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INDUSTRIAL PARAMETERS MONITORING SYSTEM

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Abstract

Last year, continuous monitoring was very difficult for people. Business managers need to monitor temperature, current, voltage, gas, etc. It needs a large number of people to monitor and control the products. For this reason, unusual situations may arise from time to time when doctors are not available. To avoid this uncertainty, we recommend LIFI based market analysis, which evaluates the market regularly. If any abnormality occurs, it will directly send a message to the administrator via LIFI communication. LIFI enables data transmission through LED bulbs. Its density changes faster than the human eye. A method based on LED flashes can encode information under the light. It is used to monitor industrial parameters such as temperature indicators, current indicators, voltage indicators and fuel sensors. Reduce the number of employees needed for job tracking by tracking all transactions without going through a single computer with the LIFI application LIFI, LED, temperature sensor, voltage sensor, current sensor, gas sensor

1. Introduction

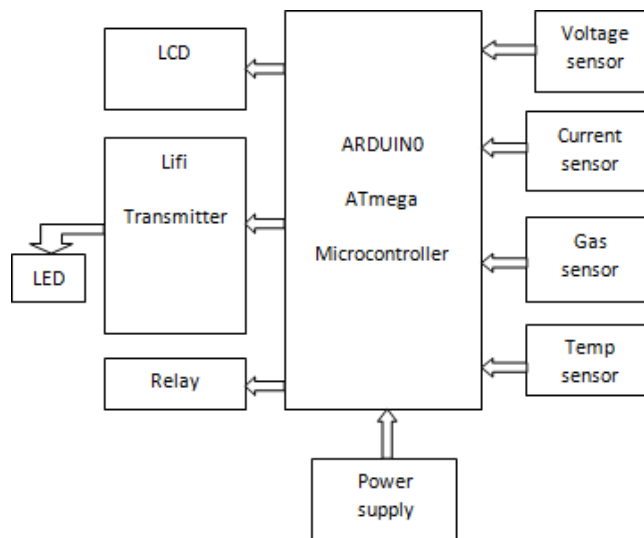
The main purpose is to establish a business management system and control the use of LIFI communication. Abnormalities can occur when products are not properly monitored and controlled. Maintenance is the most important thing in business. The analysis is performed by sensors with the highest accuracy and reliability. The control system will also be controlled by this LIFI communication. Arduino interprets the commands given by LIFI with the help of LEDs and controls the products by sending messages. The interface between the LIFI transmitter and the LIFI receiver is made by Arduino. This concept has been applied in this paper to reduce the number of workers in the industry.

2. Methodology

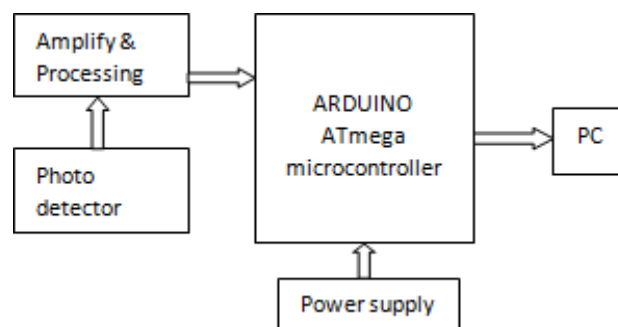
Our project mainly aims to reduce the health problems of machines and help them maintain them without relying on humans. Nowadays, with the development of the economy and the increase in the population, especially in the business world, they release unwanted products into the environment. This is one of the most important issues in business. The current idea of our project is to monitor and control the health of the machine, connect LIFI to the machine and help communicate with LIFI. Here sensors, current sensors, temperature sensors, gas sensors etc. There are entries such as. Provided for ARDUINO development board. LIFI is used to send messages through LED bulbs. LIFI provides uninterrupted output. This application is designed to monitor and control the health of machines in the industry. In the current project, the WIFI concept, which is quite expensive and has a data transmission rate of 150Mbps, is used. WIFI has problems sending data over long distances. The implementation of the LIFI concept will be done in the business sector itself to monitor and control the health of the systems. LIFI is cheaper than WIFI because free bands require no license and use light.

