Application Note ArduiTouch ESP 8266 Weather Station



Rev.	Date	Description
Α	2018-10-28	First release

1. Install the USB drivers for NodeMCU or Wemos D1

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 for ESP8266

The ESP8266 module isn't part of the Arduino-IDE. We have to install it first.

Open **file / preferences** in the Aduino-IDE and insert the following link in the **Additional Boards Manager URLs field**:

http://arduino.esp8266.com/stable/package_esp8266com_index.json



Close this window with the OK Button. Open now the board manager: **Tools / Board / Board Manager**



Go to the ESP8266 entry and install it:

💿 Boards Manager	×				
Type All v Filter your search					
CHOKE 2000, BOBIE DESEE OF ATTREES 2000 MCC.					
Online help More info					
Industruino SAMD Boards (32-bits ARM Cortex-M0+) by Industruino					
Boards included in this package:					
Industruino D21G.					
Online help					
More Inro					
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),					
Adatruit HUZZAH ESP8266 (ESP-12), ESPresso Lite 1.0, ESPresso Lite 2.0, Phoenix 1.0, Phoenix 2.0, SparkFun Thing, SweetPea					
eset LD Research DisiStrum Osla					
Genine Kange, Digistamp Cak.					
More info					
2.4.0 V Instal	~				
Close					

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.

💿 sketch_jan19a	Arduino 1.8.5 (Windows Store 1.8.10.0)				_	Х	
File Edit Sketch T	ools Help						
sketch_jan19a	Auto Format Archive Sketch Fix Encoding & Reload Serial Monitor	Ctrl+T Ctrl+Shift+M				₽ ▼	^
}	WiFi101 Firmware Updater	Ctri+Snirt+L					
<pre>void loop() { // put your }</pre>	Board: "NodeMCU 1.0 (ESP-12E Module)" Flash Size: "4M (3M SPIFFS)" Debug port: "Disabled" Debug Level: "None" IwIP Variant: "v2 Prebuilt (MSS=536)" CPU Frequency: "80 MHz" Upload Speed: "115200" Port: "COM3" Get Board Info Programmer: "AVRISP mkll" Burn Bootloader		•	Arduino Pro or Pro Mini Arduino NG or older Arduino Robot Control Arduino Robot Motor Arduino Gemma Adafruit Circuit Playground Arduino Yún Mini Arduino Industrial 101 Linino One Arduino Uno WiFi ESP8266 Modules Generic ESP8266 Module Generic ESP8266 Module SepDuino (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 0.9 (ESP-12 Module) Olimex MOD-WIFI-ESP8266 (-DEV) SparkFun ESP8266 Thing Dev			

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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.

💿 sketch_oct28a	Arduino 1.8.7 (Windows Store 1.8.15.0)				
File Edit Sketch	Tools Help				
00 6	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"	2		Boards Manager	
}	Upload Speed: "921600"	>			
	Flash Size: "4M (1M SPIFFS)"	2		OLIMEX ESP32-EVB	
	CPU Frequency: "80 MHz"	>		OLIMEX ESP32-GATEWAY	
	Debug port: "Disabled"	2		ThaiEasyElec's ESPino32	
	Debug Level: "None"	2		M5Stack-Core-ESP32	
	lwlP Variant: "v2 Prebuilt (MSS=536)"	3		M5Stack-FIRE	
	Port	2		ODROID ESP32	
	Get Board Info			Heltec_WIFI_Kit_32	
	Programmer: "AVR ISP"			Heltec_WIFI_LoRa_32	
	Burn Bootloader			ESPectro32	
	ban booloadel			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	
			٠	WeMos D1 R2 & mini	

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>

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

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

yourarduinosketchfolder/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 ArduiTouch. 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"

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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.