Motor control using Arduino

Abstract

Wireless based industrial automation is a prime concern in our day-to-day life. The approach to RF Based Wireless Network for Industrial Applications has been standardized nowadays. In this project, a wireless control and monitoring system for a motor is realized using the RC5 protocol for safe and economic data communication in industrial fields where the wired communication is either more expensive or impossible due to physical condition.

The project involves the design of remotely starting, stopping, controlling and monitoring the motor through remote interface using Arduino. The module also includes the continuous online monitoring of the motor parameters such as temperature, speed via radio frequency (RF) data acquisition system. The designed system hence provides continuous online monitoring, controlling and protection of the motor in real time. This work is oriented towards improving the remote controlling abilities of the system while keeping the hardware requirements minimum .The designed system can be used in applications such as food industry, chemical industry,etc.

Introduction

The efficient design and implementation of WSN (Wireless Sensor Networks) has become an emerging area of research in recent years**.** The vast potential of Wireless Sensor Networks is an emerging area of research in recent years. WSN consists of spatially distributed autonomous sensors to monitor physical or environmental conditions like temperature, sound, pressure and to cooperatively pass their data through the network to a main location. The advantage of wireless sensor network is that they can be used with ease in the environment where wired system cannot be used or if used, are to be treated with caution, for example, in medical treatment. Different types of WSN are- Wi-Fi, Bluetooth, smart transducers, Sigsbee.

This project presents an embedded system for determining speed and temperature in industrial electric motors by employing WSNs technology. For speed control of motor many methods are available which are either be a mechanical or electrical for example armature control, field control, flux control method etc but this methods required large size hardware to implement. So for easy control of speed and the direction control of dc motor the wireless speed and direction control of motor by using arduino is very much essential and economical to use.

Stepper motor is found with finds lot applications in computer peripherals, business machines, process control, machine tools and robotics. Especially in robotics and process control like silicon processing, IC.Bonding and Laser trimming applications, it is necessary to control the stepper motor from remote places. This project is to control the stepper motor from remote place using RF modules. This deals with the design and development of hardware and software for Wireless Stepper motor control system.

Three switches are used to control the direction of the stepper motor at the transmitter side. The status of these switches is transmitted using IR transmitter and received by the IR receiver. The microcontroller at the receiver will be continuously monitoring the status of these switches received from the decoder and performs the corresponding action.

The IR rays are transmitted through remote and a receiver receives these rays. The sensor continuously reads the status of the switches, passes the data to the MCU. Now, it is the

job of the controller to read the data and perform the corresponding action i.e., to rotate the stepper motor clockwise, anticlockwise or entirely stop it.

Proposed System