

Data Packet Struct:

```
Unsigned long EpochTime = currentTim
```

Byte	Control Req	Enum SYSTEM, SENSOR
Byte	Status	Enum ONLINE, SENSOR_FAILURE, NETWORK_FAILURE
Float	Temp	
Float	Humidity	
Float	Pressure	
Float	Light	
Float	Rain	

Pin Assignments:

DHT = D7
BMP = D1/D2 I2C
Light = D1/D2 I2C
Wind = A0
Lighting = ??
Rain = ???

Using the ESP8266 NodeMCU for driving LEDs is a common and simple task. You'll need:

Suitable Pins

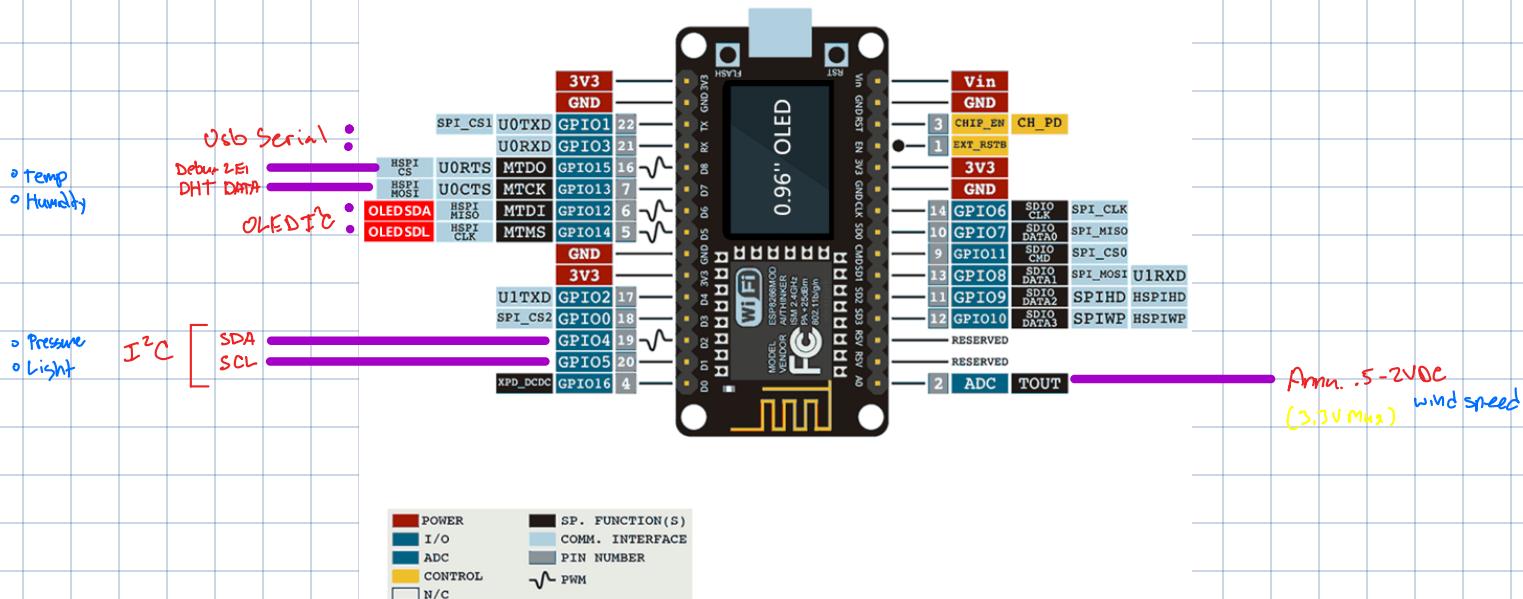
- D0 (GPIO16)
- D1 (GPIO5)
- D2 (GPIO4)
- D3 (GPIO0)
- D4 (GPIO2)
- D5 (GPIO14)
- D6 (GPIO12)
- D7 (GPIO13)
- D8 (GPIO15)

You can use the following GPIO pins for connecting buttons:

- D0 (GPIO16)
- D1 (GPIO5)
- D2 (GPIO4)
- D3 (GPIO0)
- D4 (GPIO2)
- D5 (GPIO14)
- D6 (GPIO12)
- D7 (GPIO13)
- D8 (GPIO15)

Things to Note

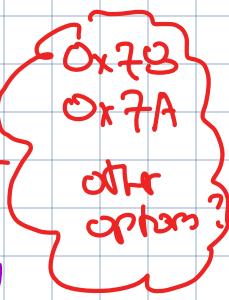
1. **Current Limiting:** Always use a current-limiting resistor.
2. **GPIO15:** Be cautious as this pin needs to be pulled to GND for the module to boot correctly.
3. **GPIO0 and GPIO2:** These pins have specific requirements during boot and might influence the boot process if they are pulled high or low incorrectly.



