

Hydroponic Automation

A brief description:

We have a small prototype of NFT hydroponic of around 50 plant space, the intent is to create a Automation system using Arduino and other necessary sensors and actuators. The goal will be to monitor the parameters of system like PH, EC, Water Temperature, Air Temperature, Air Humidity, Water Level in the container etc. and display the same on I2C LCD screen and webapp/webpage on any mobile device using ESP modules.

The image of the prototype are attached for your reference:





After taking the necessary inputs we need some actuation, like pumping of nutrient solutions from 4 different tanks to maintain PH, EC, water temperature, maybe using a relay module and control of solenoid valve for misting system to control the temperature system.

Input

- Hardware List Available
- Rough Control Logic

Output

- Schematic for connecting the sensors, relay modules and other actuators/control devices as required
- EC sensor schematics and integration with whole code and project - <https://create.arduino.cc/projecthub/mircemk/arduino-electrical-conductivity-ec-ppm-tds-meter-c48201>
- Complete code for the project
- Debugging support to run the entire system
- IOT Integration: All coding, support etc. required for setting up Thinkspeak, App Inventor(https://hacksterio.s3.amazonaws.com/uploads/attachments/540387/app_hydroponic_v0.apk) etc.

Available Hardware

- Arduino Mega
- Arduino Nano
- Arduino Uno
- Analog PH kit - <https://robu.in/product/analog-ph-sensor-kit/>
- DHT 11 sensor - <https://robu.in/product/dht-11-digital-temperature-humidity-sensor/>
- Water Level Sensor - <https://robu.in/product/anti-corrosion-type-ball-float-liquid-water-level-sensor/>
- DS18B20 Water Proof Temperature Probe - <https://robu.in/product/ds18b20-water-proof-temperature-probe-black-1m/>
- RTC - <https://robu.in/product/ds1302-rtc-real-time-clock-module-with-battery/>
- 4 Channel Isolated 5V 10A Relay Module
- LCD 2004 with I2C
- [Espressif ESP-12E esp8266 SMD Chip](#)
- [Ds18B20 Module Dc 5V Digital Temperature Sensor Module](#)
- [Verve Bluetooth Module \(HC-05\)](#)
- [OLatus ESP8266 Serial WIFI Wireless Transceiver Module For IOT/ Arduino / Raspberry Pi / AVR / ARM](#)
- [HC-SR04 Ultrasonic Module Distance](#)
- [Mini Breadboard Prototyping Prototype Shield](#)
- [Ethernet Shield](#)
- [Water pumps](#)

- Resistors, Capacitors , Transistors etc.

Basic Logic for control

Attached PDF with this document

