Application Note ArduiTouch ESP Weather Station



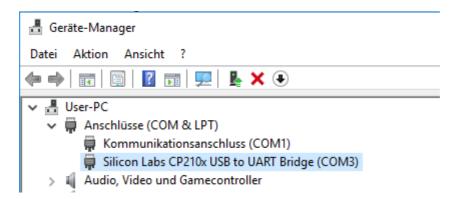
Rev.	Date	Description
А	2018-10-28	First release
В	2020-09-15	Additional information for ESP32 support

1. Install the USB drivers

The NodeMCU module includes a CP2102 chip for the USB interface. Usually the driver will be installed automatically if the NodeMCU is connected the first time with the PC. Sometimes this procedure failed. In this case you have to install the driver

http://www.silabs.com/products/development-tools/software/usb-to-uart-bridge-vcp-drivers

manually in the Windows device manager.

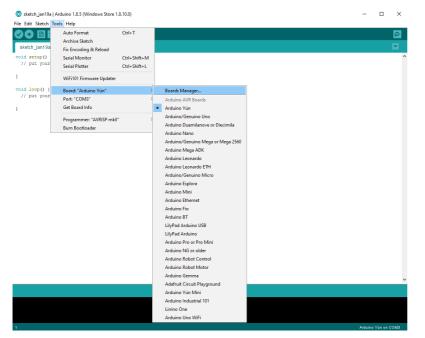


If you want to use the Wemos D1 you have to install the drivers for the CH340 USB interface instead:

http://www.wch.cn/download/CH341SER_ZIP.html

2. Preparation of Arduino IDE

The ESP8266 and/or ESP32 isn't part of the Arduino-IDE. We have to install it first.



Open the board manager: Tools / Board / Board Manager

2.1 ESP8266

Go to the ESP8266 entry and install it:

💿 Boards Manager	×
Type All V Filter your search	
Online help. More info	^
Industruino SAMD Boards (32-bits ARM Cortex-M0+) by Industruino Boards included in this package: Industruino D21G. Online help More info	
esp8266 by ESP8266 Community Boards included in this package: Generic ESP8266 Module, Olimex MOD-WIFI-ESP8266(-DEV), NodeMCU 0.9 (ESP-12 Module), NodeMCU 1.0 (ESP-12E Module), Adafruit HUZZAH ESP8266 (ESP-12), ESPresso Lite 1.0, ESPresso Lite 2.0, Phoenix 1.0, Phoenix 2.0, SparkFun Thing, SweetPea ESP-210, WeMos D1, WeMos D1 mini, ESPino (ESP-12 Module), ESPino (WROOM-02 Module), WifInfo, ESPDuino, 4D Systems gen4 IoD Range, DigIStump Oak. Online help More info	
2.4.0 V Instal	¥
Close	e

Now you can choose **NodeMCU 1.0 (ESP-12E Module)**. Set the CPU frequency to 80MHz, Flash Size to "4M (3M SPIFFS)", the baud rate of your choice and the COM port.

Auto	ormat	Ctrl+T		 	
	e Sketch				
	coding & Reload				
	Monitor	Ctrl+Shift+M			
Serial	Plotter	Ctrl+Shift+L			
WiFi1	01 Firmware Updater				
Board	"NodeMCU 1.0 (ESP-12E Module	e)" >	A		
Flash	Size: "4M (3M SPIFFS)"	;	Arduino Pro or Pro Mini		
Debug	port: "Disabled"	3	Arduino NG or older		
Debug	J Level: "None"	2	Arduino Robot Control		
IwIP V	ariant: "v2 Prebuilt (MSS=536)"	2	Arduino Robot Motor		
	requency: "80 MHz"	;	Arduino Gemma		
	d Speed: "115200"	2	Adafruit Circuit Playground Arduino Yún Mini		
	COM3"	;	Arduino Yun Mini Arduino Industrial 101		
Get Bo	pard Info		Linino One		
Progra	ammer: "AVRISP mkll"	2	Arduino Uno WiFi		
Burn I	Bootloader		ESP8266 Modules		
			Generic ESP8266 Module		
			Generic ESP8285 Module		
			ESPDuino (ESP-13 Module)		
			Adafruit HUZZAH ESP8266		
			ESPresso Lite 1.0		
			ESPresso Lite 2.0		
			Phoenix 1.0		
			Phoenix 2.0		
			NodeMCU 0.9 (ESP-12 Module)		
			 NodeMCU 1.0 (ESP-12E Module) 		
			Olimex MOD-WIFI-ESP8266(-DEV)		
			SparkFun ESP8266 Thing		
			SparkFun ESP8266 Thing Dev		

