



Development of industrial production monitoring system using GUI

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Abstract - Dynamic In a material industry, the noteworthy issue is that there is less get with most extraordinary push to obtain their work. So there is pointless activity and work. To make worker's favorable position and care and convey most extraordinary thing inside incredibly briefest period. The technique should be taught the expert to complete their work truly, particular day and age. Most of the business has some announcement using some development. Here we proposed this system by RS232 connect with baud rate 9600 and we make Graphical User Interface application to send this data/movement for every hour. According to material industry, we foreseen every one hour to send this banner by methods for RS232 interface. In view of this connection have some skill in long range and low data throughput can be extraordinarily monetarily saving. The connection is especially comfort and ease and flexibility of foundation. The server will keep up the record of the delivered material of every laborer alongside the data containing day, date, time, specialist name, Employee code, the length of created fabric, And so forth. The fundamental motivation behind the framework is to keep up record of every specialist taking a shot at the machine. **Index words:** GUI, MATLAB, Microcontroller ATMEGA328, Serial port.

to control the different gadgets associated with the microcontroller. The gadget controller comprises of two areas of programming and equipment. As programming MATLAB is utilized in light of the fact that it as of now comprises of Graphical User Interface (GUI) instrument. Above all else, the information is sent to the USB port of the PC. The Universal Asynchronous Receiver and Transmitter (UART) module changes over this standard into the TTL standard of the microcontroller. UART transmits bytes of information as individual bits in a consecutive example.

At the equipment side, another UART re-collects the bits into finish bytes. Each UART comprises of a driver of USB-to-RS232 convertor. By changing the RS232 levels back to 0 and 5 Volts with the utilization of normal level connector that is MAX232 the CMOS level is changed over into Transistor Logic (TTL) [4]. The beneficiary transmitter stick of MAX 232 is associated with collector transmitter stick of microcontroller. The MAX232 is utilized with five 1 uF capacitors to change the voltage level distinction between the PC based rationale and controller based rationale move enroll, for the transformation of serial and parallel structures [2]. The microcontroller peruses the information from the PC thusly turning on the gadgets in like manner. To interface the USB port of the PC with the framework built up, the USB-to-RS232 convertor is utilized.

I. INTRODUCTION

Presently a day's hardware is assuming an indispensable part in all ventures. Because of the quick advancements in hardware, the working style is moved forward. Fabric fabricating is one of the significant businesses which satisfy our essential need. The undertaking best applies to the mechanical condition, to screen and control certain modern parameters with/without human obstruction and to have graphical perspective of the present status of industry [1]. In this venture the client indicated inserted program is gone into the PC and downloaded from the PC to the microcontroller utilizing serial association between them. Promote the PC goes about as a host for an intelligent GUI for the client in order

The client indicated installed program is gone into the PC and downloaded from the PC to the microcontroller utilizing serial association between them. Encourage the PC goes about as a host for an intuitive GUI for the client to control the different gadgets associated with the microcontroller. The gadget controller comprises of two areas of programming and equipment. As programming MATLAB is utilized in light of the fact that it as of

now comprises of Graphical User Interface (GUI) instrument. Above all else, the information is sent to the USB port of the PC. The microcontroller peruses the information from the PC in this way turning on the gadgets appropriately [3]. The Mat lab code created is sent from the PC to the USB port. The serial information sent through it is USB based. The converter that is utilized here gives the correspondence between the RS232 port of the PC and USB port of the microcontroller.

This paper consist of 9 sections. Section II describes existing method of industrial production monitoring. Section III explains proposed system and section IV describes related work of monitoring system and section V shows the parts description. Section VI tells working principle and section VII describes result obtained, section VIII and IX tells concludes the paper and mentions benefits of these system.

