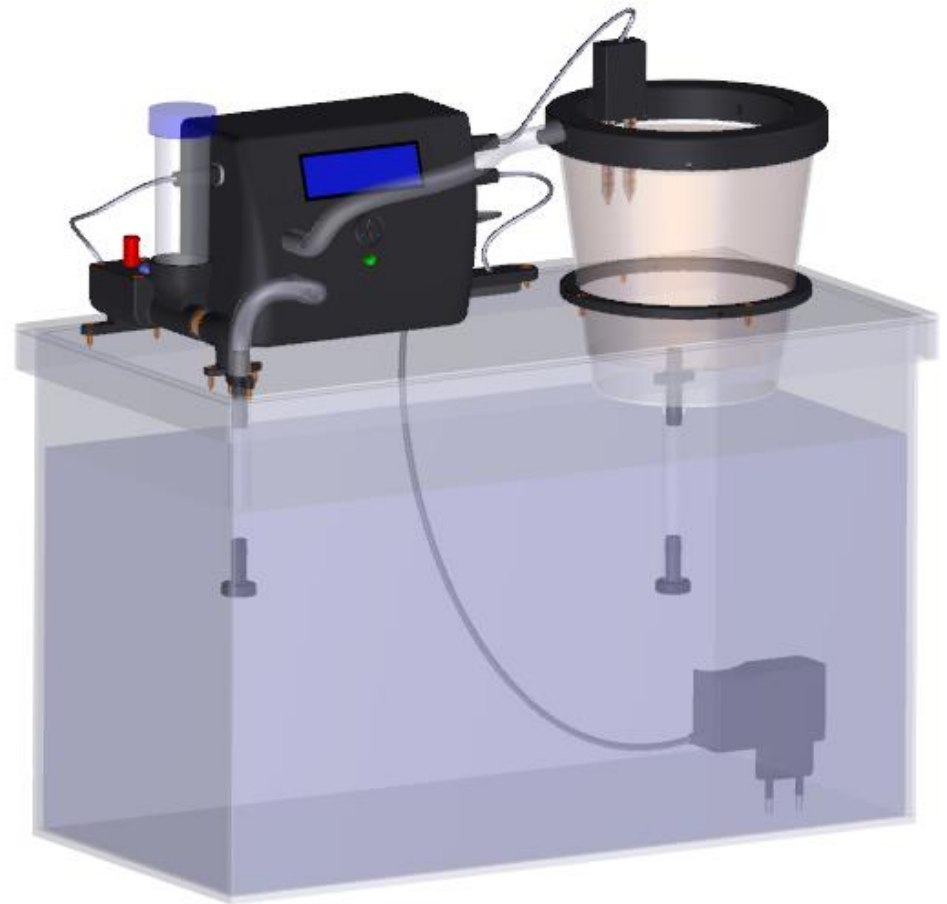
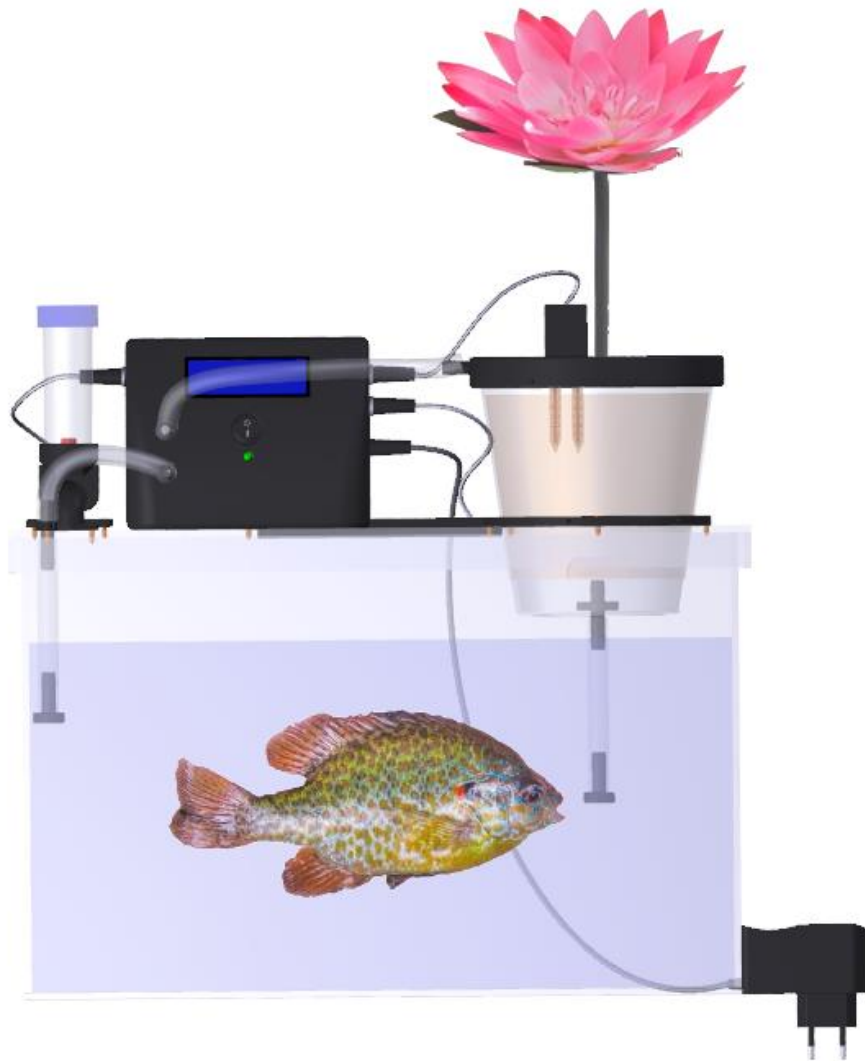


