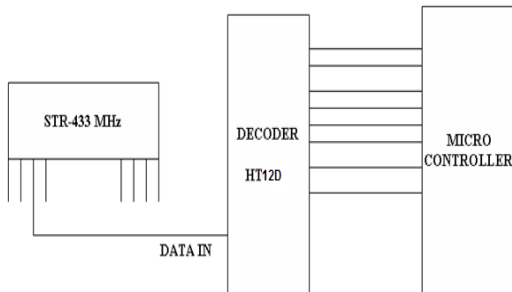




Transmission Circuit for RF



Reception circuit for RF



SPEECH RECOGNITION

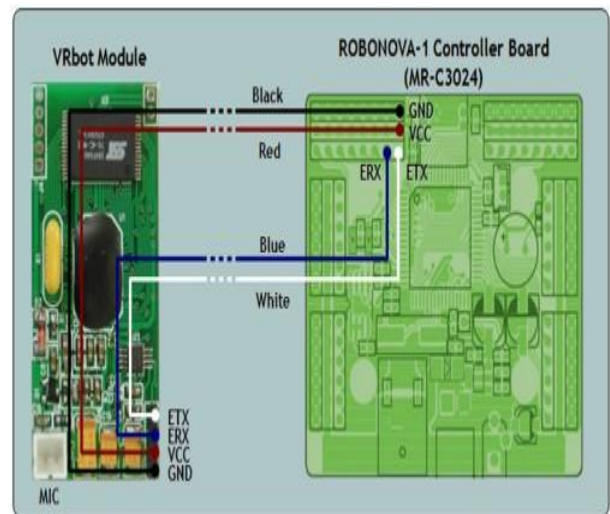
Speech recognition (also known as automatic speech recognition or computer speech recognition) converts spoken words to text. The term "voice recognition" is sometimes used to refer to recognition systems that must be trained to a particular speaker—as is the case for most desktop recognition software. Recognizing the speaker can simplify the task of translating speech.

Features:

- A host of built-in speaker independent (SI) commands (available in US English, German,

Italian and Japanese) for ready to run basic controls.

- Supports up to 32 user-defined Speaker Dependent (SD) triggers or commands (any language) as well as Voice Passwords.
- Easy-to-use and simple Graphical User Interface to program Voice Commands to your robot.
- Languages currently supported for SI commands: English U.S., Italian, Japanese and German. More languages available in the near future.
- Works with Robonova and Robozak MR-C3024 controller boards.
- Module can be used with any host with an UART interface (powered at 3.3V - 5V).



LIQUID CRYSTAL DISPLAY

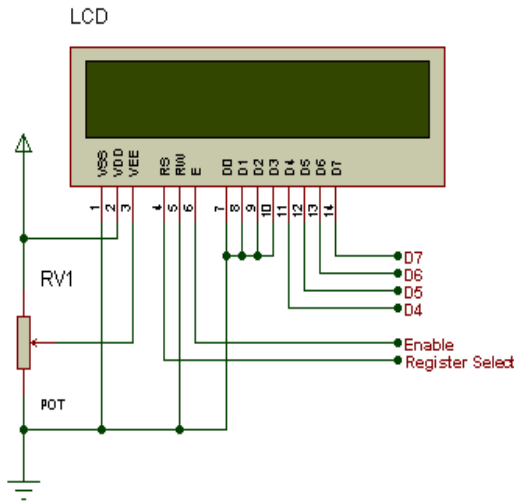
LCD stands for **Liquid Crystal Display**. LCD is finding wide spread use replacing LEDs (seven segment LEDs or other multi segment LEDs) because of the following reasons:

1. The declining prices of LCDs.
2. The ability to display numbers, characters and graphics. This is in contrast to LEDs, which are limited to numbers and a few characters.
3. Incorporation of a refreshing controller into the LCD, thereby relieving the CPU of the task of refreshing the LCD. In contrast, the LED

must be refreshed by the CPU to keep displaying the data.

4. Ease of programming for characters and graphics.

LCD Pin diagram



These components are “specialized” for being used with the microcontrollers, which means that they cannot be activated by standard IC circuits. They are used for writing different messages on a miniature LCD.

Hardware Used:

- Microcontrollers
- RF modules
- Interfacing unit

Software Used:

- Keil Compiler
- Embedded C

ADVANTAGES:

- Low cost
- Easy to implement

APPLICATIONS:

- Commercial
- Household
- Useful for patients

CONCLUSION

In This Project We Have Studied and Implemented A Voice Enabled Smart Home Management System.

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