



SMS based motor turn on/off

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ABSTRACT :

Sms based Motor Turn On/Off uses a simple Sms message to control the On/Off state of motor. It allows the user to turn the motor on or off remotely from anywhere in the world. This reduces the need of being physically present near the motor. This saves time in industrial and agricultural applications where the motor can be far away from the control room or farm. The existing solution uses very lengthy wires and cables that cover the distance between the control room and the motor. However, even this is locked to a certain location as the motor cannot be controlled from anywhere else. The Sms based Motor Turn On/Off offers a more complete and better solution to this problem by completely wireless. The user can simply send a Sms message from anywhere in the world to turn ON the motor and the Gsm module interfaced with Arduino will receive it to turn On the motor by using 3 relays. If the user wants to turn the motor off, they can simply turn it off by sending another Sms message and the Arduino will turn off the relays, which in turn turns the motor off. The system consists of several components: an Arduino nano, A sim card for receiving sms messages, a Relay to drive the motor, and a communication system for sending and receiving the message. The Arduino reads the sms message and accordingly turns the motor ON/OFF and sends a message that the motor is On/Off to the number that sent the message.

Keywords: SMS, GSM module, Arduino Nano

Introduction :

Our paper discusses the idea of controlling a motor, usually a pump wirelessly by using sms messages. By sending sms messages, we can remotely control the motor's state from anywhere in the world. This offers a solution to inconvenient, exhausting and time consuming problems often seen in agricultural sector. Sms messages have reception almost everywhere, hence, they are more reliable than using internet which varies in speed and efficiency depending upon the network range. The project has several advantages over traditional control systems. It eliminates the need for complex wiring and control panels, making it more cost-effective and easier to install. It also provides greater flexibility and convenience, allowing users to control the motor remotely using their mobile phones. The sms based motor control system is particularly useful in situations where the motor is located in a remote or hard-to-reach location. It eliminates the need for manual intervention, saving time and effort. It is also ideal for situations where the motor needs to be turned on or off at specific times, such as in agricultural irrigation systems. The system is built using an Arduino nano microcontroller board, a gsm module, and relay. The Arduino nano is responsible for reading the SMS message from the gsm module and controlling the relays based on the message content. The gsm module is used to receive the SMS message from the user's mobile phone. The relays are used to turn on or off the motor. The project has several advantages over traditional control systems. It eliminates the need for complex wiring and control panels, making it more cost-effective and easier to install. It also provides greater flexibility and convenience, allowing users to control the motor remotely using their mobile phones.

Literature Survey :

The project aims to develop an SMS-based control system for a motor using Arduino and gsm technology. The system receives an SMS message from the GSM module, which is read by the Arduino nano. Based on the message content, the Arduino will turn on or off the relay connected to it, which in turn will control the motor. The system is designed to be simple and easy to use, with minimal hardware requirements. It can be used in a variety of applications, including industrial automation, agriculture, and home automation. The project has several advantages over traditional control systems. It eliminates the need for complex wiring and control panels, making it more cost-effective and easier to install. It also provides greater flexibility and convenience, allowing users to control the motor remotely using their mobile phones. This makes it so that the user can control the motor from being anywhere in the world. The SMS-based motor control system is particularly useful in situations where the motor is located in a remote or hard-to-reach location. It eliminates the need for manual intervention, saving time and effort. It is also ideal for situations where the motor needs to be turned on or off at specific times, such as in agricultural irrigation systems. Overall, the SMS-based motor control system is a simple yet effective solution for controlling motors using SMS messages. It is easy to use, cost-effective, and can be used in a variety of applications.

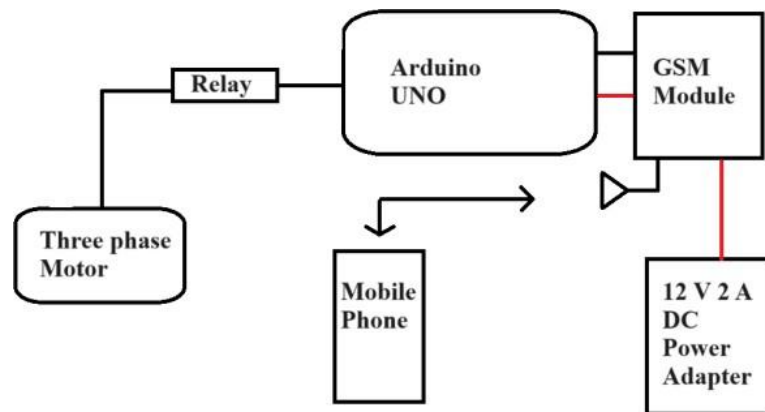


Fig 2.1 Block Diagram

Hardware aspects and working :

1. Arduino
2. Gsm Module Sim 900A
3. Relay (5V SPDT)
4. Power Supply (9v 2A)
5. SIM Card

Implementing a gsm based motor control system is relatively inexpensive, requiring minimal hardware (such as an Arduino board and a gsm module) and easy setup. The system can operate in auto mode, responding to SMS commands, or manual mode if needed. Farmers can check the status of the motor by sending an SMS query, providing transparency and peace of mind.

