

An Advanced Network to Monitor Industrial Insights

Ch. Sravan Kumar¹, N. Kartheek²

¹M. Tech Student, ECE, SVS Group of Institutions, Telangana, India

²Assistant Professor, ECE, SVS Group of Institutions, Telangana, India

Abstract: Because of the static nature of control room atmosphere, the consumer ought to always be static to watch the procedure. The suggested system approach supplies a good fix for your problem. High finish PLC's are now being implemented for controlling the whole process of fields. However an issue is that despite the fact that automation takes the entire charge of total plants couple of authentication and manual actions are essential from user side for finishing the control action. Recently there's an enormous technology improvement in industrial control rooms for monitoring the whole field of commercial plants. Hence there's essential situation for customers presence whatsoever occasions within the control room to take some timely needed control actions. The entire control room atmosphere is furthermore implemented within the Arduino-android platform and also the same is conveyed towards the process through Wi-Fi / Bluetooth / GPRS. The user in charge room could be mobile anytime, anywhere to watch and control the entire plant. Therefore, the parameter values could be supervised and stored concurrently. A visible approach of entire process station is supplied in one computer monitor to ensure that a user can monitor the whole process from one screen. An Arduino 1 board can be used for obtaining process control parameters in the sensors and transmitting it using a Bluetooth module for an android device.

Keywords: Arduino, android platform data logging, Bluetooth, mobile control room, process control.

1. Introduction

Scada product is a higher finish current control system that is implemented in most major automation industries and power plants. Several works happen to be accomplished for data acquisition using Arduino, raspberry pi and also the acquired data values are sent via Bluetooth and supervised in android platform. Data logging is really a process where a computer/controller can be used to gather the procedure control parameters with the aid of sensors and evaluate and keep recent results for further future analysis [1]. A control engineer or perhaps a user should always show up while watching monitor to consider a highly effective and timely control action. The only issue is it is tough for any human operator or perhaps a user to become whatsoever occasions nearby monitoring the procedure control stations. The primary purpose of this suggested jobs are to get both temperature and level sensor values with the aid of Arduino tool and transmit the signals via Bluetooth device interfaced with Arduino and therefore monitoring and storing the procedure variable parameters inside a wise digital device running with an android platform. Hence a highly effective system needs to be produced for avoidance from the difficulties exerted towards the operator/user within the monitoring of process control stations. The suggested work is dependent on overcoming most importantly difficulties by using Arduino-android platform that has the benefit of being broadly employed for simple real-time fundamental programs.

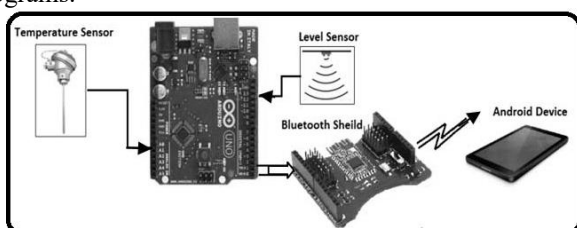


Figure 1: Block diagram of proposed system

2. Proposed System

Within this work, two process variables like temperature and level of the tank are taken for measurement with the aid of Resistance Temperature Detector (RTD) and ultrasound level sensors. These sensors are affixed to the actual time temperature process control station. Here both temperature and level values are acquired directly being an electrical signal in the temperature process station. The RTD sensor used is of platinum type and finds its application for industrial reasons in calculating the high temperature of the liquid. The ultrasound level sensor is really a non-contact type employed for calculating liquid level inside a tank. The sensors output acquired from temperature control station after proper signal conditioning is offered to Arduino device for more processing [2]. The Arduino device used here's an Arduino 1 board which comprises the controller, Bluetooth shield, Bluetooth serial module. The Arduino board consists of the formula for interacting using the android device through Bluetooth communication. The android device comes with a formula to talk with the Arduino device via Bluetooth in addition to store and display the outcomes. The computer monitor screen around the android device exhibits the actual time values of level and temperature by exhibiting the continuously and therefore enhancing the operator to watch the along the way atmosphere inside a movable manner. Arduino is really a microcontroller board able to carrying out very ease of access from the interacting conditions. This board includes a specifically designed circuit board for programming and prototyping with microcontrollers. Arduino is definitely a free platform by which much real-time hardware could be interfaced with greater compatibility. Also any software or hardware up gradation is definitely possible. It comprises all necessary things needed to aid a microcontroller. It may be began simply by simply hooking up it to some computer having a

