

# **WEATHER STATION**

## **Features :**

- Wind Speed & direction
- Atmospheric Pressure
- UV
- Temperature
- Humidity
- Light Intensity
- Real-time data collection
- Long range Data transfer
- Data Visualisation Dashboard
- Weather Prediction

## **Specifications :**

1. A3144 Magnetic Hall Sensor: <https://robu.in/product/hall-magnetic-sensor-module/>
  - Operating Voltage : 5V
  - Power consumption : 8mA
  - Datasheet : <https://www.elecrow.com/download/A3141-2-3-4-Datasheet.pdf>
2. DS18B20 Temperature Sensor: <https://robu.in/product/ds18b20-water-proof-temperature-probe-black-1m/>
  - Operating Voltage : 3-5.5V
  - Range : -55°C to +125°C
  - Accuracy :  $\pm 0.5$  °C
  - Datasheet : <https://www.analog.com/media/en/technical-documentation/data-sheets/DS18B20.pdf>
  - Sensing pin pull up using 4.7k
3. DHT22 Temperature and Humidity Sensor (AM2302) : <https://robu.in/product/dht22-digital-temperature-humidity-sensor-temperature-humidity-module-am2302/>
  - Operating Voltage : 3-5.5V
  - Temp. Range : -40 to +80 °C
  - Accuracy :  $\pm 0.5$  °C
  - Humidity Range : 0 to 100%
  - Accuracy :  $\pm 2\%$
  - Datasheet : <https://www.sparkfun.com/datasheets/Sensors/Temperature/DHT22.pdf>
4. GY-30 BH1750FVI Light Sensor : <https://robu.in/product/gy-30-bh1750fvi-digital-light-intensity-illumination-sensor/>
  - Operating Voltage : 3-5V
  - Range : 0 to 65535 lux
  - Accuracy : 1 lux
  - Built-in 16-bit ADC
  - Datasheet : <https://www.mouser.com/datasheet/2/348/bh1750fvi-e-186247.pdf>

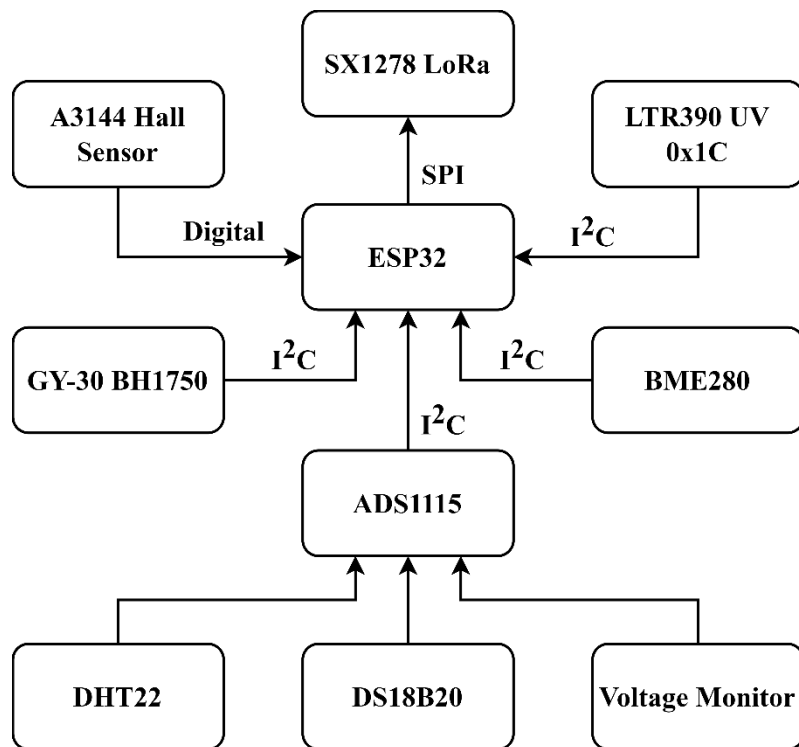
5. GY-BME280 Atmospheric Pressure Sensor : <https://robu.in/product/gy-bme280-3-3-precision-altimeter-atmospheric-pressure-sensor-module/>
  - Operating Voltage : 3.3V
  - Peak Current : 1.12mA
  - Pressure Range : 300-1100 hPa
  - Accuracy :  $\pm 1$ hPa
  - Datasheet : <https://5.imimg.com/data5/SELLER/Doc/2022/1/WG/FV/GY/1833510/gy-bmp280-3-3-high-precision-atmospheric-pressure-sensor.pdf>
6. DFRobot LTR390 UV Light Sensor : <https://robu.in/product/dfrobot-gravity-ltr390-uv-light-sensor-280nm-to-430nm-i2c-uart/>
  - Operating Voltage : 3.3-5V
  - Operating Current : 2.73mA
  - UVA Range : 280 to 430 nm
  - Address : 0x1C
  - Datasheet : [https://optoelectronics.liteon.com/upload/download/DS86-2015-0004/LTR-390UV\\_Final\\_%20DS\\_V1%201.pdf](https://optoelectronics.liteon.com/upload/download/DS86-2015-0004/LTR-390UV_Final_%20DS_V1%201.pdf)
7. SX1278 LoRa Module : [https://www.electronicscomp.com/sx1278-lora-module-ra-02-433mhz-wireless-spread-spectrum-transmission?gclid=CjwKCAjwrranBhAEiWAZbhNtR2vH4K4DIg6lcEBBsRZxT1aTu7Gt2Fxi7IRb\\_JxSCHkgcaw3MH3KxoCHlwQAvD\\_BwE](https://www.electronicscomp.com/sx1278-lora-module-ra-02-433mhz-wireless-spread-spectrum-transmission?gclid=CjwKCAjwrranBhAEiWAZbhNtR2vH4K4DIg6lcEBBsRZxT1aTu7Gt2Fxi7IRb_JxSCHkgcaw3MH3KxoCHlwQAvD_BwE)
  - Operating Voltage : 1.8- 3.7V
  - Bit Rate : 300kbps
  - Range : 15KM
  - Frequency : 410-525MHz
  - Half Duplex SPI
  - Datasheet : [https://cdn-shop.adafruit.com/product-files/3179/sx1276\\_77\\_78\\_79.pdf](https://cdn-shop.adafruit.com/product-files/3179/sx1276_77_78_79.pdf)

### Interface:

<b>DS18B20</b>	ADC	<b>LTR390</b>	I <sup>2</sup> C
<b>DHT22</b>	ADC	<b>BH1750</b>	I <sup>2</sup> C
<b>BMP280</b>	I <sup>2</sup> C	<b>A3144 Hall</b>	Digital

<b>LoRa</b>	<b>ESP32</b>	<b>LoRa</b>	<b>ESP32</b>
GND	GND	VCC	3.3V
NSS	D5	MOSI	D23
MISO	D19	SCK	D18
RST	D14	DIO0	D2

## Sensor Interface Diagram :



## Transmitter Power Plan :

