

Project #A3815

Ultimate Humidor

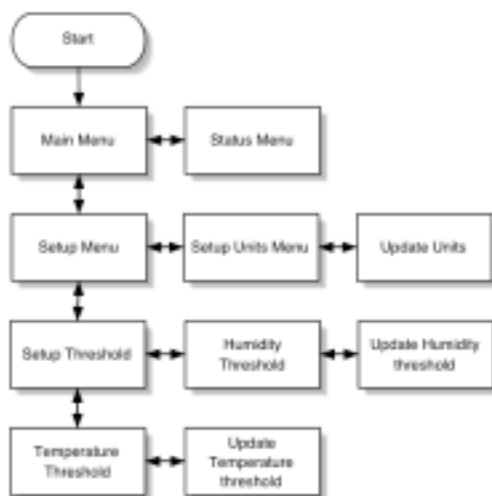
Take back control of your humidor with the Ultimate Humidor controller.

Myself like many cigar smokers maintain a stock of valuable, temperamental tobacco. I live where air conditioning is a luxury and it is not affordable to install a central a/c system. So no matter how I try I cannot keep them in ideal condition. I love to have my cigars in perfect condition, while I can continually check on the humidity of the cigars to maintain my preferred level of moisture, I always struggle to keep the temperature around 70 degrees.

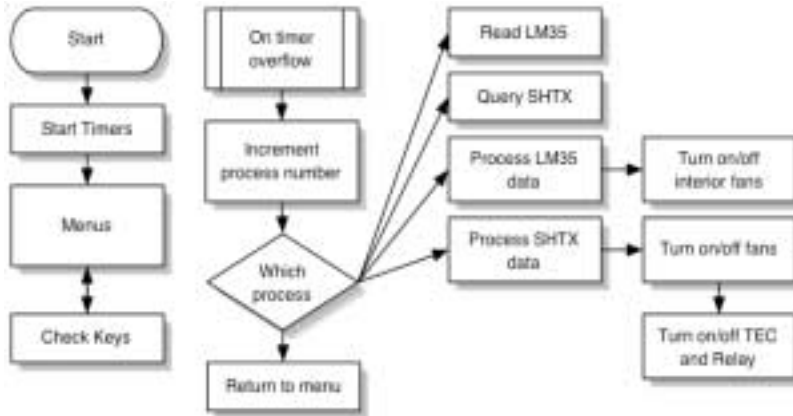
While experimenting on with a Peltier module for another project, I got an idea. What if I took the Peltier module and build a new Humidor to utilize the module for cooling and heating. I also was looking for a way to utilize regular distilled water to keep the humidor at the proper humidity. At the flower shop they use a special foam to keep flower arrangements with water for a few days. If I build an enclosure to keep the foam sealed watertight with two small vents at the top I can utilize fans to add moisture to the air when more humidity is needed.

While searching for parts on the internet I ran across a sensor that seemed to take care of my requirements for this project. I found the Sensirion SHT1X series of Temperature and humidity sensors. While I could have used other sensors for humidity, I like the idea that I do not have to calibrate these sensors since the factory calibrates them and stores the calibration values in non-volatile memory.

The core of this design is based on a ATMEGA-16 programmed with BASCOM-AVR. The application is broken into two sections the Menu system that allows configuration of the desired humidity and temperature and what units for temperature you would like to use and display.



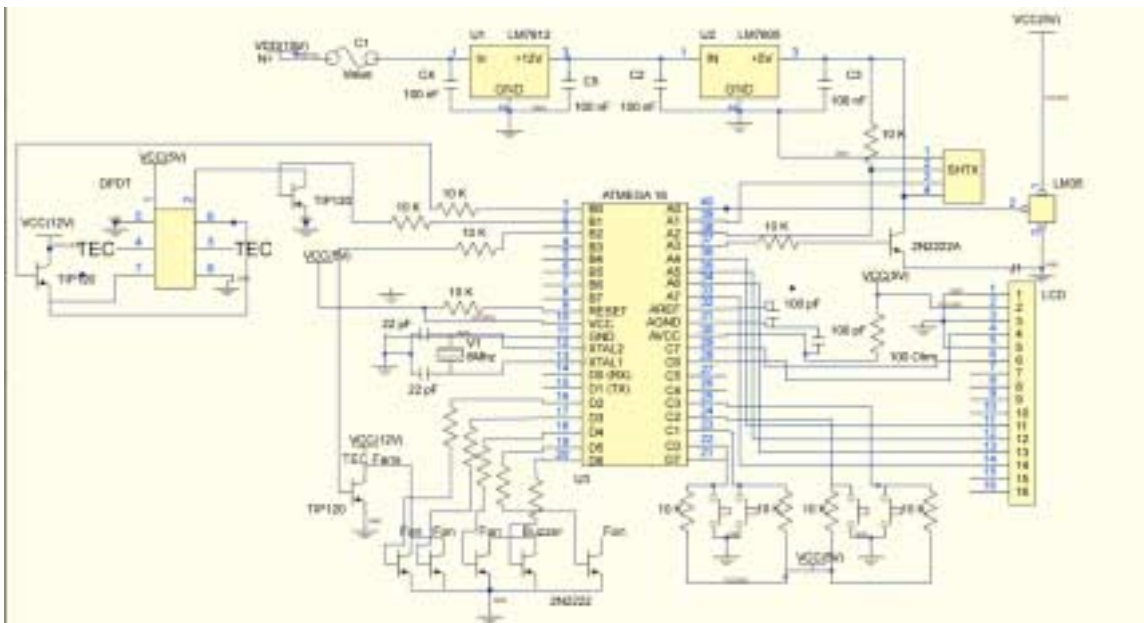
Menu organization



Program flow

Hardware:

The most important and difficult part to obtain is a 4 amp 15volt power supply. Once you have this everything else is easy. The Hardware consists of an ATMEGA-16 controller, 7 Tip120 Transistors, 1 DPDT Relay, MC78T12 Regulator, LM7805 Regulator, a few passive components, a 16*2 lcd, and a few connectors.



Putting together all of the pieces:

- 1) Assemble the board as per the schematic and program the ATMEGA-16
- 2) Purchase a small plastic box and modify the top to have small holes where the fan should vent. Mount a small 12 volt fan inside the top of the plastic box. Connect the fan to the Humidifier Fan connection.
- 3) Mount the internal fan to blow air onto the voltage regulators. Connect this fan to the internal fan connector.
- 4) Mount the external fan to pull the hot air from the humidor to the outside. Connect this to the external fan connector.
- 5) Connect the heatsinks to the TEC module and connect the TEC fans and the TEC cords to their corresponding connectors.

Conclusion:

With a little work and a lot of programming you can take back control of your Humidor.