For the Wemos D1 Mini you have to choose **WeMos D1 R2 & mini.** Set the CPU frequency to 80MHz, Flash Size to "4M (3M SPIFFS)", the baud rate of your choice and the COM port.

Application Note: AZ-Touch ESP Weather Rev B

File Edit Sketch T	Tools Help			
	Auto Format	Ctrl+T		
	Archive Sketch			
sketch_oct28a	Fix Encoding & Reload			
<pre>void setup()</pre>	Manage Libraries	Ctrl+Shift+I		
// put your	Serial Monitor	Ctrl+Shift+M		
}	Serial Plotter	Ctrl+Shift+L		
<pre>void loop() {</pre>	WiFi101 Firmware Updater			
// put your	Board: "WeMos D1 R2 & mini"	;	Boards Manager	
}	Upload Speed: "921600"	>		
-	Flash Size: "4M (1M SPIFFS)"	2	OLIMEX ESP32-EVB	
	CPU Frequency: "80 MHz"	3	OLIMEX ESP32-GATEWAY	
	Debug port: "Disabled"	3	ThaiEasyElec's ESPino32	
	Debug Level: "None"	>	M5Stack-Core-ESP32	
	lwIP Variant: "v2 Prebuilt (MSS=536)"	'	M5Stack-FIRE	
	Port	3	ODROID ESP32	
	Get Board Info		Heltec_WIFI_Kit_32	
	Programmer: "AVR ISP"	>	Heltec_WIFI_LoRa_32	
	Burn Bootloader		ESPectro32	
			Microduino-CoreESP32	
			ALKS ESP32	
			WiPy 3.0	
			ESP8266 Modules	
			Generic ESP8266 Module	
			Generic ESP8285 Module	
			ESPDuino (ESP-13 Module)	
			Adafruit HUZZAH ESP8266	
			ESPresso Lite 1.0	
			ESPresso Lite 2.0	
			Phoenix 1.0	
			Phoenix 2.0	
			NodeMCU 0.9 (ESP-12 Module)	
			NodeMCU 1.0 (ESP-12E Module)	
			Olimex MOD-WIFI-ESP8266(-DEV)	
			SparkFun ESP8266 Thing	
			SparkFun ESP8266 Thing Dev	
			SweetPea ESP-210	
			• WeMos D1 R2 & mini	

sketch_oct28a | Arduino 1.8.7 (Windows Store 1.8.15.0)

2.1 ESP32

Go to the ESP32 entry and install it:

💿 Boards Manager		×
Type All v esp32		
esp32 by Espressif Systems version 1.0.3 INSTALLED Boards included in this package: ESP32 Dev Module, WEMOS LoLin32, WEMOS D1 MINI ESP32. <u>More Info</u>		^
Select version V Install	Update Rem	iove
		~
		Close

Now you can choose **ESP32 Dev Module**. Set the baud rate of your choice and the COM port.