II. EXISTING SYSTEM

In material industry as of late framework is utilized for generation of fabric done by physically [5]. In this estimating framework happens a few issues with the end goal that mistake, wrong data given to chief. Where the way taking care of numerous an undertaking are finished by physically in that estimation of fabric is one of essential errand and is normally done by individual/physically, numerous time it might reason for error or tedious with farfetched records of good delivered by specific machine and so on. So we found that there is prerequisite of estimation and auto recording of the delivered fabric on server.

III PROPOSED SYSTEM

The novel design of Graphical User Interface for entering every hour target and outcome progress with the help of MATLAB and using RS232 communication standard, the data will be transmitted to a wireless network. For interfacing the GUI and the wireless network hardware, the baud rate of 9600 is used. Every hour the detailed entry data will be stored in a excel sheet as a backup in the personnel computer. The consolidated documentation will be stored automatically to a location and can be stored in remote servers also. It is a advance method the performance of the each worker will be recorded in the system [3]. The system should be able to interface with existing cloth manufacturing machine. Performance of the system developed will be studied to make corrections required meeting the requirements of the sponsoring agency.

IV RELATED WORK

- 1) Industrial Process Monitoring Using IOT[6]- In this project we are using ESP8266 Wi-Fi module is used for collecting data from equipment's and transfer it into a wireless internet. Internet of Things is a most favourable technique for industrial process and monitoring. IOT is a combination of embedded system and communication system.
- 2) Monitoring and Control System for Industrial Parameters Using Can Bus [1]-This system mainly reduces the high manpower requirement and also provides an automatic control of parameters during an emergency situation. The system realizes real time remote data collection monitoring and storage through CAN bus protocol.
- 3) Auto Work Status Monitoring and Information Up-Loader System Textile Industry [3]-It is an advance method the performance of the each worker will be recorded in the system. The procedure that will give the accurate measurement as well as it will keep the record of how much cloth produced. The server will maintain the record of produced cloth of each worker along with information containing date, day and time etc.,
- 4) Remote Monitoring of PLC- Scada based Industrial Processes using GSM Technology [7]-The proposed project is completely safe from unauthorized personnel as security username and password are provided to ensure processes' safety.
- 5) Monitor and Quality Control for Automatic Production Line System [8] -The objective of this work was to build an engineering solution to propose a non- touch real time control system for measuring dimensions finished pieces, by developing image analysis algorithms for estimation of the quality of automatic system.
- 6) Industrial Parameter Monitoring and Controlling Using GSM and Web Server [9] - Remote Monitoring, and Control is one of the most important and necessary criteria for increasing production and process plant availability. We can achieve these advantages by the substitution of embedded ARM processor to realize data acquisition and control (DACS).

- 7) Industrial Monitoring and Controlling

System Using Android Application [10] - It provides authentication. The operator can remotely log into this monitoring system via his smart phone. The system is proposed as cloud computing which is the general term for anything that involves delivering hosted server over the internet and storage capacity as a service to user.

V. DESCRIPTION OF PARTS

5.1 RS232 PORT

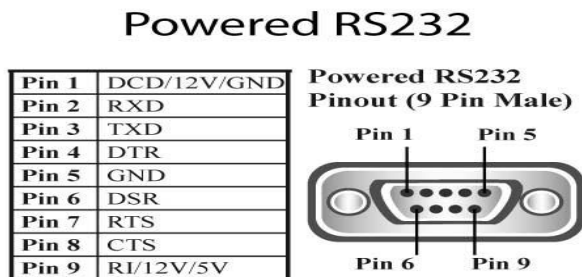


Fig 5.1. Pin Description of RS232 port

The above diagram shows pin description of serial communication port. The RS-232(X) is a correspondence link, generally utilized for exchanging and getting the serial information between two gadgets. It underpins both synchronous and nonconcurrent information transmissions [11]. Numerous gadgets in the mechanical condition are as yet utilizing RS-232 correspondence link. Rs-232 link is utilized to recognize the distinction of two flag levels between rationale 1 and rationale 0. The rationale 1 is spoken to by the - 12V and rationale 0 is spoken to the +12V. The RS-232 link works at various baud rates like 9600 bits/s, 2400bits/s, 4800bits/s and so on. The RS-232 link has two terminal gadgets to be specific Data Terminal Equipment and Data correspondence Equipment. Both gadget will sends and gets the signs. The information terminal hardware is work station and information correspondence Equipment is modems, or controllers and so on.