# MINI AQUAPONIC SYSTEM



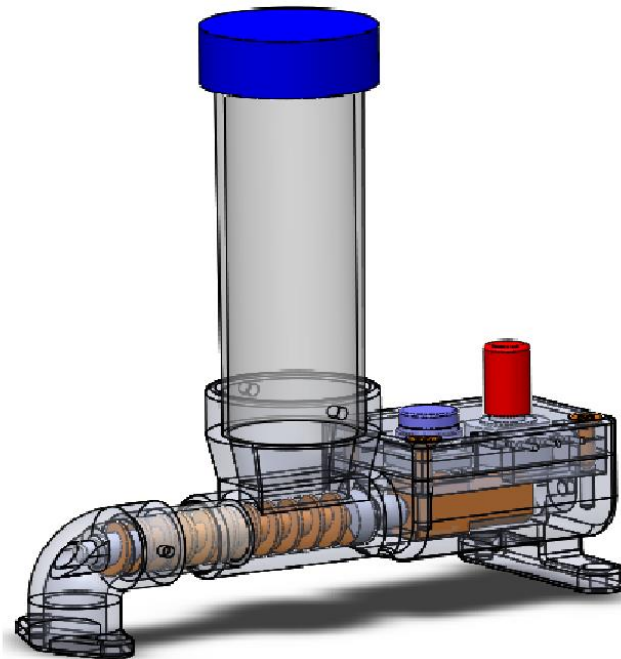
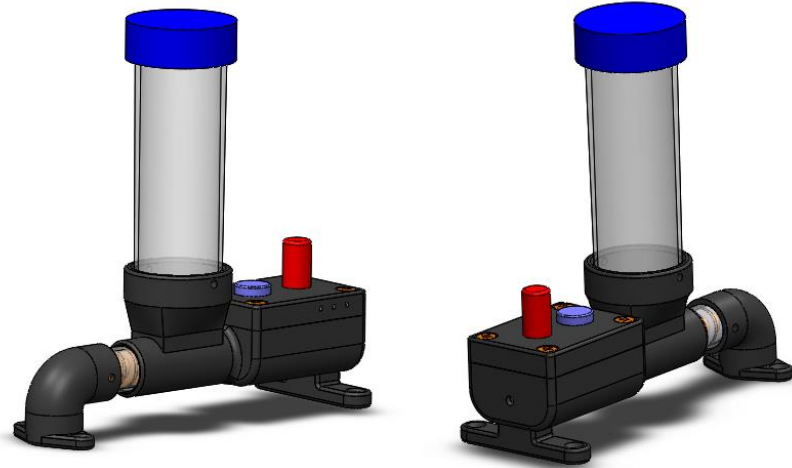
## Automatic device