Libraries

○ U982 I²C display

address = 0x3C



○ robotlert DHT11 3-5V

○ BMP180 Pressure 3.3VDC

address = 0x77

○ BH1750 Light 3-5V

address = 0x23

0x5C

normal mode :

→ send serial heartbeat
↓ DPP Data packet

Telnet mode : // Debug Serial mode

→ send Serial print X1

→ wait for cmd

w • w report = send wx report

d • data = send PCT sensor data

s - status = send status report. up time etc. Flug? →

r • restart = restart ESP

C = calibrator = adjust offsets... EEPROM

Cal mode :

○ DHT offset T + H

○ BMP180 Error + Oversampling (0-3)

○ Light threshold Night_Park_Pay-Bright ?

Display

Cycle @ 2 sec? 5 sec

- Page - S0
Wifi SSID + (.....)
connection to: master,

- Page - S1
IP address
Mac address
- Page - S2
Sensors check status
- Page - D
System status
Shows flow, Wt, WiFi running, Current Millis
- Page - I
Current reading
Temp, humd, Wind, Light, pressure, dew point
- Page - 2
24 hour date + chr
Min max temp
Avg max Wind
Forecast: ↑ ↓ Pressure
Conditions: Sunny

To do

- add EEPROM + offsets copy from RF Power meter
- add up time to wx report
- add startup splash screen
- verify new wind code + update interval for Packet
-

$$\downarrow \text{error show 16}$$

$$\downarrow \text{oe } \oplus$$

$$14 = \text{ws_ms} * 2.23694$$

$$\frac{14}{2.23694} = \text{ws_ms} = 6.25855$$

$$\frac{0.7 \text{ volts}}{219 \text{ ADC}} = \frac{0.3}{x} \text{ reduce ADC read}$$



or change Voltage

$$vs_ms = (\text{Voltage} - 0.4) * (32.4 / (2 - 0.4))$$

20.25

$$0.3090642 = \text{Voltage} - 0.4 = 0.7090642 = \text{Voltage}$$

$$\text{Voltage} = \text{sensor val} * (3.3 / 1023)$$

$$\frac{0.7090642}{(3.3 / 1023)} = \text{sensor val} = 219$$

0.3 bits/bone

$$x * 219 = 0.4$$

$$x = 0.018265$$

$$\frac{x}{1023} = \frac{f}{1023} = f = x * 1023$$

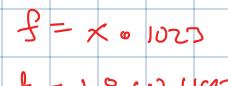
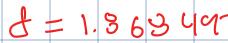



Figure 2. Pin connections (top view)

