



FLUID / GAS CONTROL OF BOILER USING STEPPER MOTOR CONTROL VIA GSM

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Abstract- The plan parts of an inserted gadget which can control stepper motor by sending a particular SMS message from a cell phone are introduced. This gadget is amazingly convenient at places where we need to control the HIGH and LOW temperature exchanging of the boiler yet no wired association with that spot is required. GSM (SMS) controlled stepper motor is programmed control framework which is fit for getting a lot of order directions as Short Message Service and play out the fundamental activities like beginning, stop and speed control. We utilize a committed modem at the beneficiary module and send the AT orders utilizing SMS administration according to the necessary activities. The versatile unit is interfaced with Arduino UNO(R3) so it assumes the liability of perusing the got orders as SMS and plays out the predefined undertakings, for example, motor start, stop, motor course and speed which thus controls the temperature of the evaporator.

Key Words: Stepper motor, GSM, Arduino Uno

1 INTRODUCTION

This Project is a generally excellent case of inserted framework as the entirety of its activities is constrained by smart programming inside the microcontroller. GSM and GPRS based plans have built up another creative and open utility item for mass correspondence. This is a Stepper Motor Control Device which control the stepper motor through messages got as SMS or GPRS Packets and furthermore send affirmation of errand. This gadget is intended to remotely control the Stepper Motor from anyplace and whenever. This remote-control Stepper motor control gadget is conceivable through implanted frameworks. The primary point of the task is to structure a SMS electronic Stepper Motor Control toolbox which can supplant the customary Stepper Motor Control Devices. The

toolbox gets the SMS, approves the sending Mobile Identification Number (MIN) and plays out the ideal activity after vital code change. The framework is made effective by SIMs so the SMS can be gotten by number of gadgets loads up in a territory utilizing procedures of time division numerous entrance. In light of this, we have planned the task to work with sim300 innovation.

The GSM modem is arranged as a collector. The SMS sent by the client is written in a specific arrangement. The undertaking manages the structure advancement of equipment and programming for remote stepper motor. Switches are given to control the bearing of stepper motor on the transmitter side. The status of these switches is transmitted utilizing GSM transmitter and got by the GSM collector. The microcontroller at the less than desirable end consistently screens the status of these changes got from the decoder and plays out the comparing activity. What's more, henceforth the speed of the progression developments and the course can be controlled and fluctuated. For each change required in the progression development of the stepper motor, the present circumstance esteem must be reset to the following an incentive to be procured subsequent to turning off the fundamental force supply. At that point the motor must be restarted for the execution of the following estimation of the bearing and speed of the stepper motor. And this should be possible with the assistance of GSM MODULE, sparing the client the loathsomeness of a confounded riddle of wires, and henceforth it changes over a peculiar troublesome innovation to a simple and easy to understand one. 16 X 2 Liquid Crystal show (LCD) is given at the recipient side to show the status of the stepper motor. L293D driver is utilized to drive the stepper motor. This venture utilizes directed 5V and 12V, 500mA force supply. 7805 three terminal voltage controllers are utilized for voltage guideline. Extension type full wave rectifier is utilized to correct the air conditioner yield of optional of 230/12V advance down transformer.

The pole or axle of a stepper motor pivots in discrete advance additions when electrical order beats are applied to it in the best possible grouping.

The motors pivot has a few direct connections to these applied info beats. The arrangement of the applied heartbeats is legitimately identified with the heading of motor shafts revolution. The speed of the motor shafts pivot is straightforwardly identified with the recurrence of the info beats and the length of turn is legitimately identified with the quantity of information beats applied.

This task is structured with a plan to utilize the versatile hand set as a significant distance remote controller. The portable sets are currently a day utilized most generally and ordinarily. The SMS can be sent to any versatile client of any specialist co-op with no or a base charge. This framework is structured utilizing a GSM modem. The GSM modem is designed as a recipient. The SMS sent by the client is written in a specific organization. The controller gets the message and disentangles it to distinguish the undertaking to be finished.

Stepper motors discover part of utilizations in PC peripherals, business machines, process control, machine devices and mechanical technology. Particularly, in mechanical technology and procedure control like silicon handling, I.C. Holding and Laser cutting applications, it is important to control the stepper motor from remote spots.

This undertaking is to control the stepper motor through GSM MODULE. This arrangements with the plan and advancement of equipment and programming for Wireless Stepper Motor Control System. This period is a time of machines. Each work – the human does – is being made simple by the utilization of machines, for instance: Robots. There is an exceptionally huge scope usage of robots in ventures, and people are required to just order these robots.

