



## Smart Water Pressure Monitoring System

status **active**

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### Smart Water Pressure Monitoring System

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#### About

This repo contains

- Backend
- Firmware
- Detailed instructions

for Smart Water Pressure Monitoring System.

## Getting Started

These instructions will get you a copy of the project up and running on your system.

### Prerequisites

Things you need to install the FW.

- Arduino IDE

### Installing

A step by step series that tell you how to get the Firmware and Backend running

## ESP32 Configuration

You should have Arduino IDE Installed

1. Add ESP32 Board to your Arduino IDE
2. In your Arduino IDE, go to File> Preferences Installing ESP32 Add-on in Arduino IDE Windows, Mac OS X, Linux open preferences
3. Enter [https://dl.espressif.com/dl/package\\_esp32\\_index.json](https://dl.espressif.com/dl/package_esp32_index.json) into the "Additional Board Manager URLs" field then, click the "OK" button: Note: if you already have the ESP32 boards URL, you can separate the URLs with a comma(each board will go to new line) as follows:  
[https://dl.espressif.com/dl/package\\_esp32\\_index.json](https://dl.espressif.com/dl/package_esp32_index.json),  
[http://arduino.esp8266.com/stable/package\\_esp8266com\\_index.json](http://arduino.esp8266.com/stable/package_esp8266com_index.json)
4. Open the Boards Manager. Go to Tools > Board > Boards Manager...
5. Search for ESP32 and press install button for the ESP32 by Espressif Systems".
6. That's it. It should be installed after a few seconds.
7. In your Arduino sketchbook directory, create tools directory if it doesn't exist yet.
8. Unpack the tool into tools directory(present in libs/ESP32FS-1.0.zip) (the path will look like <home\_dir>/Arduino/tools/ESP32FS/tool/esp32fs.jar).
9. Close and re-open the Arduino IDE.
10. Now copy the contents of the libs folder to the libraries directory of your Arduino
  1. If you are using windows, the libraries directory will be Documents/Arduino/libraries

