

Xbee based automation for control of home appliances

K.Srikanth, G.Anil Kumar, M.K.Chaitanya Patnaik, S.Jaganadham, M.Padmavathi

Abstract— *The XBee based RF Modules were engineered to operate within the Zigbee protocol and support the unique needs of low-cost, low-power wireless sensor networks. The modules require minimal power and provide reliable delivery of data between remote devices. This paper investigated one scenario which mainly was used for controlling several home appliances like Fans & Bulbs. Other communicating mediums like IR, RF and Ultrasonic are not supportive for high speed transmission and two way transmission, but XBee supports high speed transmission and two way transmission.*

Keywords—*X bee, Control, Automation*

I. Introduction

Wireless transmission has become an important factor in various fields. A basic transmitter consists of a power source, a signal generator (oscillator), signal converter/amplifier, mixer (mixes the oscillator and amp signals to create the transmitted signal), output amplifier. A receiver is similar to a transmitter except instead of mixing the signal with the oscillator signal it removes the oscillator signal. Systems can be much more complicated depending on power needs (distance between antennas, frequency interference...) and application (encoder/decoder, security or digital conversion).

Process industries such as steel plant, paper mills, thread mills, etc., use motors that need to work accordingly. Loss of control affects the output process, and indirectly affects the total cost of the output .

K. Srikanth, Associate Professor, Dept. of EEE, Raghu Institute of technology, Visakhapatnam-531162. India

G.Anil Kumar, M.K.Chaitanya Patnaik, S.Jaganadham, M.Padmavathi
Students, Raghu Engineering College, Dakamarri, Visakhapatnam-531162
India

II. Methodology

In this project we have power supplies with +5V & -5V option normally +5V is enough for total circuit. Another (-5V) supply is used in case of OP amp circuit. Transformer primary side has 230/50HZ AC voltage whereas at the secondary winding the voltage is step downed to 12/50hz and this voltage is rectified using two full wave rectifiers. The rectified output is given to a filter circuit to filter the unwanted ac in the signal After that the output is again applied to a regulator LM7805(to provide +5v) regulator. Whereas LM7905 is for providing -5V regulation. (+12V circuit is used for stepper motors, Fan and Relay by using LM7812 regulator same process like above supplies.) The flow charts indicate a brief description of the control strategy for the transmitter and receiver.

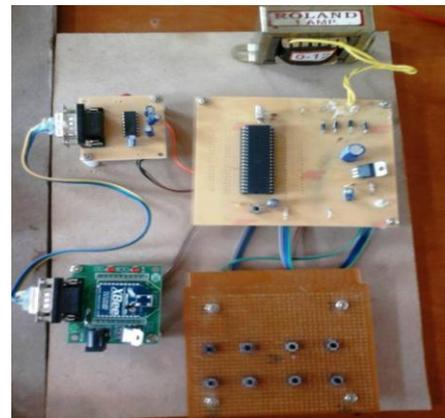


Figure 1: Transmitter unit

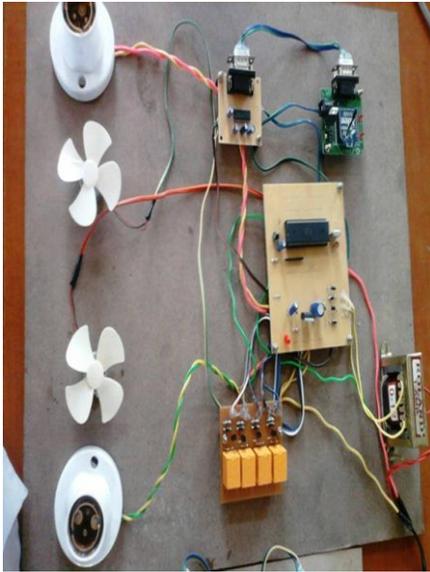


Figure 2: Receiver Unit and test set

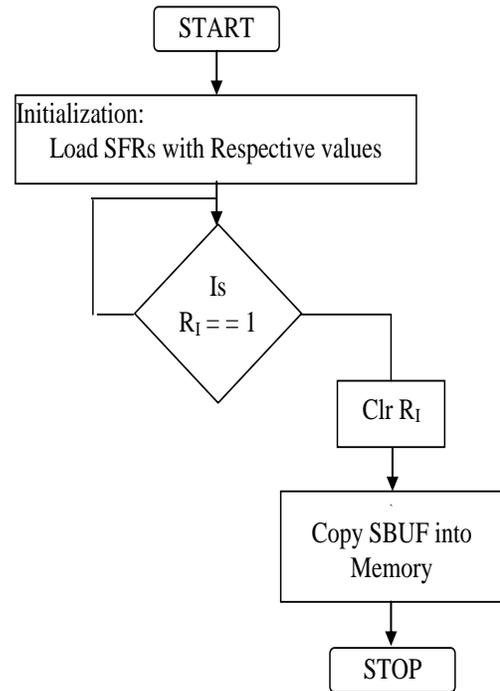


Figure4: Transmitter flow chart

III. Results

By using the x-bee module, in the wireless transmission we achieved the control over various types of loads. The x-bee used here is useful for controlling the loads up to a distance of 1.6km. In future, x-bee can spread its tentacles in diverse areas such as nuclear facilities, chemical factories, mining etc. Now a day's, this method can be used for various applications in military and various industries because this technique avoids illegal operation of motors in industries.

IV. Conclusions

This project demonstrated completely usefulness for controlling the domestic loads. Controlling them, is efficient using x-bee module because it is high speed wireless transmission system. In many applications there is a need for low cost, high flexibility wireless transmission so we opt for x-bee. Obviously it is perfect

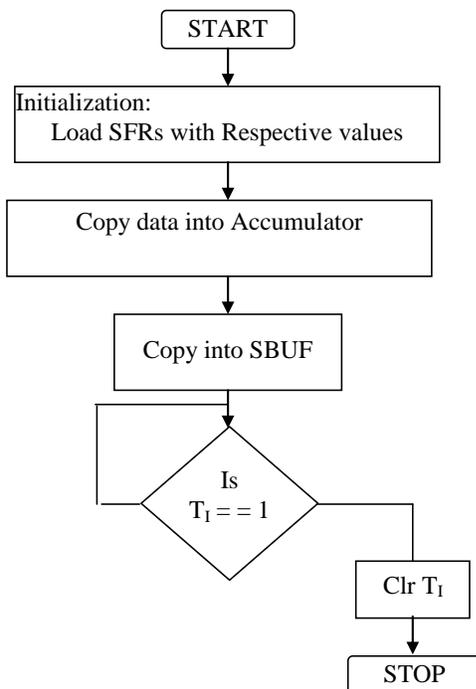


Figure3: Receiver flow chart

method due to its low maintenance. In future advanced technologies like robotics and submarines this technique can be implemented.

Acknowledgment

We thank Raghu Educational institutions for providing the necessary facilities for preparing & testing the test modules. We would like to thank our chairman Shri Raghu Kalidindi for his encouragement.

References

[1]Digital Integrated electronics, Taub, Herbert and schilling, Donald

[2]Kenneth J Ayala, “ The 8051 Microcontroller Architecture, Programming & Applications”, Penram International, 2nd Edition, 1996.

[3]G.Anil Kumar, M.K.Chaitanya Patnaik, S.Jagannadam, M.Padmavathi “ X-bee based home automation”, Final year project, Raghu Engineering college, April, 2010.