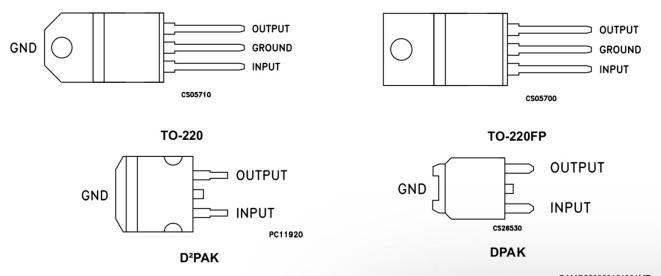
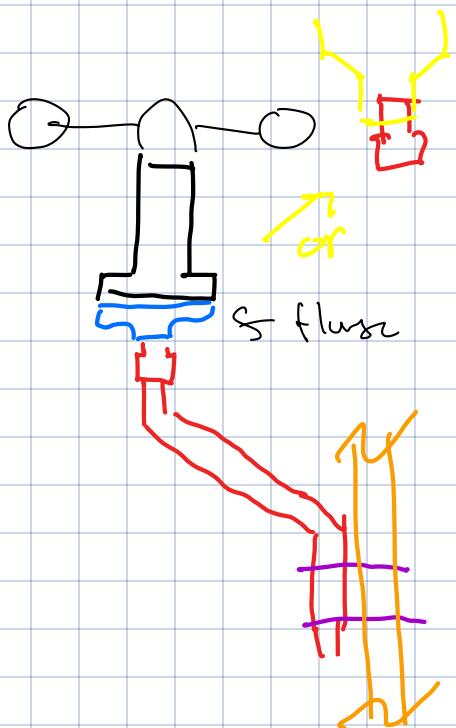
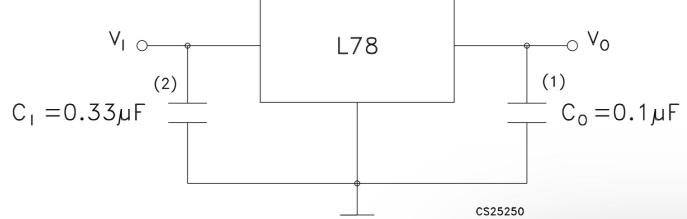
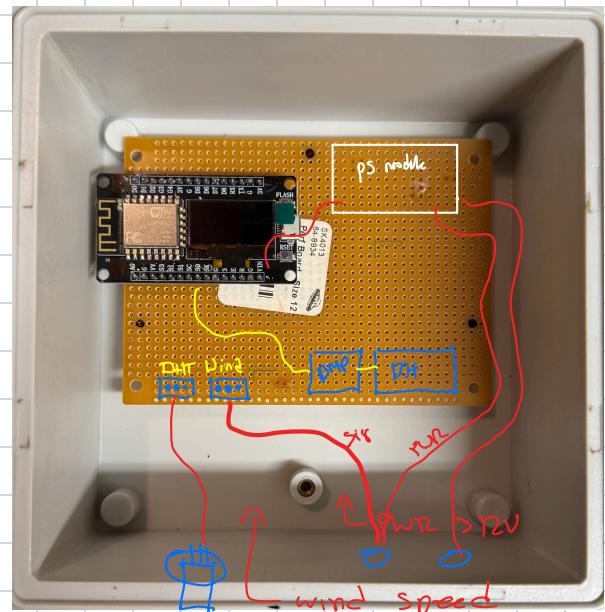
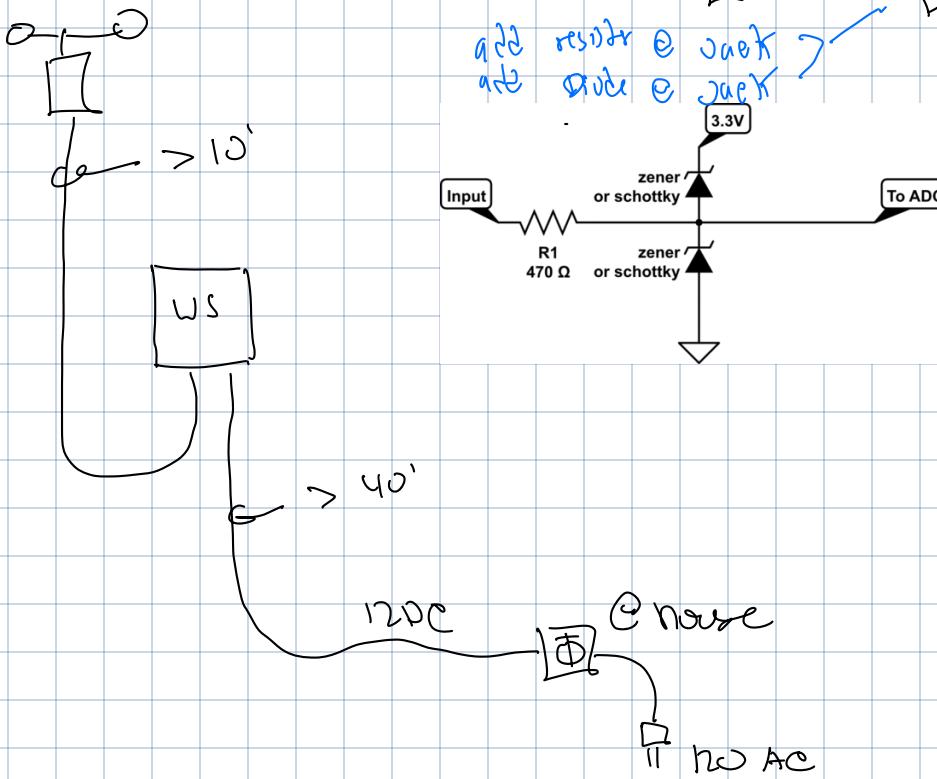
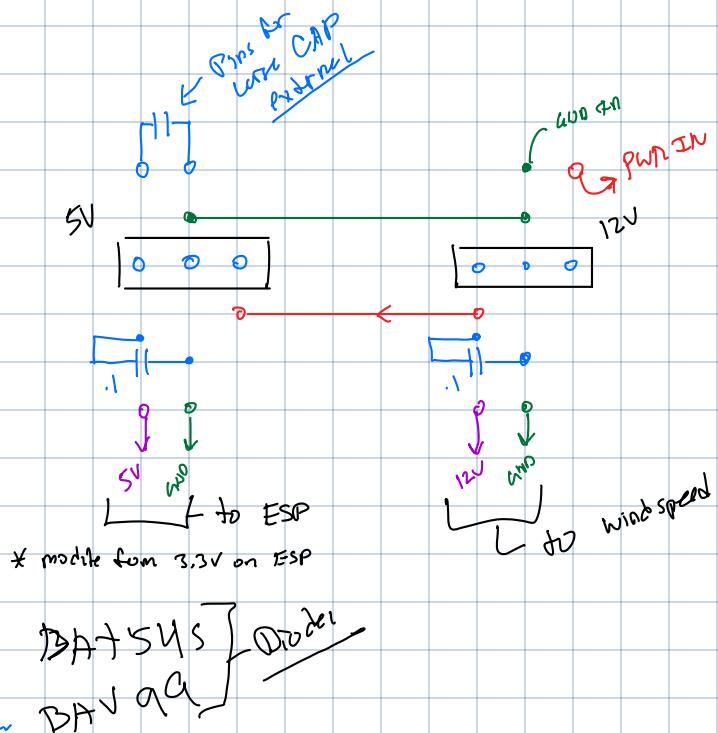


