

Smart Gloves

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Abstract-A wireless smart home system has been presented for elderly and disabled people. The main goal of this system is to control home appliances by using hand gloves. The proposed system can recognize the signals when the switch is pressed, convert them into the required data format, and send the data through the RF encoder. Based on the received data at the RF decoder associated with the appliances desired switching operations are performed. Additionally the proposed system needs to be trained of using Bluetooth. We can control and monitor the home appliances through the Bluetooth wirelessly. It is used for connecting consumer electronics such as a wireless keyboard or mouse to a PC. Bluetooth is being used in industry for machine-to-machine communications and other short-range wireless applications. It can be used to develop home automation system for the people with special needs like the elderly and the disabled. The proposed system is a low cost and low power system because Bluetooth and hand gloves are used

Index Terms-Bluetooth, RF encoder, RF decoder.

1. INTRODUCTION

It sounds futuristic but with a notion in providing ease in life, technological world focus in automating very possible thing. Inventions and evolutions in technology has made this possible.

Home Automation plays an important role in people's life with concern to their standard of living. As the number of controllable devices in the home rises, interconnections and communication becomes a useful and desirable feature. Systems can range from simple remote control through to complex computer or microcontroller based network with varying degrees of intelligence and automation.

Physically challenged persons find difficulty in switching ON/OFF their home loads such as light, fans etc., and they require an attender to do these. In the absence of the assistance, their world seems to be more difficult and complex. So a design which help them to automate their home loads even in the absence of the attender will be quite essential .For this we require the intelligence of a micro controller for controlling the home appliances. There are other similar existing technologies available for this purpose but their cost and complexity is a disadvantage.

Home automation is being implemented into more and more homes of older adults and people with disabilities in order to maintain their independence and safety. These smart homes allow older adults and people with disabilities to stay in their homes where they feel comfortable, instead of moving to a costly health care facility. The transition to a health care facility can cause a lot of anxiety and home automation can either prevent or delay this anxiety. For the disabled smart homes give them opportunity for independence, which will help them gain confidence and determination. Smart homes can

provide both older adults and people with disabilities with many different types of emergency assistance systems, security features, fall prevention, automated timers, and alerts. These systems allow for the individual to feel secure in their homes knowing that help is only minutes away. Smart home systems will make it possible for family members to monitor their loved ones from anywhere with an internet connection.

2. BLOCK DIAGRAM

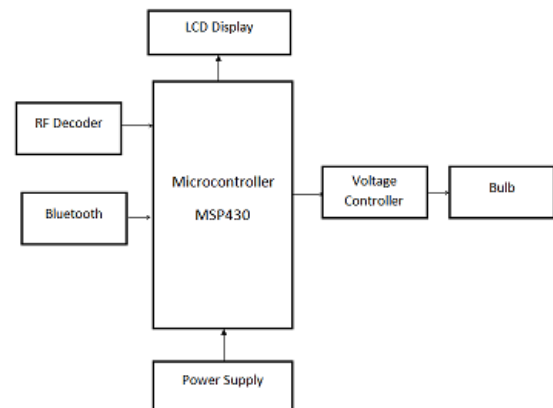


Fig. 1. Block diagram

3. MICROCONTROLLER

The MSP-EXP430G2 Launchpad Development Kit is an easy-to-use microcontroller development board for the low-power and low-cost MSP430G2x MCUs. It has on-board emulation for programming and debugging and features a 14/20-pin DIP socket, on-board buttons and LEDs & Booster Pack Plug-in Module pin outs that support a wide range of modules for added functionality such as wireless, displays & more. The MSP-EXP430G2 Launchpad also comes

with 2 MSP430 devices, with up to 16kB Flash, 512B RAM, 16MHz CPU speed and integrated peripherals such as 8ch 10-bit ADC, timers, serial communication (UART, I2C & SPI) & more.