The venture manages the structure advancement of equipment and programming for remote stepper motor. Switches are given to control the bearing of stepper motor on the transmitter side. The status of these switches is transmitted utilizing GSM transmitter and got by the GSM recipient. The microcontroller at the less than desirable end persistently screens the status of these changes got from the decoder and plays out the comparing activity. What's more, henceforth the speed of the progression developments and the course can be controlled and changed. For each change required in the progression development of the stepper motor, the present circumstance esteem must be reset to the following an incentive to be obtained subsequent to turning off the principle power supply. At that point the motor must be restarted for the execution of the following estimation of the course and speed of the stepper motor. And this should be possible with the assistance of GSM MODULE, sparing the client the repulsiveness of an entangled riddle of wires, and henceforth it changes over an odd troublesome innovation to a simple and easy to understand one. 16 X 2 Liquid Crystal show (LCD) is given at the collector side to show the status of the stepper motor. L293D driver is utilized to drive the stepper motor. This undertaking utilizes directed 5V and 12V, 500mA force supply. 7805 three terminal voltage controllers are utilized for voltage guideline. Extension type full wave rectifier is utilized to amend the air conditioner yield of optional of 230/12V advance down transformer.

The pole or axle of a stepper motor pivots in discrete advance additions when electrical order beats are applied to it in the best possible grouping.

The motors turn has a few direct connections to these applied info beats. The arrangement of the applied heartbeats is straightforwardly identified with the course of motor shafts turn. The speed of the motor shafts revolution is straightforwardly identified with the recurrence of the information beats and the length of turn is legitimately identified with the quantity of info beats applied. This task is planned with a plan to utilize the versatile hand set as a significant distance remote controller. The versatile sets are currently a day utilized most generally and normally. The SMS can be sent to any versatile client of any specialist organization with no or a base charge. This framework is structured utilizing a GSM modem. The GSM modem is arranged as a beneficiary. The SMS sent by the client is written in a specific organization. The controller gets the message and disentangles it to recognize the assignment to be finished.

2 SYSTEM ANALYSIS

2.1 EXISTING SYSTEM

Stepper motor is generally utilized moving framework because of their dependable structure and control straightforwardness. In this way, control the speed of stepper motor is extremely basic in industry and another specialized field. Particularly in Robotics and procedure control like silicon handling and I.C. Holding it is important to control the speed of stepper motor from remote spots, so thus extraordinary control strategies for stepper motor are designed. This strategy is one of them. His is a stepper motor control gadget which controls the stepper motor through SMS and GPRS. The microcontroller gets the SMS from the MODEM and performs procedure on a stepper motor toolbox.

2.1.1 DISADVANTAGES

- The fundamental point of this undertaking is to control speed of motor from remote places and play out the ideal errand. In this venture we utilize a committed modem to sending knead as contribution to the controller and microcontroller is use as recipient reason.
- Microcontroller is interface with modem so it gets AT order and assume the liability to perusing the gets order play out the predefined task which is given to it, for example, beginning, halting, and motor revolution and speed control.
- In this venture we are utilizing programming name Proteus programming for making test unit and Keli programming for dumping program in microcontroller.

2.2 PROPOSED SYSTEM

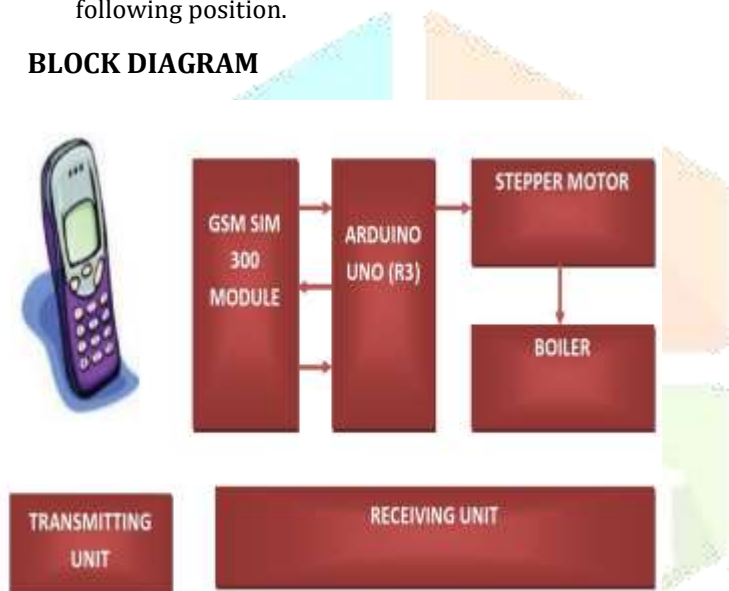
Stepper motor is found in a great deal of utilizations, for example, PC peripherals, business, machines, process control, machine apparatuses and apply autonomy. Particularly in various zones of mechanical technology, process control like silicon preparing, in Nuclear lab, I.C. Holding and Laser cutting application, it is important to control stepper motor from remote spots. In this paper, the plan parts of an implanted gadget which can control stepper motor by sending a s pacific message from a cell

phone are introduced. This controller is very convenient at place where we need to control the ON and OFF exchanging of the gadget yet no wired association with that place accessible. GSM controller stepper motor is programmed control framework which is fit for accepting a lot of order directions from wherever where GS M signals are accessible as Short Message Service and play out the fundamental activity like beginning, stop and speed control.

