

Raspberry Pi Based Global Industrial Process Monitoring Through Wireless Communication

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Abstract- The project 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 RS232 and microcontroller that measures and controls various global parameters. The system comprises of a single master and multiple slaves with wireless mode of communication and a raspberry pi system that can either operate on windows or linux operating system. The parameters that can be tracked are temperature, light intensity, water level, gas detection and fire extinguisher. Along these lines we can screen and control the gadgets through remote PC as it is specifically transmitted through program it can be seen anyplace on the planet and can be effortlessly controlled. Now the users are no longer required to dedicatedly present on-site to monitor the process. Instead any employ of industry can do this task along with his other activities.

Index Terms— Raspberry Pi, Zigbee, Sensors--Temperature Sensor, Gas Sensor, Fire Sensors, LDR.

I. INTRODUCTION

In our system, the single board computer will be internet enabled and hence the industrial process parameters can be monitored from anywhere through a browser interface. Now the users are no longer required to dedicatedly present on-site to monitor the process. Instead any employ of industry can do this task along with his other activities.

II. EXISTING METHOD

In the current work, the created framework was not effective in the perspective of assignment booking as the framework utilized was a non-Linux gadget and furthermore outside Ethernet was utilized for correspondence. Each time the undertaking will be done physically.

III. PROPOSED METHOD

The proposed strategy is utilized to beat the disadvantages exhibit in existing technique. Here we are utilizing ARM Intelligent Monitoring Center which utilizes Samsung's processor as its fundamental controller. The natural conditions exhibit inside the lab can be checked utilizing sensors like temperature, gas and LDR. Every one of the sensors are associated with sensor board. From the sensor board we are sending checked esteems to control room (ARM board) through RS232 serial link. The serial link is associated with one of UART port of ARM board. At whatever point a man is entered inside the lab, the individual's picture can be caught by camera and send it to controller.

The controller transmits the information to remote PC through Ethernet by utilizing FTP. FTP is a convention through which clients can transfer

records from their frameworks to server. When information is set at server we can see the information at remote PC (with web) on site page with one of a kind IP address. We can see ceaseless spilling of video and additionally sensor's information.

On the off chance that we need to control the gadgets in view of sensor's data we can control through site page from remote area utilizing HTTP convention. HTTP convention constantly asks for the server for control (kill on or turn) the gadgets. Along these lines we can screen and control the gadgets through remote PC as it is specifically transmitted through program it can be seen anyplace on the planet and can be effortlessly controlled consequently.

IV. SYSTEM ARCHITECTURE

This undertaking is a usage of modern process checking through remote correspondence.

A. Block Diagram

Modules: Raspberry pi, Zigbee, UART, Temperature sensor, gas sensor, fire sensors, LDR.

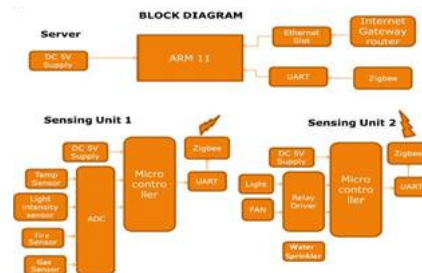


FIG1: Block Diagram

B. Temperature sensor:

over internet on any browser as well also in advancement will operate the appliance from the web.

SCHEMATIC: Temperature sensor, gas sensor, fire sensor and LDR sensor are connected with ADC0808, which is of 8 channel and measures reading at precision time period of 10 micro seconds having a channel length of 8 bits and supporting 8 different channels. These valves are given to 8052 controller and from this controller send wirelessly with ZigBee UART transmitter.

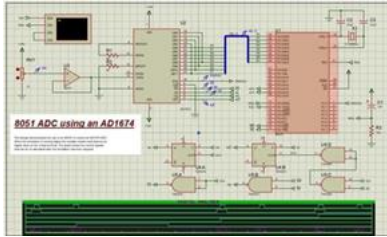


FIG 4: schematic diagram

VI. HARDWARE SNAPSHOT



FIG 5 Monitoring Section

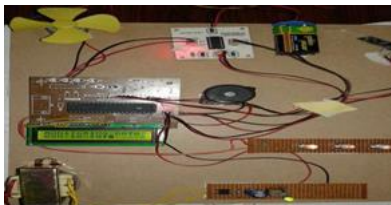


FIG 6: (a) Controlling section



FIG 6 (b) Controlling section

ADVANTAGES

Low support cost.

Easy to implement and low power consumption.
Avoid unplanned lab operation interruptions.

Increase laboratory efficiency.

Remotely track critical system parameters.
Controlling is done by using web technology.

VII. FUTURE SCOPE

We can likewise record this live gushing information by interfacing outer memory stockpiling. We can finish our undertaking utilizing remote innovation. In future we can give greater security to information by utilizing encryption, unscrambling strategies.

VIII.CONCLUSION

The task "mechanical process checking through remote correspondence" has been effectively outlined and tried. It has been created by coordinating highlights of all the equipment segments and programming utilized and tried.

It is a reconfigurable keen sensor interface for mechanical WSN. The framework can gather sensor information cleverly.

It is extremely appropriate for continuous and powerful necessities of the rapid information obtaining framework. At last, by taking continuous observing of water condition we checked that the framework accomplished great impacts unfeasible application.

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