fools Help Auto Format	Ctrl+T		
	Ctri+1		
Archive Sketch			
Fix Encoding & Reload			
Manage Libraries	Ctrl+Shift+I		Boards Manager
Serial Monitor	Ctrl+Shift+M		
Serial Plotter	Ctrl+Shift+L		A
WiFi101 / WiFiNINA Firmware Updater			Arduino NG or older
			Arduino Robot Control
Board: "ESP32 Dev Module"	>		Arduino Robot Motor
Upload Speed: "921600"	3		Arduino Gemma
CPU Frequency: "240MHz (WiFi/BT)"	3		Adafruit Circuit Playground
Flash Frequency: "80MHz"	2		Arduino Yún Mini
Flash Mode: "QIO"	2		Arduino Industrial 101
Flash Size: "4MB (32Mb)"	>		Linino One
Partition Scheme: "Default 4MB with spiffs (1.2MB APP/1.5MB SPIFFS)"	3		Arduino Uno WiFi
Core Debug Level: "None"	>		Arduino SAMD (32-bits ARM Cortex-M0+) Beta Boar
PSRAM: "Disabled"	3		Arduino MKR Vidor 4000
Port: "COM15"	3		ESP32 Arduino
Get Board Info		•	ESP32 Dev Module
Programmer: "AVRISP mkli"	,		ESP32 Wrover Module
Burn Bootloader			ESP32 Pico Kit
			TinyPICO
Libraries*/			MagicBit
			Turta IoT Node
tions for the ESP8266_*/			TTGO LoRa32-OLED V1
5			TTGO T1

3. Programming

3.1 Installation of additional libraries

Install the following libraries through Arduino Library Manager

Mini Grafx by Daniel Eichhorn <u>https://github.com/ThingPulse/minigrafx</u>

Json Streaming Parser by Daniel Eichhorn <u>https://github.com/squix78/json-streaming-parser/blob/master/library.properties</u>

simpleDSTadjust by neptune2 <u>https://github.com/neptune2/simpleDSTadjust</u>

For ESP8266 only:

ESP8266 WeatherStation by Daniel Eichhorn <u>https://github.com/ThingPulse/esp8266-weather-station</u>

For ESP32 only:

ESP32 WeatherStation modified by Zihatec <u>https://github.com/HWHardsoft/ESP32 Weather Station</u>

You can also download the library also directly as ZIP file and uncompress the folder under vourarduinosketchfolder/libraries/

After installing the Adafruit libraries, restart the Arduino IDE.

3.2 Source Code

The source code for the weather-station based on the awesome sources by Daniel Eichhorn

https://blog.squix.org

We have made some small changes to made code compatible for AZ-Touch. You can download these sources from our website. You have to unpack the Zip archive in a new directory with the same name.

3.3 Custom settings in settings.h

In the source code you will find a file named settings.h. Some changes in this file are required for customisation:

WiFi:

Please enter the SSID and pasword in the lines 25 and 26 of settings.h #define WIFI_SSID "yourssid" #define WIFI PASS "yourpassw0rd"

Account for OpenWeatherMap:

To receive later data by the platform OpenWeatherMap you will need an own account. Sign up here to get an API key: <u>https://docs.thingpulse.com/how-tos/openweathermap-key/</u>

Enter your API key in line 38 of settings.h String OPEN WEATHER_MAP_APP_ID = "your_api_key";

Your location:

Go to <u>https://openweathermap.org/find?q=</u> and search for a location. Go through the result set and select the entry closest to the actual location you want to display data for. It'll be a URL like https://openweathermap.org/city/2657896. The number at the end is what you assign to the constant below.

Enter the number and name of your location in line 45 and 46 of settings.h String OPEN_WEATHER_MAP_LOCATION_ID = "2804279"; String DISPLAYED CITY NAME = "Ziesar";

Time:

Please choose your timezone in line 65 of settings.h #define UTC_OFFSET +1

3.4 Run the demo

Please open this sample in the Arduino IDE. After compilation and upload you will see the current time and temperature of your location. Further more an weather forecast for the next few days is displayed. The touch has only one function. You can choose the displayed time format by touching in the upper part of the screen.