Figure 8. Fixed output regulator



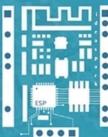
+V
GND
GND
Vce
Sic
Anp





Get Started with Arduino IDE

Take the steps to set up your ESP8266-0.96" OLED board with this tutorial. Light up the OLED Screen!



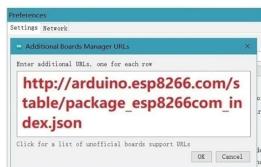
1 Web Search CH340 Driver

• Search, download driver. Recommended for Win10 OS



2 Add Boards Manager URLs in IDE

• IDE -> "Preferences" -> "Additional Boards Manager URLs"



3 Install ESP8266 Board Package

• IDE -> "Board" -> "Boards Manager"



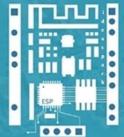
4 Select ESP8266 Board

• IDE -> "Tools" -> "Board": NodeMcu 1.0(ESP-12E Module)"



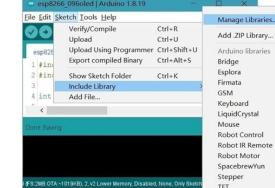
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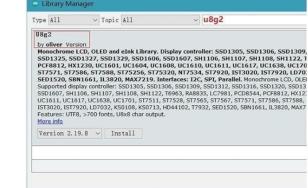
5 Include Library

• IDE -> Sketch -> "Include Library" -> "Manage Libraries"



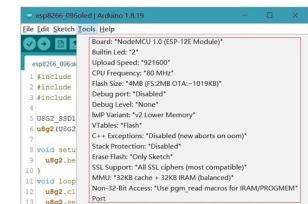
6 Install Library "U8g2"

• Install 2.19.8 version u8g2 Library by oliver



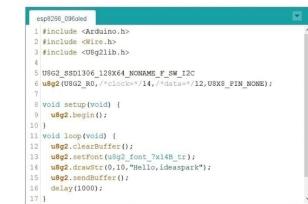
7 Set Board and Processor

• Configure the Tools parameters as shown in the figure



8 Run Sample Code

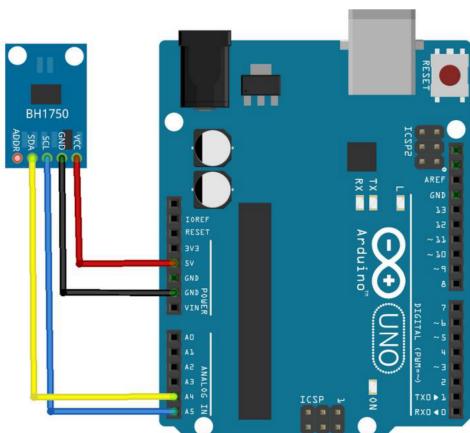
• Copy the code in the figure to your IDE



12:07PM Wed Jan 29 *** handsontec.com

'50 with Arduino is a simple matter of wiring up the sensor to your Arduino-installing the [hp_BH1750](#) library written by Stefan Armborst, and running one of nipes. Download this library and install it to Arduino IDE Library folder.

750 module to Arduino Board as shown below:



damental feature of the sensor, measuring the ambient light in lux, you can use the "lux" example:

amples -> hp_BH1750 -> BareMinimum

e demo file, upload to your Arduino wired up to the sensor. Once you upload the co

BMP180 Module Pinout