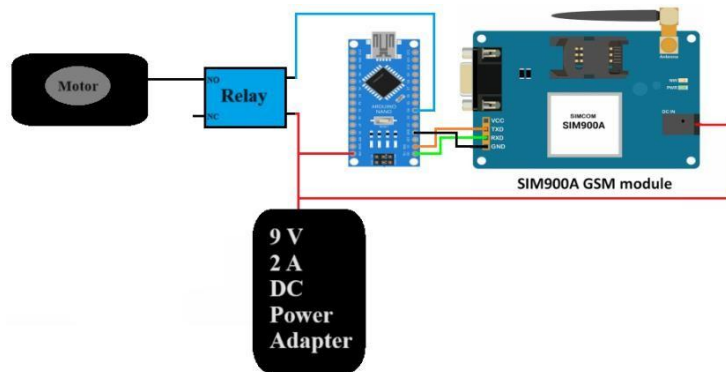


Fig 3.1 Interfacing diagram

A SMS based Motor Turn ON/OFF using Arduino and gsm system consists of several components working together to turn a motor ON or OFF. Here is a breakdown of each component and their role in the system:

1. Arduino Board - This is the central processing unit of the system that runs the code and controls the various components. It receives user input and accordingly sends signals to the relays.
2. Relay- The relays are used to act as a switch. They provide electrical isolation for the Arduino and prevent the motor from draining excess current.
3. GSM Module - The GSM module is responsible for sending and receiving text messages between the user's mobile phone and the Arduino board. It can be used to remotely turn on or off the motor from anywhere in the world.
4. Power Supply - The power supply provides the required voltage and current to run the Arduino board, GSM module, and other components. It can be either a battery or an AC adapter.

- The user sends an sms to the gsm module containing the command message.
- The gsm module receives the sms and extracts the command message.
- The Arduino board reads the command message from the gsm module and compares it with the declared string.
- If the message triggers ON condition, then the Arduino board sends high signal to the relay which turns on the motor.
- If the message triggers OFF condition, then the Arduino board sends low signal to the relay which turns off the motor.
- If the message triggers the status function, then the current status of the relay pin is checked by the Arduino and sent to the user.

The project uses the Arduino IDE to write the code for the Arduino board. The code involves initializing the components and setting up the communication between them. The GSM module is initialized with the appropriate AT commands, and the message receiving and comparing is done by the Arduino board.

Conclusion :

The sms-based motor control system proves highly advantageous in agricultural settings. It allows farmers to remotely manage irrigation pumps and other machinery, offering flexibility in responding to changing weather conditions without the need for physical presence. Farmers can schedule motor activations to align with specific crop water requirements or take advantage of off-peak electricity rates, leading to water and energy conservation. By eliminating the need for manual intervention, the system streamlines agricultural operations, reducing labor efforts and enabling farmers to focus on other critical tasks. Additionally, its on-the-go adjustability ensures quick adaptation to unforeseen circumstances or emergencies, such as abrupt changes in water levels or equipment malfunctions.

In industrial contexts, the sms-based motor control system facilitates advanced process automation by enabling precise control over machinery and equipment. This automation streamlines production processes, diminishing the need for constant manual supervision. The system contributes to energy efficiency by optimizing motor usage, preventing unnecessary operation during idle periods or low-demand times. Integration with sensor networks allows real-time monitoring of motor performance, enabling early detection of faults or malfunctions and facilitating timely maintenance to prevent costly downtime. Industrial managers can remotely monitor and control critical machinery, enhancing operational flexibility and responsiveness to production demands or operational requirements. Overall, the system's simplicity, cost-effectiveness, and ease of use make it a valuable tool for optimizing processes and increasing productivity in diverse industrial environments. The project aims to create an sms-based control system for a motor using Arduino and gsm technology. Sms messages received by the gsm module are read by the Arduino nano, which then controls relay connected to it, regulating the motor. This system offers advantages over traditional methods by eliminating complex wiring and control panels, making it cost-effective and easily installable. Users can remotely control the motor via mobile phones, particularly beneficial in remote or hard-to-reach locations and for scheduled operations like agricultural irrigation.

The system comprises an Arduino nano, gsm module, and relay. The Arduino reads sms messages from the gsm module, and the relays control the motor accordingly. This innovative solution is expected to positively impact the GSM technology market due to its simplicity, cost-effectiveness, and versatile applications in industrial automation, agriculture, and home automation. Eliminating manual intervention saves time and effort, especially in inaccessible locations or situations requiring scheduled motor activation. In conclusion, the sms-based motor control system presents a straightforward and efficient solution for motor control through sms messages. Its user-friendly design, cost-effectiveness, and adaptability across various applications make it a valuable addition to the realm of gsm technology.

The system is built using an Arduino nano microcontroller board, gsm module, and relay. The Arduino nano is responsible for reading the sms message from the gsm module and controlling the relays based on the message content. The gsm module is used to receive the sms message from the user's mobile phone. The relays are used to turn on or off the motor.

The project has several advantages over traditional control systems. It eliminates the need for complex wiring and control panels, making it more cost-effective and easier to install. It also provides greater flexibility and convenience, allowing users to control the motor remotely using their mobile phones.

The project is expected to have a positive impact on the market of gsm technology. The sms based motor control system provides a new and innovative solution for controlling motors. It is easy to use, cost-effective, and can be used in a variety of applications. The system is designed to be simple and easy to use, with minimal hardware requirements. It can be used in a variety of applications, including industrial automation, agriculture, and home automation.

The system is particularly useful in situations where the motor is located in a remote or hard-to-reach location. It eliminates the need for manual intervention, saving time and effort. It is also ideal for situations where the motor needs to be turned on or off at specific times, such as in agricultural irrigation systems.

Overall, the sms based motor control system is a simple yet effective solution for controlling motors using sms messages. It is easy to use, cost-effective, and can be used in a variety of applications.

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