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IMPLEMENTATION OF SCADA BY USING GSM

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ABSTRACT

The purpose of this project is to accumulate the remote electrical parameters like Voltage, Current and Frequency and send these real time values over GSM network victimization GSM Modem/phone. This project is additionally designed to shield the electrical electronic equipment by operational AN magnetic attraction Relay. This Relay gets activated whenever the electrical parameters exceed the predefined values. The Relay is accustomed operate a electrical fuse to change off the most electrical provide. User will send commands within the style of SMS messages to browse the remote electrical parameters. this technique can also mechanically send the $64000 time electrical parameters sporadically (based on time settings) within the style of SMS. This can also be designed to send SMS alerts whenever the electrical fuse journeys or whenever the Voltage or Current exceeds the predefined limits. This project makes use of AN aboard laptop that is usually termed as small controller. This aboard laptop will expeditiously communicate with the various sensors being employed. The controller is given some internal memory to carry the code. This memory is employed to dump some set of assembly directions into the controller. and therefore the functioning of the controller relies on these assembly directions.

Keyword: SCADA, GUI window, GPRS.

1. INTRODUCTION:

system that is ready to watch all the systems like temperature, Pressure, gas and wetness, The SCADA master conjointly performs processing on the information's gather from the temperature, pressure and wetness sensing element and sends the management commands in protocol format.

The projected system is to attain management over the Food storage firm through command sent by user [1]. SCADA system consists of primarily the room, field space and communication device. within the standard SCADA systems the communication could be achieved primarily through the radio waves and up to latest by message communication through GSM modem GSM is a wireless communication technology; preferred these days for transmission information anyplace within the world through SMS with the standard ways that of communication has their own pitfalls i.e. radio waves area unit at risk of interference GSM message communication area unit quite slow and there' slimitation for GSM messages. thus we tend to area unit proposing the new approach of communication.

II. SYSTEM ARCHITECHURE

A. **PROBLEM DEFINITION SCADA** system primarily face 3 main challenges, these area unit high price at time the of installation, issue to achieving security and wired association thanks to that it cannot use at remote place from server. therefore our planned systems aiming to be develop exploitation Wireless Networks with real time basis that having information transmission and reception capability between computer and field space. the most objective of the enforced system is as follows

• activity & composition of gas exploitation detector at remote place.

• Collect the info from detector nodes send it to base station by wireless channel.

• In base station we tend to use the data on user interface window

• we tend to conjointly send the management signal from the bottom station to remote location to manage the sector temperature

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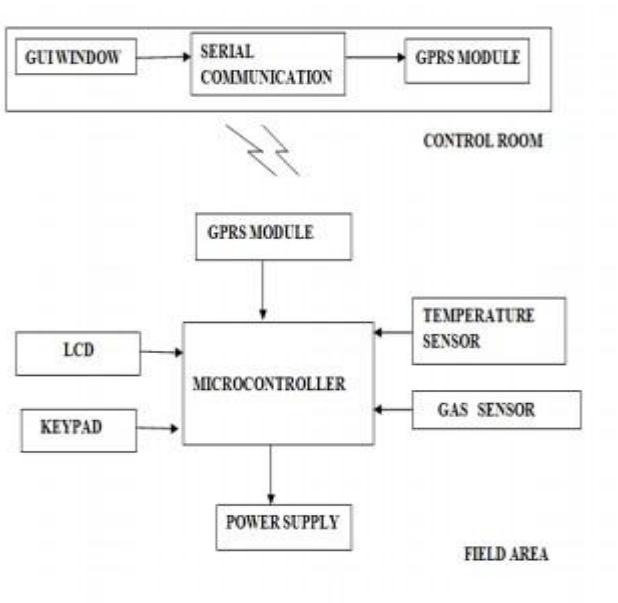

Figure.1. Block diagram of wireless SCADA system using microcontroller

B. **PROPOSED SYSTEM** The system is employed to watch and management temperature and gas severally .Gas detector within the system displays existing CO2 gas and temperature detector displays temperature of the atmosphere on the user interface window temperature may be controlled by, cooling fan provided on shopper aspect [2].

