Component Details

Everything is being operated on an Arduino Mega 2560 unless stated otherwise.

Water Sensor

The water sensor is utilized to measure the water level. As water makes contact with the sensor, it returns a given value, depending on the amount of water. In the case of this project, the water sensor is meant to measure the amount of water in a container and send an alert if the water level is too low and cause the system to produce an “error” state.

Documentation

Stepper Motor

A stepper motor is a mechanism that can be controlled in small increments or “steps”. For the sake of the project, the stepper motor is used in a way that would be “opening a gate” as the fan blade is activated to direct the "air vent", except when the system is disabled.

Documentation

Liquid Crystal Display (LCD)

The LCD is used to display information and write or read information from another location, such as from a computer. In this case for the project, it is being used to display information from the Temperature and Humidity Module. When the system is in the “ERROR” status, it will display an error message.

Documentation

Real Time Clock Module (RTC)

The RTC module can be used in multiple different ways, whether it’s setting a time or pulling the current time. It can also print the current time. For the sake of the project, time information will be printed in the serial port to monitor the change in states and any changes in the position of the stepper motor.

Documentation

DHT11 Temperature and Humidity Module

The Temperature and Humidity module is used to read the ambient temperature and humidity in a given environment. For the project, it will be constantly read and displayed on the LCD, except when the system is disabled. As long as the temperature is above or below a certain threshold, the system will run or idle.

Documentation

Fan Blade and Motor

The fan blade is an attachment to the motor, which spins in a given direction and stops itself, depending on the information given to it. This component is more demanding for voltage, so it is not meant to be used with our Arduino board. For the project, the motor will be turned on when the temperature rises above a threshold and turned off when it falls below the threshold.

Documentation

Light-Emitting Diode (LED)

The LED is a simple component, lighting up when a signal is given. For the sake of the project, the LEDs are used to represent the state of the device, with different colors representing different states.

Button

The button is a simple component, sending a signal when it is pressed or depressed. For the project, buttons are used to start and stop the device and rotate the stepper motor.

Potentiometer

The potentiometer is another simple component that can vary in its resistance strength based on user input. For the project, the potentiometer was used to make the LCD screen visible.