1. BLOCK DIAGRAM

1.1. TRANSMITTER:



3.2 RECEIVER:

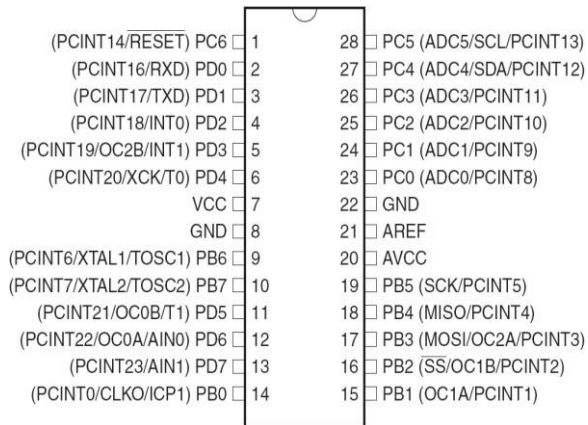


4.LIFI

Here we can get information about the structure and functioning of the LIFI model. LIFI transmits information through lighting, which transmits information through LED bulbs that change faster than the human eye can follow. The data of the light can be encoded by changing the opening and closing speed of the flash. LED power is adjusted very quickly and is invisible to the human eye, so the output remains constant. LIFI means light fidelity. It provides better bandwidth, efficiency, availability and security. It has high data transfer and accuracy.

5. HARDWARE DISCRPTION

The hardware consists of various components such as ARDUINO UNO atmega 328 ,relay,16*2 LCD, voltage sensor, current sensor, temperature sensor, gas sensor, LIFI transmitter, photo detector(LIFI receiver),external device (power distributor)DC supply of 5vARDUINO UNO is a microcontroller board based on the ATmega328.It contain 14 digital pin and 6 analog pin. ARDUINO is open source board and onboard programming. It is user interface easy and connect USB cable easily. It as fraction of time send the message. Arduino Uno can be programmed with the Arduino software IDE.



PIN DIAGRAM OF ATMEGA328

The pins PB0-PB5, PD0-PD7 are digital pins. The PC0- PC5 are analog pins. PB6-PB7 pins are crystal oscillator pins.

5.2 VOLTAGE SENSOR

The power meter (LM358) is used to monitor and measure the power supply. It reacts with a contrast. It will compare the input voltage with the starting voltage and the output will be the raw voltage and output it to the analog pin of the ARDUINO board. It is based on the principle of high performance. A relay that will open the circuit in case of voltage change.



5.2.1. SCHEMATIC DIAGRAM OF VOLTAGE SENSOR

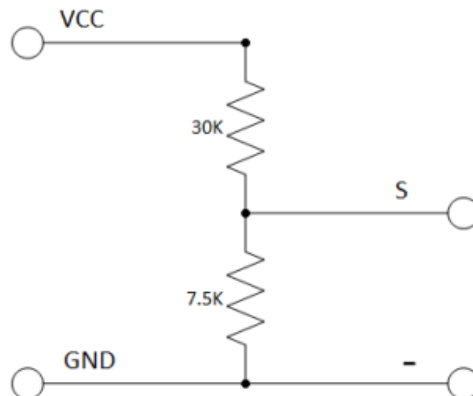
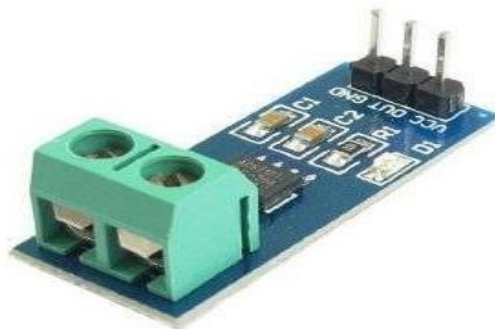


Fig-voltage sensor of schematic diagram

5.3. CURRENT SENSOR

Current sensor (ACS712) is used to measure AC and DC. It has a linear current sensor based on the Hall effect. This sensor is used in motor control, load sensing, switching power supply and overcurrent fault protection. It is quite difficult to analyze the current flow in the equipment from the main equipment. Since constant current analysis of a circuit creates galvanic isolation in the device, we must measure the current without affecting the device. A popular and simple current sensing method is the Hall effect.

Fig-Current sensor



5.3.1 SCHEMATIC DIAGRAM OF CURRENT SENSOR

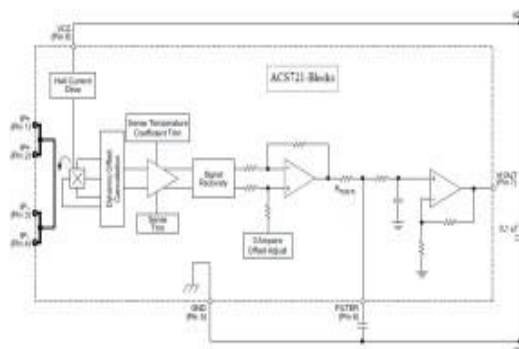


Fig-current sensor of schematic diagram

5.4 TEMPERATURE SENSOR

The LM35 is an integrated circuit that can be used to measure temperature, whose output is proportional to the temperature in oC. The LM35 has an advantage over traditional thermometers measured in Kelvin because the user does not need to subtract a constant voltage from its output to obtain a simple measurement in Celsius.