Presently a day's the vast majority of PCs have two serial ports and one parallel port (RS232). These two sorts of ports are utilized for speaking with outer gadgets and they work in various ways. The parallel port sends and gets the 8-bit information at once more than eight separate wires and this exchanges the information rapidly, the parallel ports are normally used to associate a printer to a PC. A serial port sends and gets one piece information at any given moment more than one wire and it exchange information gradually. The RS-232 stands for

suggested defamed and 232 is a number X is shows the most recent form like RS-232c, RS232s. The most regularly utilized sort of serial link connectors are 9-stick connector DB9 and 25-stick connector DB-25. Every one of them might be male or female compose. Presently a days a large portion of PCs utilize DB9 connector for nonconcurrent information trade. The most extreme length of RS-232 link is 50ft.

5.2 WIRELESS TRANSCIEVER

Remote handset (transmitter/collector) modules offer a speedier time-to-advertise other option to chips/chipsets that permit architects at all levels of RF experience to incorporate a finished remote framework into their items. Numerous modules are fabricated as a drop-in arrangement where creators make a good stick out on their processor board and supply serial information to the proper pins. Modules offering the least demanding mix enable the architect to send crude UART information into the module and expect that same information out on the less than desirable end of the remote connection. A handset is a mix transmitter/beneficiary in a solitary bundle. The term applies to remote specialized gadgets, for example, cell phones, cordless phone sets, handheld two-way radios, and versatile two-way radios. Once in a while the term is utilized as a part of reference to transmitter/beneficiary gadgets in link or optical fiber systems. When a gadget conveys a remote flag, it is known as a transmitter.

At the point when another gadget grabs that remote flag and comprehends the data, it is known as a recipient. ... At the point when a gadget has both a transmitter and a beneficiary, it is now and then called a transceiver. A handset is a gadget involving both a transmitter and a collector that are joined and share normal hardware or a solitary lodging. At the point when no hardware is basic amongst transmit and get capacities, the gadget is a transmitter-beneficiary. The term began in the mid 1920s. Comparable gadgets incorporate transponders, transverses, and repeaters. The essential preferred standpoint of utilizing a handset as opposed to a different transmitter and recipient is taken a toll. In a handset, a significant number of the parts can be shared amid both transmit and get tasks. Another preferred standpoint is that handsets can be tuned more effortlessly than particular units. A detriment of utilizing a handset is that while duplex activity isn't conceivable with most handsets, correspondence should now and again be done on two distinct frequencies.

5.3. USB-TTL PORT



Fig 5.3. USB-TTL port image

The above diagram shows the concept of USB-TTL port. USB, short for Universal Serial Bus, is an industry standard that was made to describe connections, connectors and traditions for affiliation, correspondence, and power supply amongst PCs and their periphery devices. USB was expected to standardize the relationship of PC peripherals (tallying reassures, pointing contraptions, mechanized cameras, printers, flexible media players, circle drives and framework connectors) to PCs, both to pass on and to supply electric power. It has, all things considered, supplanted a grouping of before interfaces, for instance, serial ports and parallel ports, and furthermore segregates control chargers for adaptable contraptions – and has ended up being conventional on a broad assortment of devices. The USB TTL Serial connections are an extent of USB to serial converter joins which give organize among USB and serial UART interfaces. Extents of connections are open offering accessibility at 5V, 3.3V or customer decided banner levels with various connector interfaces.

FEATURES

- Stable and solid chipset CP2102. USB detail 2.0 agreeable with full-speed 12Mbps.
- Standard USB write a male and TTL 6pin connector.
- 6pins for 3.3V, RST, TXD, RXD, GND and 5V.
- All handshaking and modem interface signals. Baud rates: 300 bps to 1.5 Mbps. Byte get support; 640 byte transmit cradle.

