INTELLIGENT SYSTEM FOR HAZARDOUS GAS, HUMAN DETECTION AND TEMPERATURE MONITORING IN COAL MINES USING GSM

This project is aimed to design an intelligent system for Hazardous gas and human detection and temperature monitoring and controlling in coal mines by using GSM technology.

Security is primary concern for everyone. There are many ways to provide security in coal mines. Because the main aim of this project is to continuously monitor s the different parameters in coal mines. This is a purely wireless project using GSM modem and totally eliminates a person who has to monitor the parameters in coal mines all the time.

A GSM modem provides the communication interface. It transports device protocols transparently over the network through a serial interface. A GSM modem is a wireless modem that works with a GSM wireless network. This GSM Modem can accept any GSM network operator SIM card and act just like a mobile phone with its own unique phone number. Advantage of using this modem will be that you can use its RS232 port to communicate and develop embedded applications. Applications like SMS Control, data transfer, remote control and logging can be developed easily. The modem can either be connected to PC serial port directly or to any microcontroller.

This project is designed in such a way that, the analog quantities which are to be recorded continuously are taken and converted into corresponding digital values using an ADC. A gas senor is interfaced to the controller for detecting the hazardous gas in the coal mines and an IR transmitter and receiver also interfaced to the controller for detecting the objects(or persons) in specific area in coal mines. The microcontroller continuously monitors the sensors data. A GSM modem will be interfaced to the controller through serial communication. Whenever the temperature exceeds, a warning message will be sent to the predefined number through GSM modem automatically. When ever the gas sensor activated or any object is

Dr.no: # 10-5-56, IInd floor, opp Andhra Bank, Ramarao Peta, Kakinada-533004, (A.P) India
Website: www.ebreakers.in, E-mail : info@ebreakers.in
Land Line: 0884-2369364, Mobile: +91-9030839364, 9290101915.

detected by IR sensor then immediately message will be sent to the particular number through GSM modem. A 16X2 LCD will be interfaced to the controller to display the status of the sensors.

This project uses regulated 5V, 500mA power supply. 7805 three terminal voltage regulator is used for voltage regulation. Full wave bridge rectifier is used to rectify the ac output of secondary of 230/12V step down transformer.

TECHNICAL SPECIFICATIONS:

HARDWARE:

- Micro controller : AT89S52
- Crystal : 11.0592 MHz
- LCD : HD44780
- Temperature sensor : LM35
- ADC : ADC0804
- Gas sensor
- IR transmitter
- IR receiver
- GSM modem : Sim 300
- Power supply
- Transformer : 12V step down
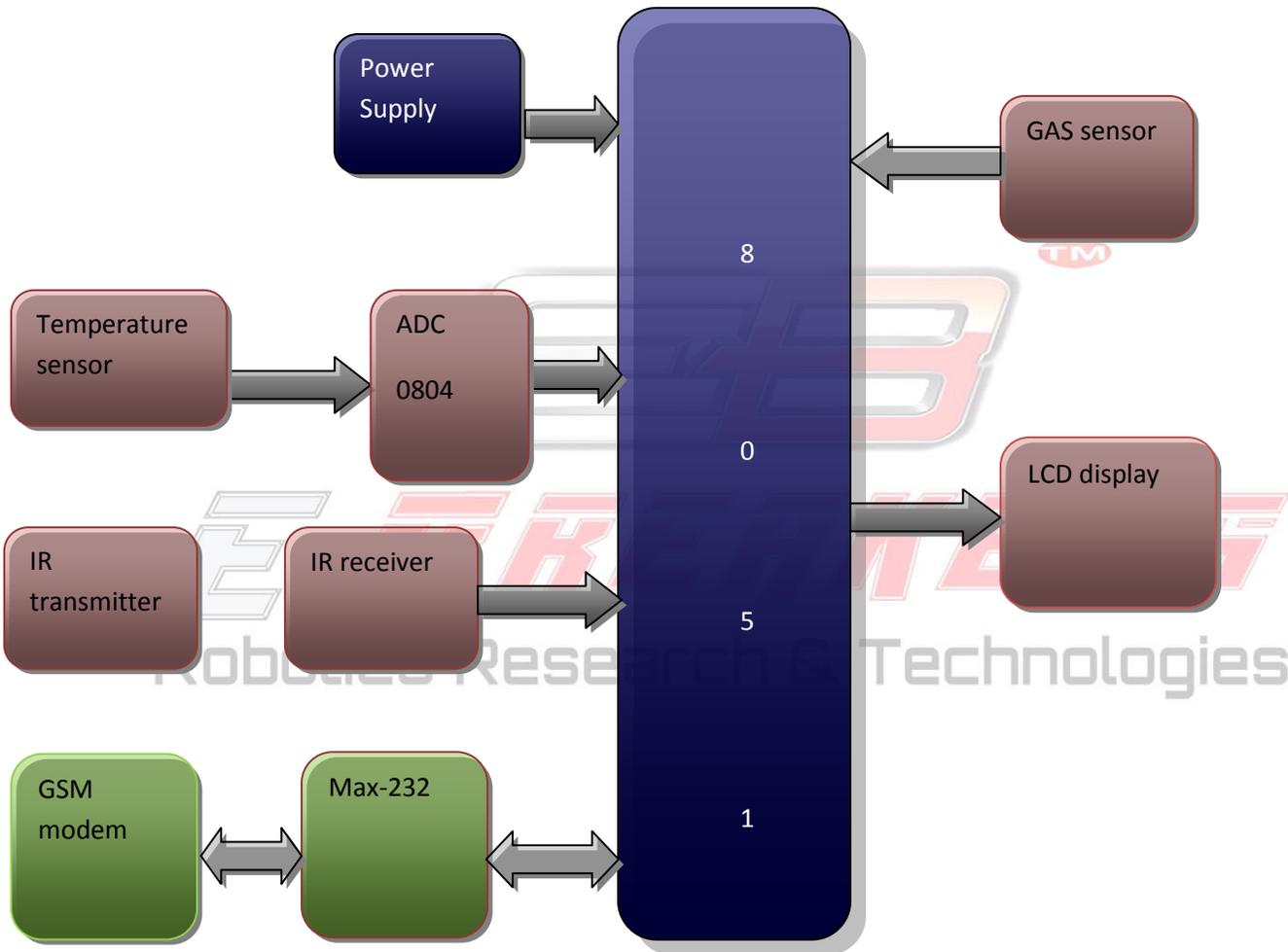- Filter : 1000uf/25V
- Voltage Regulator : 7805

SOFTWARE :

- Keil micro vision
- proteus
- UC flash

APPLICATIONS:

- Industrial applications

- Household applications

Dr.no: # 10-5-56, IInd floor, opp Andhra Bank, Ramarao Peta, Kakinada-533004, (A.P) India
Website: www.ebreakers.in, E-mail : info@ebreakers.in
Land Line: 0884-2369364, Mobile: +91-9030839364, 9290101915.

BLOCK DIAGRAM:

Power Supply →	
	← GAS sensor
	8
Temperature sensor → ADC 0804 →	
	0
	→ LCD display
IR transmitter → IR receiver →	**5**
GSM modem ↔ Max-232 ↔	**1**

POWER SUPPLY BLOCK DIAGRAM:

Step down Transformer → Bridge Rectifier → Filter → Regulator → Output

Dr.no: # 10-5-56, IInd floor, opp Andhra Bank, Ramarao Peta, Kakinada-533004, (A.P) India
Website: www.ebreakers.in, E-mail : info@ebreakers.in
Land Line: 0884-2369364, Mobile: +91-9030839364, 9290101915.