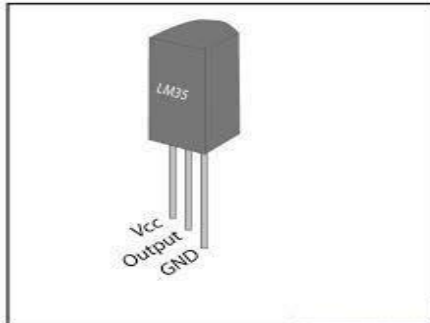


Fig-LM35 sensor

5.4.1. INTERFACING TEMPERATURE SENSOR AND LCD WITH ARDUINO

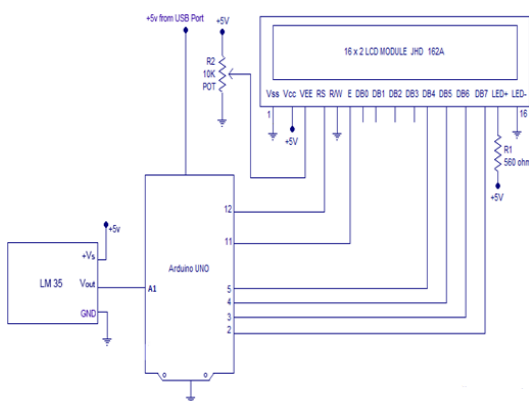


Fig-LM35 and LCD interfacing

5.5 GAS SENSOR

The Grove-

Gas Sensor (MQ2) module is used for gas detection. Hydrogen (H₂), liquefied petroleum gas (LPG), methane (CH₄), carbon monoxide (CO), alcohol, tobacco, propane, etc. can catch. It is low cost and suitable for different uses. MQ2 is not sensitive to low LPG levels. Gas sensors are used to detect unwanted gases in the air.



Fig-Gas sensor (MQ2)

5.6 RELAY MODULE INTERFACING WITH ARDUINO:

Arduino relay module is one of the most powerful applications for Arduino because it can easily control AC and DC sources by providing a 5V control relay. A relay is a switch operated by an electromagnet. Relays can be used to control high voltage devices such as motors or low voltage devices such as lights. Relays operate on electromagnetic models. When the relay coil is powered, it acts like a magnet and changes the state of the switch. The part that powers the relay module is completely separate from the part that turns it on and off.

5.6.1. CIRCUIT DIAGRAM:

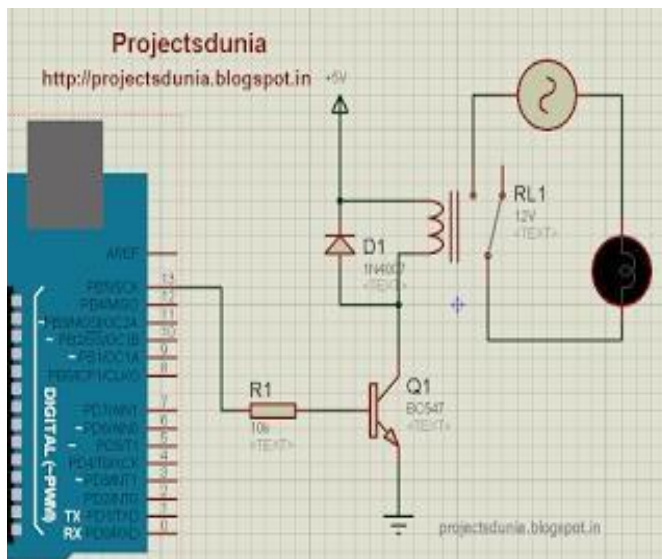
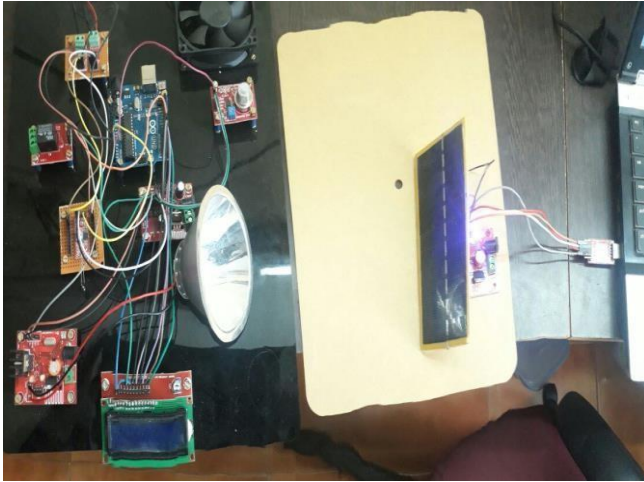


Fig-Relay Driver Circuit

HARDWARE NTERFACING



Conclusion

Thanks to this study, it is not possible to monitor some businesses continuously. A new technology called LIFI is being used to provide seamless benefits to care workers wherever they are