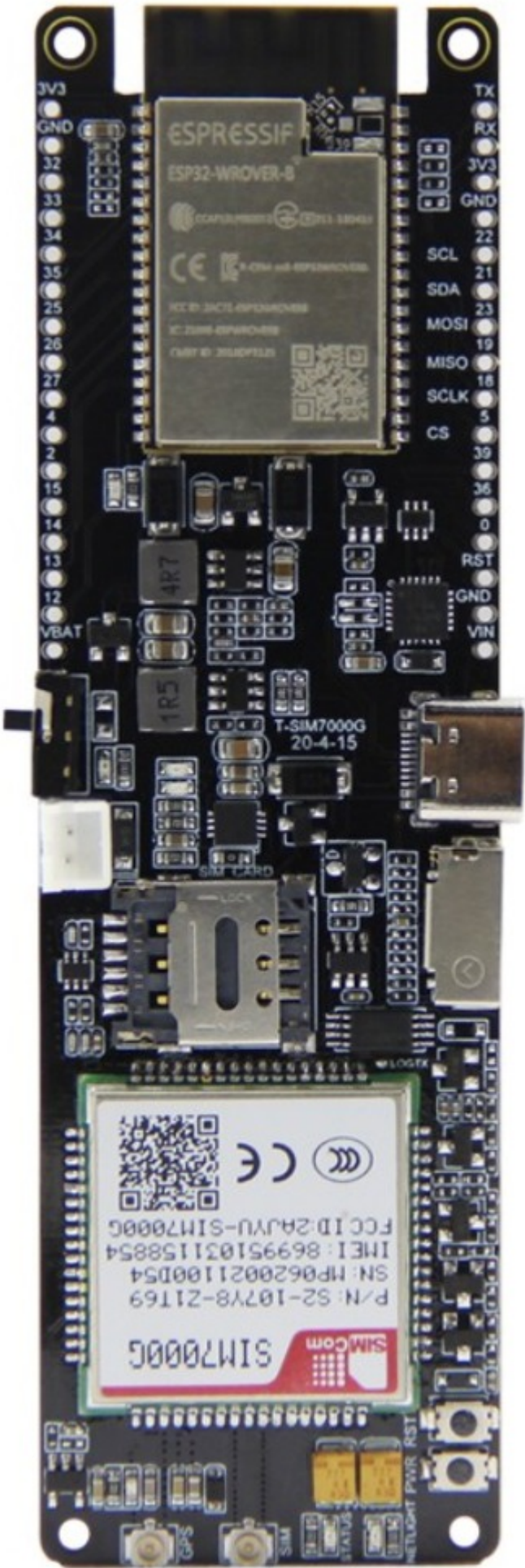
## ESP32 Node FW Uploading

1. Select ESP32 Dev Module from Tools->Board->ESP32
2. Select the correct port from Tools->Port
3. Then open Firmware.ino file,
4. Select Tools > ESP32 Sketch Data Upload menu item. This should start uploading the files into ESP32 flash file system.
5. Now Upload the Code to your ESP32 Dev Module.
6. Your ESP32 is now ready to be used.

## Circuit

### ESP32 SIM7000 Pinout

Follow the pinout diagram given below to connect different components to your ESP32 SIM7000.