- LCD I2C 1602.
- Switch button.
- LED.
- DC pump.
- 2 channel relay module.
- 1 channel relay module.
- DHT11 temp. and humidity sensor.
- Resistor 330  $\Omega$ .
- IR tracker sensor module.
- ESP 32.
- MCU PCB.



## Fish feeder

- DC motor with gear box.
- Push button.
- Potentiometer.

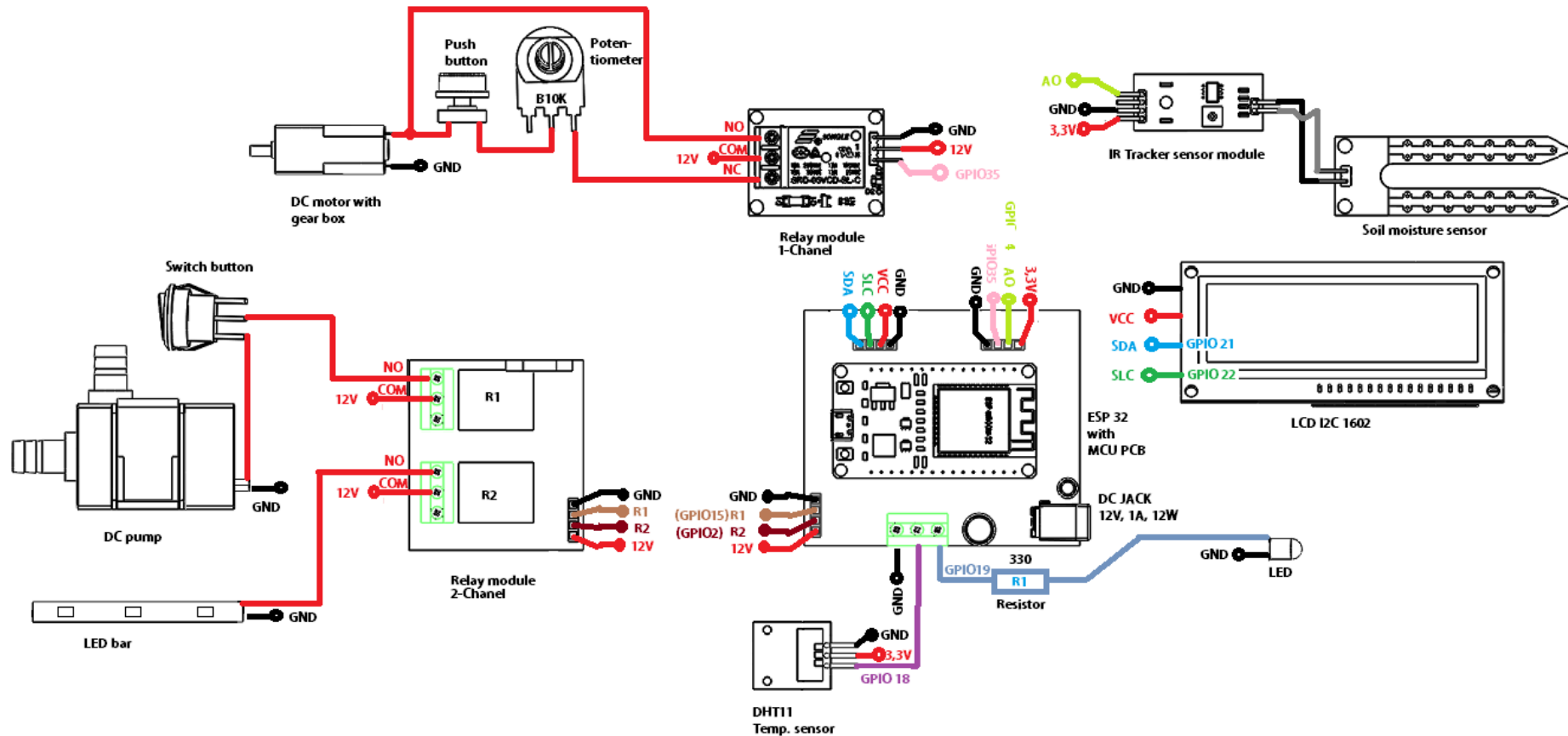


## Peripheral devices and sensor

- *Soil moisture sensor.*
- *LED bar.*



# Circuit Diagram



# Source code

DIY

```
#include <Wire.h>
#include <LiquidCrystal_I2C.h>
#include <DHT.h>

int lcdColumns = 16;
int lcdRows = 2;
LiquidCrystal_I2C lcd(0x27, lcdColumns, lcdRows);

#define DHTPIN 18
#define DHTTYPE DHT11
DHT dht(DHTPIN, DHTTYPE);

void setup() {
    // put your setup code here, to run once:
    pinMode (15, OUTPUT);
    digitalWrite(15, LOW);
    pinMode (2, OUTPUT);
    digitalWrite(2, LOW);
    pinMode (35, OUTPUT);
    digitalWrite(35, LOW);
    pinMode (19, OUTPUT);
    digitalWrite(19, HIGH);
```

DIY

```
    adcAttachPin (34);
    Serial.begin(9600);
    lcd.init();
    lcd.backlight();
    Serial.println(("DIY Home Automation-Yoto Yotov!"));
    Serial.print(("LED:"));
    Serial.println(digitalRead(19));
    dht.begin();
}

void loop() {
    // put your main code here, to run repeatedly:

    delay(500);
    float h = dht.readHumidity();
    float t = dht.readTemperature();
    float f = dht.readTemperature(true);
    if (isnan(h) || isnan(t) || isnan(f)) {
        lcd.setCursor(0, 0);
        lcd.println (F("Failed sensor!"));
        Serial.println (F("Failed sensor!"));
        delay(10000);
        lcd.clear();
```