III.HARDWARE DESIGN

The circuit has overload and terminal protection. The capacitors should have enough high voltage rating to securelyhandle the input voltage feed to circuit. we have a tendency to discuss the detail of power provide, ATmega16 microcontroller, temperature detector, gas

sensor, alphanumeric display and GSM module during this half.

1. **POWER SUPPLY**:

Starting with power offer style can create straight forward the project to implement as a result of all electronic circuits need the DC voltage to figure properly. to induce correct DC voltage, we have a tendency to need the AC to DC converter. this can be wiped out power offer style. This circuit need 2 DC voltages i.e. +5V and +12V.To get these voltages, we'd like a electrical device to create the AC mains drop to a secure price i.e.12-fifteen volts so use a rectifier to convert AC into DC. This circuit will provide +5V output at regarding a hundred and fifty mA current, however it are

often accumulated to one A once smart cooling

is more to 7805 regulator

2. **ATMEGA 32MICROCONTROLLER** :

The Atmega32 is 8-bit microcontroller is accountable for all the operations with their low power consumption, varied combination of 8-channel 10-bit ADC, four PWM Channels to scale back the program size, reduced instruction set computing |architecture} architecture to store real time information and quick process non-volatile memory isneeded thus this microcontroller is especially appropriate for industrial management, access management. It conjointly contains programmable serial UART for serial communication. By death penalty powerful directions in single clock cycle, ATmega16 achieves throughputs approaching one million instructions per second per MHz permitting the system designer to optimize power consumption versus process speed. The idle mode stops the hardware whereas permitting the USART, two-wire interface, A/D converter SRAM, Timer/counter, SP1 port and interrupts system to continue functioning. the facility down mode saves the register content however freezes the generator, disabling all different chip operate till ensuing interrupt or hardware reset. In power save mode, the asynchronous timer continues to run , permitting the user to keep up a timer base whereas the remainder of device is sleeping. The ADC noise reduction mode stops the hardware and every one I/O modules except asynchronous timer and ADC, to reduce switch noise throughout ADC conversion. In stand-by mode, the oscillator is running whereas the remainder of device is sleeping [3][4]. this may enable in no time take off combined with low power consumption

3. **GAS SENSOR MQ-135** :is an air quality sensor. It can use in air quality control equipments for buildings/offices. MQ-135 gas sensor has fast response and high sensitivity to detect the gas. It has features like simple driving circuit, stable long life, and wide detecting scope.

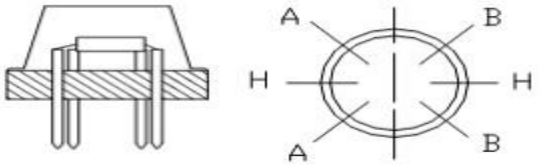

Figure.3 Structure and configuration of MQ-135

MQ-135 sensing element in the main composed by small AL2O3ceramic tube, Tin oxide (SnO2) sensitive layer, measure conductor and heater area unit mounted into a crust created by plastic and chrome steel internet. it's sixpins out of that four area unit accustomed fetch signals and remaining area unit used for providing heating current. Resistance of sensing element is variable

for varied gases. it's appropriate for detective work of NH3, alcohol, Benzene, smoke, CO2, etc. during this it use to observe carbonic acid gas gas

4. **TEMPERATURE SENSOR** : The LM35 series square measure exactness integrated-circuit temperature sensors, whose output voltage is linearly proportional to the °Celsius (Centigrade) temperature [5]. The LM35 therefore has a bonus over linear temperature sensors tag in °Kelvin, because the user isn't needed to cipher an outsized constant voltage from its output to get convenient Centigrade scaling. LM35 doesn't need any external standardization or trimming to supply typical accuracies of ±¼°C

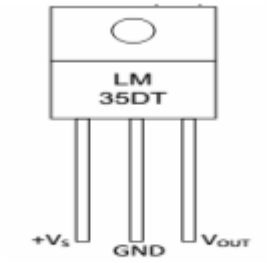

Figure.4 Structure of LM 35

at

5. **LCD The Liquid Crystal Display (LCD**) is used to show the info. once we use sixteen by a pair of {lcd| liquid crystal show |LCD|digital display |alphanumeric display} which means that it will display the 2 lines containing sixteen characters every. The pel matrix is seven|of seven} by five pixels that square measure every character are

often displayed exploitation 7 columns of the pixels and five rows of the pixels. to manage the operation of LCD, 3 management signals square

measure used thatsquare measure nut (Enable), R/W (Read/Write), RS (Register Select).