2.2.1 ADVANTAGES

- The stepper motor utilizes the hypothesis of activity for the magnets to make the motor shaft turn an exact separation, when a beat of power is given. At the point when no force is applied, the leftover attraction in the rotor magnets will make the rotor adjust one lot of its attractive posts with the attractive shafts of one of the stator magnets.
- This implies that that rotor will have 24 potential detent positions. At the point when the rotor is in a respectable position, it will have enough attractive power to shield the pole from moving to the following position.

BLOCK DIAGRAM



3. SYSTEM REQUIREMENTS

HARDWARE DESCRIPTION

3.1 Power Supply

The AC supply is applied to 12V advance down transformer. The transformer yield is the 12V AC which is corrected utilizing a diode connect. The yield of Diode Bridge of 12V DC is separated by capacitors.

3.2 Stepper motor



A stepper motor (or step motor) is a brushless, synchronous electric motor that can partition a full turn into countless advances. The motor's position can be controlled decisively, with no input component. Stepper

motors are like exchanged hesitance motors (which are extremely huge venturing motors with a diminished shaft tally, and by and large are shut circle commutated).

3.3 ARDUINO UNO R3 MICROCONTROLLER



The Arduino Uno R3 is a microcontroller board based on the ATmega328. It has 14 digital input/output pins (of which 6 can be used as PWM outputs), 6 analog inputs, a 16 MHz crystal oscillator, a USB connection, a power jack, an ICSP header, and a reset button. It contains everything needed to support the microcontroller; simply connect it to a computer with a USB cable or power it with a AC-to-DC adapter or battery to get started.

3.4 GSM SIM 300 MODEM



GSM/GPRS module is utilized to build up correspondence between a PC and a GSM-GPRS framework. Worldwide System for Mobile correspondence (GSM) is a design utilized for versatile correspondence in the majority of the nations. Worldwide Packet Radio Service (GPRS) is an augmentation of GSM that empowers higher information transmission rate. GSM/GPRS module comprises of a GSM/GPRS modem gathered together with power supply circuit and correspondence interfaces (like RS-232, USB, and so forth) for PC. The MODEM is the spirit of such modules.

4 .WORKING

In this undertaking, we are utilizing the GSM innovation. A miniaturized scale controller is a little PC on a solitary incorporated circuit comprising of a moderately basic CPU

joined with help capacities, for example, clocks and so forth. Microcontrollers are utilized in naturally controlled items and gadgets, for example, remote controls, office machines, power apparatuses and toys. The LCD shows the present activity of the framework. The microcontroller is utilized to control the transfer drivers relying on the product program. Significant job of this task is to get the SMS to speed control of stepper engine. At first, the SMS is gotten from the individual approved to go through this set by the GSM modem (SIM300 MODEM) and is moved to the microcontroller gadgets pack with the assistance of a MAX232 chip. According to the AT orders given by the microcontroller to the modem, the control signal is removed and is utilized to control the gadgets associated with it. We need to change over the „septets“ of the telephone to „octets“ on the grounds that the microcontroller needs bytes with 8 bits length. This procedure is important to unravel the message from SMS. A program is stacked into microcontroller gadgets pack and afterward the circuit is associated with the modem. The microcontroller now attempts to peruse the SMS from the main memory area of the modem and continues attempting again until the modem gets any (customized for each one second). Before executing the control signal piece of the SMS, the modem separates the number from the SMS and checks if this number has the entrance to control the gadget or not. For controlling the gadgets, the message will be sent in hexadecimal organization. The hex information is changed over into double and the specific yield is empowered. We have associated LEDs to the ports of miniaturized scale controller to show the yield and their status demonstrates whether the ports are set to „ON“ or „OFF“. What's more, speed control like send the message in content configuration like MOTOR SPEED LOW, MOTOR SPEED MEDIUM and MOTOR SPEED HIGH FOR STEPPER MOTOR.

5.CONCLUSION

In This paper we have talked about the minimal effort, secure, pervasively available remotely controlled speed control of stepper engine is presented. The methodology

talk about in this paper is control the speed of stepper engine through back rub. Stepper engine control is use in a large number of mechanical reason, home security and in atomic force research facility. On the off chance that we need to control the stepper engine from remotely, at that point this task is valuable on account of ease. The GSM innovation fit arrangement has demonstrated to be controlled remotely, give mechanical security has accomplish the objective to control distinctive modern machines remotely utilizing the SMS based framework. The information is feed in the microcontroller as order and portable and microcontroller is interface and AT order is given for versatile correspondence. At the point when the SMS is get by the modem is perused by the controller is further work is finished by the controller according to the order given in the SMS for example start , stop, switch ,forward order

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