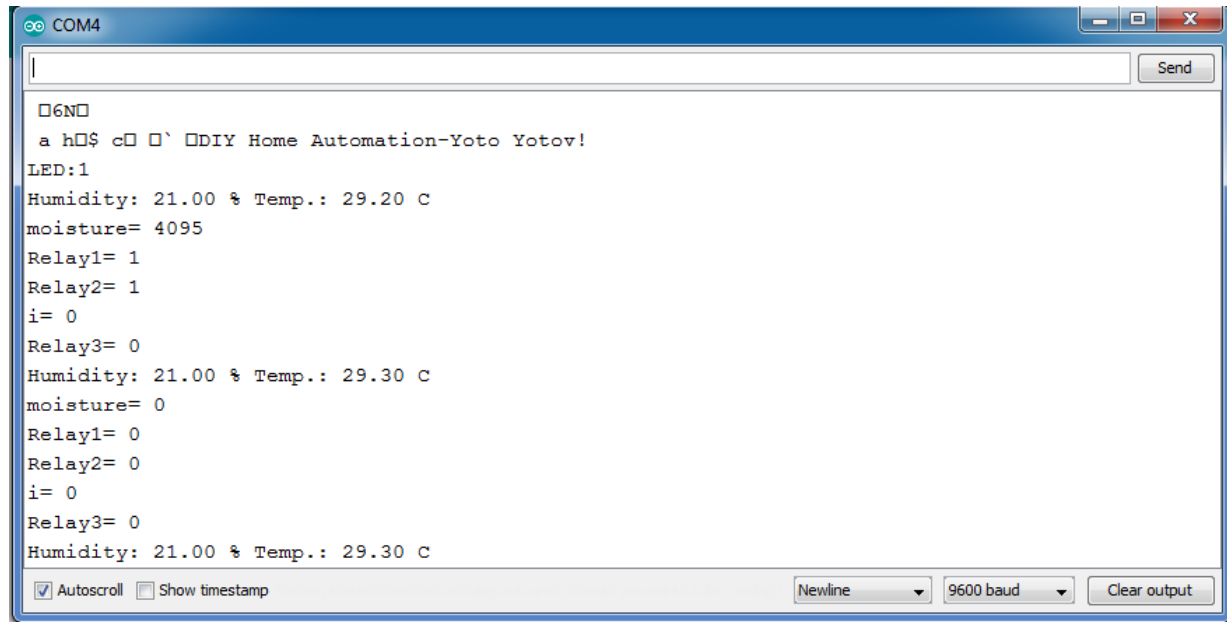
```
    return;
}
lcd.setCursor(0, 0);
lcd.print(F("Humidity: "));
Serial.print(F("Humidity: "));
lcd.print(h);
Serial.print(h);
lcd.print(F("%"));
Serial.print(F(" %"));
lcd.setCursor(0,1);
lcd.print (F("Temp.: "));
Serial.print(F(" Temp.: "));
lcd.print(t);
Serial.print(t);
lcd.print(F(" C "));
Serial.print(F(" C "));
delay(10000);
lcd.clear();
Serial.println();
int moisture = analogRead(34);
Serial.print(("moisture= "));
Serial.println(moisture);
delay(5000);
```

```
if(moisture>3800 && moisture <=4095)
digitalWrite(15,HIGH);
else
digitalWrite(15,LOW);
Serial.print(("Relay1= "));
Serial.println(digitalRead(15));
delay(1000);
if(moisture>3800 && moisture <=4095)
digitalWrite(2,HIGH);
else
digitalWrite(2,LOW);
Serial.print(("Relay2= "));
Serial.println(digitalRead(2));

int i = digitalRead(35);
Serial.print(("i= "));
Serial.println(i);
delay(5000);
for (int i=0; i<=400; i++)
if(i>350 && i <=400)
digitalWrite(35,HIGH);
else
digitalWrite(35,LOW);
Serial.print(("Relay3= "));
Serial.println(digitalRead(35));
}
```



# Result



A screenshot of a serial terminal window titled 'COM4'. The window has a blue title bar with standard Windows window controls. The main area is white with black text. At the top, there is a 'Send' button. Below it, the text '06N' is displayed. This is followed by a line of code: 'a h\$ c ` DIY Home Automation-Yoto Yotov!'