

The design of Intelligent humidifier

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Abstract

This design is based on the microcontroller intelligent automatic humidifier. Through the core microcontroller chip equipped with temperature and humidity detection sensor, as the core of the system for the detection of temperature and humidity in the environment, through the sensor, transmitted to the core microcontroller for signal processing and conversion, and then by the microcontroller will process the signal, and the temperature and humidity sensor measured by the ambient temperature display display, here set up a water level detection and alarm module, in the water level is too low and temperature and humidity is too high when the automatic stop operation, to achieve the intelligent control of the humidifier, enhance the practicality.

Keywords

Humidity sensor; microcontroller; display.

1. Introduction

People's attention to the details of life makes the improvement of environmental conditions more and more important. Humidity also has a great impact on physical health. Although the humidifier on the market has the function of increasing the humidity in the air, it must be artificially intervened to achieve the start and stop of the humidifier. This makes it so that when the humidifier is working, if there is no artificial shutdown, the working time of the humidifier will be uncontrolled, resulting in excessive humidification. The research of this project is to measure the water level on the basis of the previous humidifier to ensure that in the case of the water level not reaching the standard, the humidifier does not start to avoid dry burning. At the same time, the temperature and humidity of the environment are collected and displayed by the temperature and humidity sensor module and the liquid crystal display module. At the same time, the design of the key input module can realize the standard of freely adjusting the temperature and humidity and water level, automatically start the humidifier in the case of humidity below the standard value, and close the humidifier when the temperature and humidity are higher than the standard value. Trigger the alarm module when the water level is lower than the set standard value, and the voice water addition prompt is performed. All collected external information is processed by the microcontroller and transmitted to the next computer for operation. The design of the intelligent humidifier is realized, and the design also helps to advance the development of humidifier product technology.

2. Automatic humidifier design scheme

In order to meet the functions required for the automatic humidifier in this design, the temperature and humidity detection sensor is equipped with a temperature and humidity detection sensor on the core microcontroller chip as the core of the system. The design of the host computer mainly includes the temperature and humidity sensor acquisition part and the key input setting part, and the lower computer transmits the signal acquisition and reception

of the host computer to the core microcontroller for signal processing and conversion. A system block diagram of this automatic humidifier is shown in 1.

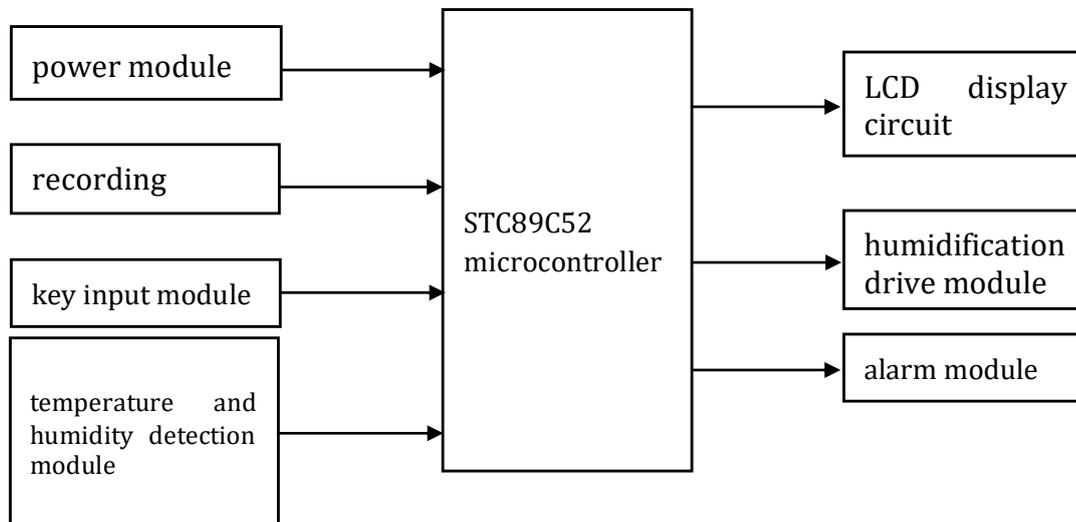


Figure 1 System block diagram of the automatic humidifier

3. How the system circuit works

The research of this project is to measure the water level on the basis of the previous humidifier to ensure that in the case of the water level not reaching the standard, the humidifier does not start to avoid dry burning. At the same time, the temperature and humidity of the environment are collected and displayed by the temperature and humidity sensor module and the liquid crystal display module. At the same time, the design of the key input module can realize the standard of freely adjusting the temperature and humidity and water level, automatically start the humidifier in the case of humidity below the standard value, and close the humidifier when the temperature and humidity are higher than the standard value. Trigger the alarm module when the water level is lower than the set standard value, and the voice water addition prompt is performed. All collected external information is processed by the microcontroller and transmitted to the next computer for operation. Realizes the design of the intelligent humidifier. The automatic humidifier meets the following requirements:

(1) First of all, the power module provides a 5V DC power supply to provide a stable input voltage for each module and the microcontroller to ensure the normal operation of the humidifier.

(2) In the design scheme, the design has a key input module, in order to allow the user to adjust the standard values of temperature, humidity and minimum water level according to their own needs. When the humidity is below the standard value we have set, the humidifier automatically turns on humidification mode until the set standard is reached. Even if you increase the ambient humidity, it will not cause excessive humidification.

(3) The humidification start and stop of the automatic humidifier is under the premise of the water level meeting the standard, when the water level is lower than the standard value we set, regardless of whether the temperature and humidity meet the humidification standard humidifier will not start, this design is to prevent the humidifier from drying and burning, resulting in damage to the humidifier.

(4) At the same time, there is a voice input module, the user can automatically enter the voice reminder of adding water according to the needs, and when the water level is lower than the minimum water level set, the water reminder can be added by playing the input voice.

(5) The temperature and humidity detection module equipped with the monitoring module monitors the temperature and humidity in the environment, and the liquid crystal display module displays the ambient temperature and humidity and water level values.

4. Summary

The design of the automatic humidifier is based on the needs of the market and the increasingly high requirements of people for the living and working environment in modern society. After realizing the impact of humidity on people's lives and work, humidifiers were born. There are many types of humidifiers on the market, but compared to the humidifiers on the market, the smart humidifiers of this design are very different. The automatic humidifier of this design needs to control the humidifier automatic humidification according to the set temperature and humidity value, and the water prompt is carried out when the water level is too low and the humidification operation is automatically stopped to prevent dry burning. At the same time, the key input module is set up, which allows the user to freely adjust the temperature and humidity value that suits the needs and stop humidification when the temperature and humidity are higher than the ideal humidifier. The operation of automatic humidification is realized in a real sense.

References

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