USB cable or powering it by having an AC-to-Electricity adapter or battery [3]. Here the Bluetooth shield can be used with regards to treatment of Arduino device in the android device. By getting this shield, the android device can control or have the information in the Arduino device with the aid of touchscreen. This Bluetooth shield integrates a Bluetooth module which is Arduino compatible. The Bluetooth module is contained inside a Bluetooth shield. It's used easily with Arduino for wireless serial communication. Here a serial Bluetooth module can be used for developing a link between Arduino 1 and also the android application. Even the Bluetooth module should be a slave type since all smartphones/capsules that are offered today readily is of master type. There are numerous kinds of temperature sensors available which here a resistance temperature detector can be used to sense the high temperature. RTD is an among the high temperature sensors which supplies good precision, stability and reliability. Hence it's ideally utilized in most laboratories and industrial processes. Within this suggested work a platinum RTD sensor has been utilized. Ultrasound sensors are non-contact type as well as are thus insusceptible towards the qualities like scaling, corrosive & grime atmosphere, viscous liquids etc. This sensor which doesn't have any moving parts produces ultrasound pulses in direction of the medium and will get deflected. Time passed between released to received signal is proportional to the stage within the tank. Thus ultrasound transducer is dependent on the key where the time passed between your sent and received signal is directly proportional towards the tank's liquid level. Named PC employed for this suggested jobs are a generally available android device getting a 7 inch touchscreen for any friendly interface having a screen resolution of 1280 x 800 pixels. Additionally, it includes a Wireless / Bluetooth enabled running with a versatile free android platform [4]. This tablet has a loaded Android 4.2.2 operating-system that has an expected enhanced performance and lots of good features. Because this android system is effortlessly available everywhere it's considered for that suggested work. The software's utilized in the work happen to be categorized into two sections as pointed out below. Eclipse is definitely an IDE suited to Java and lots of other programming languages for example C, C++, FORTRAN, COBOL, Python, etc. The Eclipse Integrating Development Atmosphere (IDE) can be used for that developing the android program to ensure that an android application package could be produced. Also by utilization of various plug-INS many programs could be coded in other programming languages. Eclipse designers and eclipse CDT for C/C++ developers and so forth. By using plug-ins written for that Eclipse Platform and user can write and lead any needed plug-in modules. Arduino is definitely a free platform getting an adaptable, simple to use software and hardware that is useful in creating interactive objects or conditions. The Arduino software or IDE works on the computer and it is accustomed to write and upload the pc code to some physical board. Arduino integrated development atmosphere (IDE) is really a mix-platform application designed in Java. It is made to introduce programming to the new programmer who's not really acquainted with software development. Including a code editor with lots of features and is capable of doing producing and uploading programs towards the board in one click. Arduino programs are designed in either C or C++ and also

the coding written is known as a sketch. The Arduino IDE has a software library which makes many common input/output procedures very simpler [5]. Customers are needed to define 3 functions known as setup () and loop () to create a runnable cyclic executive program. The setup () is really a function that when run at the beginning of a course initializes the configurations while loop () can be used to frequently before the board forces off. There's a directory known as hardware where the Arduino IDE consists of the hardware-specific C libraries along with other necessary configuration files.

3. Conclusion

Sensors get the data with assistance of Arduino-Bluetooth module the information values are sent for an android device where parameter values are kept in memory while concurrently the consumer can observe and evaluate the blood pressure measurements acquired instantly. The suggested system promotes the control engineer to get the data values anyplace inside the control room. This new product is suited to obtaining the control parameters like temperature and level process variables of the existing temperature process controller. Therefore, the suggested system behaves just like a good easy to use device from the control engineer because the user can invariably be mobile any place in the control room and it doesn't require person near a panel display whatsoever occasions monitoring the procedure. The setup from the suggested work can be used directly for monitoring the real life process control signals like liquid level and temperature only. This above pointed out work paves method for developing various sorts of inexpensive data logging systems working with the aid of Arduino android platform. Here the procedure could be visualized within the screen of the ordinary android tablet. Generally because of the utilization of Arduino-android free platform combination, enhancement and up gradation in the software and hardware is definitely possible.

References

- [1] Ana Priscila Alves, Hugo Silva, Andre Lourenco and Ana Fred, "BITalino: A Biosignal Acquisition System based on the Arduino," BIODEVICES 2013.
- [2] Jithin Krishnan, Niranjan D. Khambete and Biju B, "A Real time Data Acquisition and Monitoring Device for Medical Applications based on Android Platform," International Journal of Advanced Computer Research, Volume-3 Number-3 Issue-12 September-2013
- [3] Gurpal Singh and Inderpal Singh, "Android os based wireless data acquisition system via Bluetooth," IJRET, Vol.03, Issue no.06, June 2014.
- [4] A. H. Shajahan and A. Anand, "Data acquisition and control using Arduino-android platform: Smart plug," International Conference on Energy Efficient Technologies for Sustainability (ICEETS), pp. 241-244, April 2013.
- [5] M. A. Zermani, Elyes Feki, Abdelkader Mami, "Temperature Acquisition and Control System based on the Arduino," IJESE, Vol.02, Issue no.12, October 2014.