. Then, 'LED:1' is shown. The next two lines are 'Humidity: 21.00 % Temp.: 29.20 C' and 'moisture= 4095'. This is followed by 'Relay1= 1' and 'Relay2= 1'. Then, 'i= 0' is shown. The next two lines are 'Relay3= 0' and 'Humidity: 21.00 % Temp.: 29.30 C'. This is followed by 'moisture= 0'. Then, 'Relay1= 0' and 'Relay2= 0'. Then, 'i= 0' is shown. The next two lines are 'Relay3= 0' and 'Humidity: 21.00 % Temp.: 29.30 C'. At the bottom, there is a status bar with a checked 'Autoscroll' checkbox, an unchecked 'Show timestamp' checkbox, a 'Newline' dropdown menu, a '9600 baud' dropdown menu, and a 'Clear output' button.

```
06N
a h$ c ` DIY Home Automation-Yoto Yotov!
LED:1
Humidity: 21.00 % Temp.: 29.20 C
moisture= 4095
Relay1= 1
Relay2= 1
i= 0
Relay3= 0
Humidity: 21.00 % Temp.: 29.30 C
moisture= 0
Relay1= 0
Relay2= 0
i= 0
Relay3= 0
Humidity: 21.00 % Temp.: 29.30 C
```

☒ Autoscroll ☐ Show timestamp Newline 9600 baud Clear output





# Thank you for your attention!

- 3D Models
- <https://grabcad.com/library/mini-aquaponic-system-and-fish-feeder-1>

- Source code

<https://github.com/Yoto7/MiniAquaponicSystem>