3.1 Features

- 14-/20-pin DIP (N) socket
- Built-in flash emulation for debugging and programming
- 2 programmable LEDs
- 1 power LED
- 1 programmable button
- 1 reset button

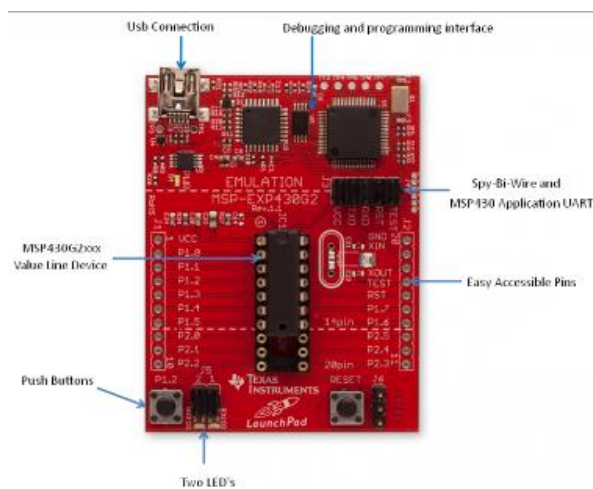


Fig. 2. MSP430 Board



Fig. 3. MSP430G2553 Microcontroller

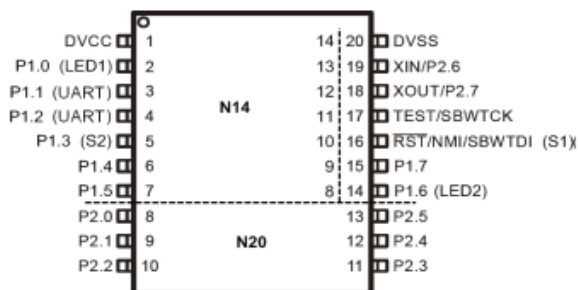


Fig. 4. Pin diagram of MSP430

4. HOME AUTOMATION

Here a feature named essentials is provided in the hand gloves where the user can control over their home accessories like switching on and off the fan, light and other devices .This operation can also be controlled using Bluetooth.

5. RF ENCODER

Whenever the high output pulse is given to base of the transistor BF 494, the transistor is conducting so tank circuit is oscillated. The tank circuit is consists of L2 and C4 generating 433 MHz carrier signal. Then the modulated signal is given LC filter section. After the filtration the RF modulated signal is transmitted through antenna.

6. RF DECODER

The RF receiver is used to receive the encoded data which is transmitted by the RF transmitter. Then the received data is given to transistor which acts as amplifier. Then the amplified signal is given to carrier demodulator section in which transistor Q1 is turn on and turn off conducting depends on the signal. Due to this the capacitor C14 is charged and saw tooth signal is appears across the capacitor. Then this saw tooth signal is given to comparator. The comparator circuit is constructed by LM558. The comparator is used to convert the saw tooth signal to exact square pulse. Then the encoded signal is given to decoder in order to get the decoded original signal.

7. BLUETOOTH

Bluetooth is an open wireless protocol for exchanging data over short distances (using short length radio waves) from fixed and mobile devices, creating personal area networks (PANs). It was originally conceived as a wireless alternative to RS-232 data cables. It can connect several devices, overcoming problems of synchronization.

IEEE 802.15.1: WPAN/ Bluetooth. Task group one is based on Bluetooth technology. It defines physical layer (PHY) and Media Access Control (MAC) specification for wireless connectivity with fixed, portable and moving devices within or entering personal operating space

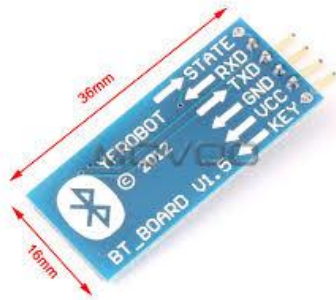


Fig. 5. Bluetooth module

8. CODE COMPOSER STUDIO

Code Composer Studio is an integrated development environment (IDE) that supports TI's Microcontroller and Embedded Processors portfolio. Code Composer Studio comprises a suite of tools used to develop and debug embedded applications. It includes an optimizing C/C++ compiler, source code editor, project build environment, debugger, profiler, and many other features. The intuitive IDE provides a single user interface taking you through each step of the application development flow. Familiar tools and interfaces allow users to get started faster than ever before. Code Composer Studio combines the advantages of the Eclipse software framework with advanced embedded debug capabilities from TI resulting in a compelling feature-rich development environment for embedded developers.

9. CONCLUSION

In Today's modern world people opt for a sophisticated life. This product helps us to save the electrical energy. Thus taking steps to save the energy for third generation will be accomplished. This product mainly designed for elderly or physically challenged peoples to handle the household activities easily. It also helps youngsters by operating through mobiles. Everyone owns a smartphone which became a part of life, using Bluetooth in mobile one can control over the entire system with ease.

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