- Hardware or X-On/X-Off handshaking bolstered. Event character bolster Line break transmission.
- USB suspend states upheld by means of SUSPEND pins.
- Temperature Range: - 40 to +85.
- Size: 42mm X 15mm.
- Weight: 4g

5.4 MICROCONTROLLER ATMEGA328P

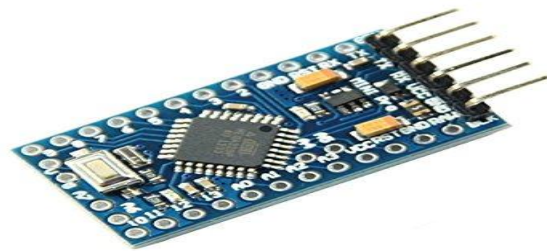


Fig 5.4.1. ATMEGA 328P

The diagram 5.4. tells the operation of Arduino Uno. Arduino star little is a microcontroller board in perspective of the ATMEGA328. It has 28 modernized information or yield pins [12]. 6analog commitment on board resonator, a reset discover and openings for mounting pin header. There are two adjustment of the expert littler than normal one continues running at 3.3v and 8MHZ, the other at 5v and 16MHZ.

There are 4 sticks in Arduino master littler than common – resonate, trigger, VCC, ground. The FTDI Basic will be used to program (and power) the Pro Mini. The headers are optional, be that as it may they're our favored strategy to interface distinctive contraptions to the Pro Mini. The Mini packs almost as much chip punch as the standard Arduino, however there are several huge hardware changes you should think about before you start modifying your dare to the Mini. The primary glaring gear differentiate is the voltage that the Mini works at: 3.3V. Not at all like the Arduino Uno, which has both a 5V and 3.3V controller on board, the Mini simply has one controller. This infers if you have peripherals that restrictive work at 5V, you may need to do some level moving before you associate it to the Pro Mini (or you could go for the 5V variety of the Pro Mini).

Another genuine assortment from the standard Arduino lies in the speed at which the ATmega328 runs. The Pro Mini 3.3V continues running at 8MHz, a substantial bit of the speed of an Arduino Uno. We put a slower resonator on the Mini to guarantee safe assignment of the ATmega328, 8MHz is still abundance speedy, and the Mini will at display be prepared for controlling any endeavor the Arduino Uno can.

PIN DESCRIPTION :

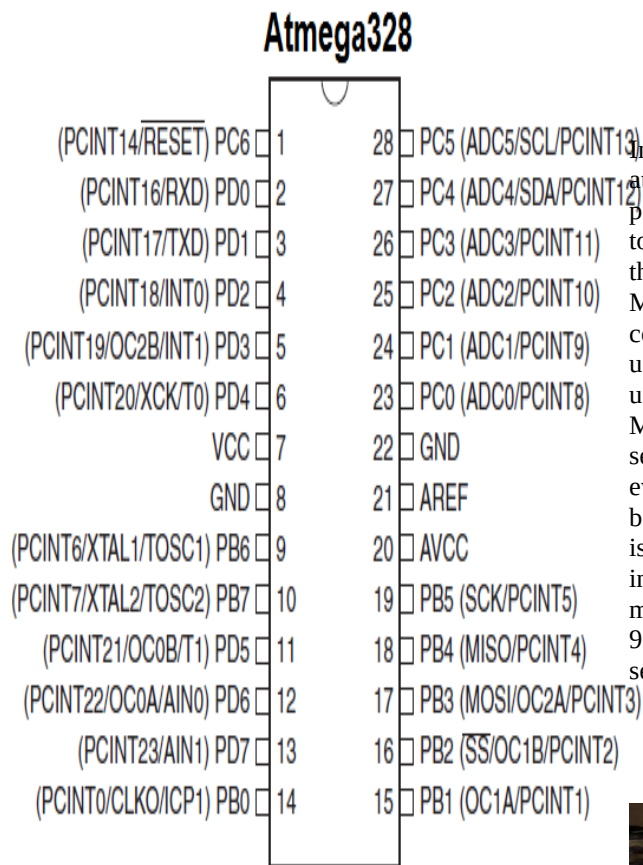


Fig 5.4.2. pin description of ATMEGA 328P

This above diagram shows the pin description of microcontroller ATMEGA328P.

