

Wireless Industrial Parameter Monitoring and Controlling using Raspberry pi 3

Prof. Aniket Kharat¹, MS. Sayali Ingale², MS. Sonali Godase³, MS. Swapnali Sargar⁴

Department of E&TC Engineering , Solapur University ,Solapur

FTC'S, COER , Sangola (India)

Abstract

This paper proposes an advanced system for process management via a credit card sized single board computer called raspberry pi based multi parameter monitoring hardware system designed using that measures and controls various global parameters. The system comprises of a single master and slave with wireless mode of communication and a raspberry pi system that can either operate on windows operating system. The parameters that can be tracked are smoke, motion , temperature & light intensity. The master board use raspberry Pi, LM35 & LDR Sensor ,PIR sensor, smoke sensor. From slave board the data is sent to the master and from master the data is sent to personal computer. We can monitor the data through Personal computer on webpage, display device (16x2 LCD) and simultaneously we will get message alerts when the parameter readings exceed the limit.

Keywords: *Wireless Industrial Parameter Monitoring; Raspberry Pi 3; LDR Sensor; Motion Sensor; Temperature & Smoke Sensor.*

1. Introduction

The. Real time monitoring of power system is essential for its continuous and reliable operation. This advanced system presents a low cost, low power consuming system that can be used for quick and accurate power system parameter monitoring. The designed system will continuously measure the processes and display the power system parameters like Smoke sensor, LDR sensor, Temperature sensor, Motion sensor. Now-a-days the accidents in the industries have increased. Even if any explosion occurs it can't be easily known to the laborers and it may cause accidents. So in order to avoid this, a system has been designed and this is allowed to monitor the ambient situations inside the industry. Some of the parameters such as explosions, temperature and motion are sensed by using sensors and the received data from sensors transmitted to the raspberry PI and then transmitted to the personal computer on the webpage. In this system different

types of sensors are used. Wireless communication is very important concept and it plays an important role in various industries of automation field. Wireless based industrial automation is a prime concern in our day-to-day life. The approach to Wireless Network for Industrial Applications standardized nowadays.. Wireless is predicted to be one of the fastest growing technologies in the area of process automation sector. Applications include wireless light switches, electrical meters with in home-displays, traffic management systems, and other consumer and industrial equipment that require Short-range low-rate wireless data transfer. In the hazardous working environment, human safety is an important concern. At the same time if any person is absent in an important place for monitoring, it may also cause serious hazards. At present many systems are implemented in industrial areas but still accidents are occurring. The new method is to design a system and that is place in industries. The system will be equipped with some sensors like temperature and light for detecting the explosions and the ambient temperature. If any serious situation occurs means an alert given to the nearby workers.. So the wireless transmission technology is preferred. The data which is collected from sensors should be transmitted without any delay and loss of data.

3. Block diagram

The Raspberry Pi is a series of credit card-sized single-board computers developed in the United Kingdom by the Raspberry Pi Foundation to promote the teaching of basic computer science in schools and developing countries.

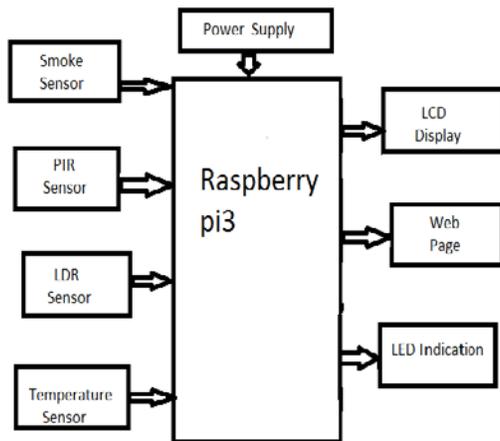


Fig. 1 block diagram of system.

1. It have quad- core-64 bit ARM cortex A53 clocked at 1.2GHZ & 1 GB RAM
 2. BCM 43143 Wi-Fi on board.
 3. Bluetooth low energy on board.
 4. 40 pin extended GPIO.
 5. 4x USB 2 ports.
 6. Full size HDMI.
 - 7.CSI camera port for connecting the raspberry pi camera.
 - 8.GPU: 400MHz Video Core IV multimedia.
 9. Memory: 1GB LPDDR2-900 SDRAM (i.e. 900MHz).
- (1)

4.Conclusions

The designed system is reliable to use and can be used in any working environment. The sensors which are used are so sensitive. The suffocation of the labours working inside the mine is avoided. The accidents are prevented which are caused by ambient condition .

Acknowledgments

We offer our sincere and hearty thanks ,with a deep sense of gratitude to our Managing Director Hon. **Mr Bhausaheb Rupnar** to give such platform and Project Guide **Prof. Kharat A.D.** for his valuable direction and guidance to our project, his meticulous attention towards our project work without taking care of his valuminous work.We are grateful to the Dean Students welfare **Prof. Dhavale . .** and Head of Department **Prof. Mrs.Raut. D. M.** for providing all facilities to carry out this project work and whose encouraging part has been perpetual source of inspiration.We are thankful to our Project coordinator **Prof. Pathan.H. .**and Principal **Dr.Mahatme A. B** for their encouragement towards our project.We also thank our Electronic and Telecommunication Engineering staff and friends. We were indebted for their constant help, encouragement and without whom this project would not have been success

References

- [1] H. Rammamurthy, S.B. Prabhu, R. Gadh , and A. M. Madni, "Wireless Industrial Monitoring and Control Using a Smart Sensor Platform," IEEE Sensors Journal, vol. 7 No.5, pp. 611-618, May 2007
- [2] H. Rammamurthy, S.B. Prabhu, R. Gadh , and A. M. Madni, "Smart Sensor Platform for Industrial Monitoring and Control," Proceedings, IEEE Sensors 2005 Conference, pp. (unknown), November 2005
- [3]www.google.com
- [4]www.wikipedia.com