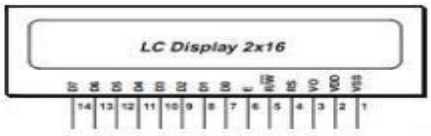

Figure.5 16×2 LCD

It is interfaced with ATmega16 microcontroller on the sector space. The liquid crystal {display|LCD|digital display|alphanumeric display} is employed to display the presence of gas like carbon dioxide and gift temperaturewithin the atmosphere. The point given by server is additionally show on digital display.

6. **4×4 keypad**: A 4×4 input device is interface with microcontroller on field facet. To interface a four×4 input device to a microcontroller eight lines area unit needed out of that 4 lines area unit needed to input pins and therefore the different 4lines to the output pins of the microcontroller.

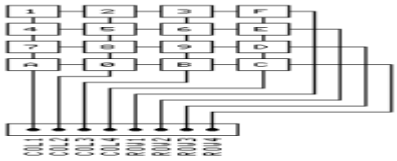

Figure 6.4x4 keypad

7. **MOTOR DRIVER IC L298**: is high voltage, high current full bridged driver IC, having low saturation voltage and it has capability of over temperature control.

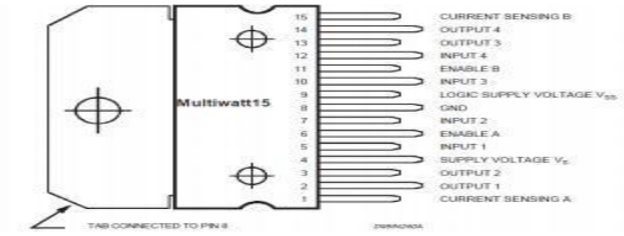

Figure 7.L298 motor driver structure

8. **GSM MODULE GSM (Global System for Mobile communication) :** is the most well liked customary for mobile communication system within the world.SIM900 GSM module used here may be a quad-band (850/ 900/ 1800/ 1900 MHz) GSM module consists of a TTL interface associate degreed an RS232 interface . it's associate degree embedded powerful TCP/IP protocol stack that is that the main feature of module. The GSM module perpetually desires a pc or external processor/controller to receive "AT commands" type. GSM module itself doesn't give any interface between the user and also the network, however the pc to thatmodule is connected is that the interface between user and network.

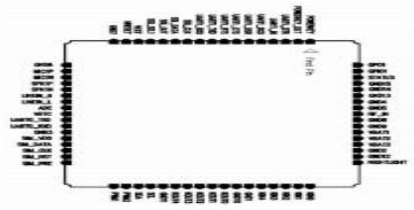

Figure.7 Pin assignment of SIM 900

IV.SOFTWARE DESIGN:

Software style for SCADA system relies on 2 elements initial is microcontroller programming and interface windowstyle. For wireless SCADA system interface window at the server aspect is made exploitation Microsoft visual studio 2010.Server aspect application run on windows software system ,it needs the ".Net" version four.0 being install on server aspect. At the sector aspect microcontroller programming is finished exploitation AVR studio that is freelyaccessible on net. The programming is build exploitation embedded C language. careful flow chart for operating of whole system in addition as package style.

V.EXPECTED RESULT AND DISCUSSION

The graphical programme window victimization C# . Through GSM module victimization GPR Skind service ommunication is finished inside server and field. The server with user interface window shows the varied knowledge send field aspect microcontroller.

VI.CONCLUSION

The planned system ceaselessly monitors greenhouse emission gas and controls temperature with the assistance of cooling fan provided at field facet that is intended shows the amount of gas and temperature within the atmosphere victimization Wireless service like GPRS rather than wired a ffiliation. liquid crystal display displays knowledge on field facet and user interface window shows knowledge on server facet sent by microcontroller..We can set temperature from server and in line with that cooling fan gets operate once temperature reaches to line point; the cooling system is stop mechanically.

VII. REFERENCES

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