VI WORKING PRINCIPLE

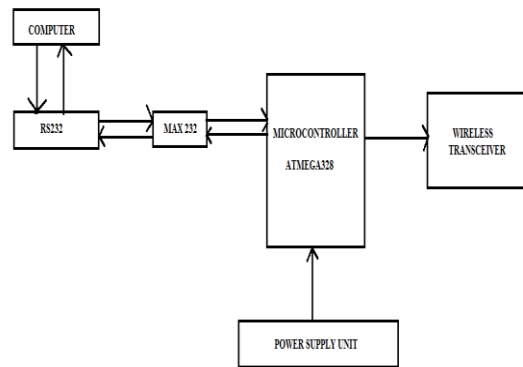


Fig 6. Block Diagram

In this block diagram, we are using microcontroller atmega 328p, wireless transceiver, USB2TTL ,PC and power supply. Power supply is used to provide power to whole circuitry like PC, wireless transceiver etc., in this proposed system we have used microcontroller , MAX232 chip is used to interfacing different components. In PC, MATLAB software is predefinedly used. MATLAB is a commercially available widely used, interactive, technical computing software. MATLAB version 7.12 is used and higher provide serial communication functionally [3&11]. We enter every hour data will be stored into sa excel sheet as a backup in the personnel computer. Every person data is send microcontroller via USB2TTL port. While interfacing the wireless transceiver and microcontroller through RS232 port with baud rate 9600 is used. After reaching the data and it will be send to the LED display.

VII RESULT&DISCUSSION

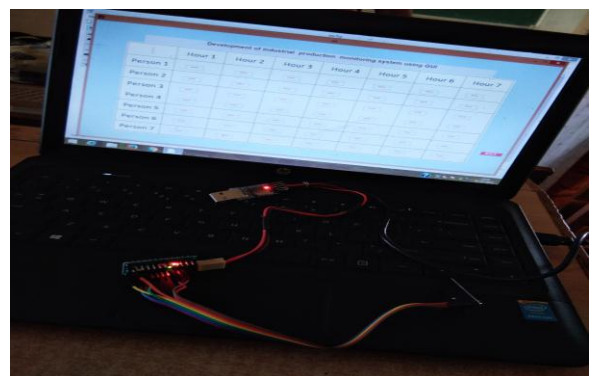


Fig .7. Result

The above figure shows that the result of proposed system model. From this novel, we creating GUI model to entering production for every 60 minutes. In this progress, we creating callback program and the result is stored in a excel sheet as a backup into a computer. To enter the data for consecutive column

the data is send serially via USB2TTL logic otherwise the system will be closed.

VIII FUTURE SCOPE

- Consume Less time.
- It reduces manpower.
- In future it can be developed through online.
- It increases production and profit.
- It connects more devices with the help of online and are focused into single server.

IX. CONCLUSION

The GUI based device control using Mat lab has been presented in this paper. Here an elaborate and immaculate discussion of all our associated work pertaining to the study, that includes GUI toolbox of Mat lab, programming and designing of microcontroller for controlling the various loads has been presented. The converter that is used here provides the communication between the RS232 port of the PC and USB port of the microcontroller. At end of day the system will inform to manager how much goods produced by the machine with whole day information available at the server [2]. The server will maintain the record of the produced cloth of each worker along with the information containing day, date, time, etc. The server create the reports of daily production and also the total production data will be send to the owner on daily basis. This project effectively promotes high portability and provides a simple way to monitor the process on the go.

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