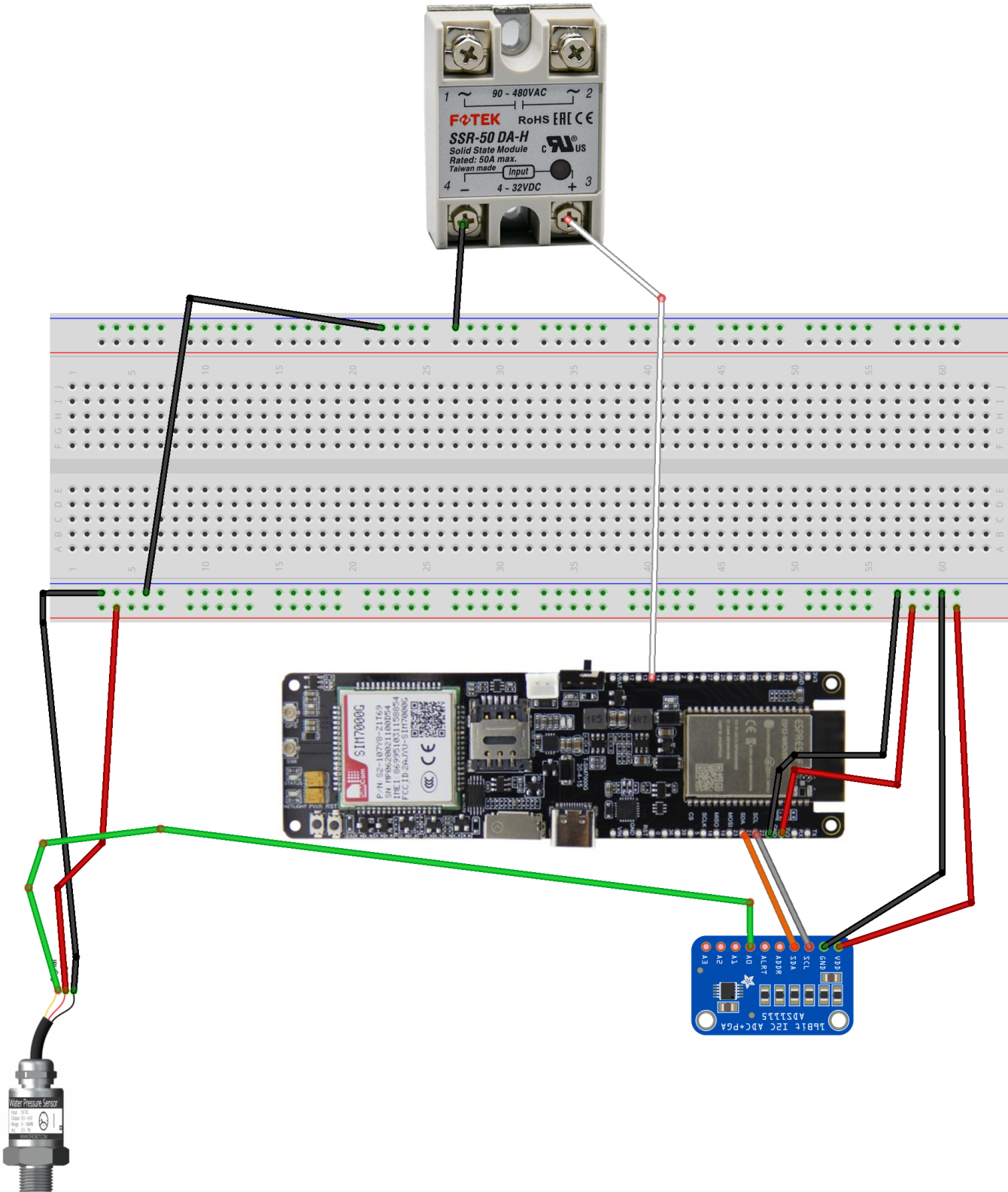
## Water Pressure Sensor Pinout

### Water Pressure Sensor Pinout



## Complete Circuit Diagram

Here's the complete circuit diagram of the system.



fritzing

Other Components

Other components pin connection details

Channle Relay Module(SSR or Mechanical)

## Relay Connected with ESP32

Relay Module Pins	ESP32
+	14
-	GND

## Water Pressure Sensor

## Water Pressure Sensor Connected with ADS1115

Water Pressure Sensor	ADS1115
Signal(Yellow)	A0
VCC(Red)	3.3V
GND(Black)	GND

## ADS1115

## ADS1115 Connected with ESP32

ADS1115	ESP32
SCL	SCL
SDA	SDA
VDD	3V3
GND	GND

## Usage

1. Upload the code to your ESP32.
2. Power on your ESP32, it will present you with an AP named **SmartWPM-abc** (while **SmartWPM** can be changed in the portal and **abc** is a unique id for each esp32)
3. Default captive portal password **123456789AP** which can be changed in captive portal.
4. Connect to the ESP32 access point and open the web-browser and navigate to the link **[http://esp32.local/\\_ac](http://esp32.local/_ac)**. This link will work on most of the operating systems but if your operating system is not allowing to open it, you may want to check the captive portal IP Address from the serial monitor and can use that IP Address in place of the above mentioned URL.
5. The default access IP Address is **[http://192.168.4.1/\\_ac](http://192.168.4.1/_ac)**

6. You will be presented with a main dashboard as shown below(based on your device)

SmartHVAC Controller		Connect to WiFi	Saved WiFi Networks	Disconnect	Reset...	Settings	HOME
Established connection	N/A						
Mode	AP_STA(5)						
IP	0.0.0.0						
GW	0.0.0.0						
Subnet mask	0.0.0.0						
SoftAP IP	192.168.4.1						
AP MAC	24:0A:C4:AF:DB:9D						
STA MAC	24:0A:C4:AF:DB:9C						
Channel	1						
dBm	0						
Chip ID	40155						
CPU Freq	240MHz						
Flash size	4194304						
Free memory	247068						

7. You can also open <http://esp32.local/> to see the DHT22 (humidity and temperature sensor live data).

Smart HVAC Controller Device		≡
<b>Smart HVAC Controller</b>		
Device ID: 240AC4AFDBDB9C		
Temperature and Humidity: 0.0,0.0		
<button>Refresh</button>		

8. Once connected to a WiFi network, you can again access the captive portal using same URL or the IP Address from the Serial monitor.

9. You can open settings page with following default credentials

1. User: **AP Name (SmartWM)**
2. Password: **admin**

## WebApp

Web App is now running on your Server.

- FrontEnd Address: <http://10.7.77.1:8080>
  - Default UserName: admin@admin.com
  - Default Password: admin
- BackEnd Address: <http://10.7.77.1:8000>
- PHPMyAdmin : <http://10.7.77.1/phpmyadmin>
  - Default UserName: root
  - Default Password: swpm-mysqldb

In WebApp folder there is a file named smartwaterpressure.sql which contains database structure.

The webapp(frontend and backend) are running using PM.

## Built Using

- [Arduino](#) - Embedded Framework and IDE - For Sensor Node Design

## Authors

- [@Nauman3S](#) - Development and Deployment