



Datasheet for JWSmythe Temperature Sensor

v1.1

rev: 20231215

Introduction

Expandable smart temperature sensor

Overview

This device uses an ESP32-C3 Microcontroller (MCU), with a Bosch BME680. It can measure temperature, humidity, pressure, and VOC sensor.

There are numerous pins exposed to screw terminals, so you can add more sensors, or other devices appropriate for GPIO pins

Firmware

This device is suitable for use with ESPHome and Tasmota firmware. It can be used with voice assistants, such as Amazon Alexa. Espressif provides tools for voice assistants with their Rainmaker software. All of these are free.

<https://esphome.io/>

<https://tasmota.github.io/docs/>

<https://www.espressif.com/en/news/Alexa%20on%20ESP32>

<https://rainmaker.espressif.com/>

We preinstall the ESPHome firmware, but you can use anything you'd like.

It can be programmed with your own firmware. Many people like using the Arduino IDE environment. This device can be programmed just like an Arduino, running your own custom code.

<https://espressif-docs.readthedocs-hosted.com/projects/arduino-esp32/en/latest/installing.html>

Pinouts

The ESP32-C3 model is ESP32-C3-MINI-1-H4

The pins are assigned as:

GPIO	Assignment	Notes
0	Boot Button	
1	Battery Level Sense	2:1 voltage divider 1k Ω \pm 1%
2	Strapping	
3	Available	
4	Available	I2C SCL
5	Available	I2C SDA
6	Available	
7	Available	
8	Strapping	WS2812B RGB LED
9	Strapping	
10	Available	
18	Available	
19	Available	

You can add additional I2C devices to pins 4 and 5. The BME680 is attached to this, at address **0x77**.

Power

Input power: You can provide power in a variety of ways.

1. Battery power. Place an 18650 battery in the battery holder. Be sure the polarity is correct (+ to +, - to -). Do not attach anything to the screw terminals
2. DC power. 2.4v to 5.5v. Attach a power supply to the BAT+ and GND pins.
3. DC Power, regulated 3.3v. You can attach a REGULATED 3.3v power supply to the 3v3 and GND pins. This bypasses the onboard voltage regulator.

Accessory power: If you add additional sensors, you can use the 3v3 screw terminal to provide their power. This is regulated from the onboard voltage regulator. We highly recommend using only 3.3v sensors, and only attaching them to the 3.3v terminal.

If you want, you can attach to BAT+ and GND, but the battery voltage. will vary from 4.2v to 3.0v. Directly attaching to the battery does not provide any battery protection, and can discharge the battery beyond the minimum voltage, ruining it.

Programming

To program this device, you must attach a USB toTTL/UART converter. It must be in 3.3v mode. The header pins are immediately beside the ESP32-C3. We also sell this adapter, but you can use any that you want, as long as it supports 3.3v.

You do not need the battery or power to be attached for programming. Our adapter provides more 3.3v current than most, through an additional voltage regulator.

Simply attach

- 3.3v to 3.3v (also indicated as 3v3 or +. Never 5v.)
- GND to GND (also indicated as -.)
- TX to TX
- RX to RX

If the adapter is properly recognized, but you don't see any data, you should try switching TX and RX on ONE side.

Important Components

Purpose	Manufacturer	Part
Microcontroller	Espressif	ESP32-C3-MINI-1-H4
Temp/Humid/Press/VOC sensor	Bosch	BME680
Buck/Boost Voltage Regulator	Texas Instruments (TI)	TPS63031DSKR
Battery Protection	JSMicro Semiconductor (JSMSEmi)	DW01
Undervoltage	Tuo Feng (TF)	S8205A

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