# Display Shield ArduiBox NodeMCU

# construction and programming manual

Rev.	Date	Description
А	2018-01-19	First release

## 1.) Electrical connection

Pin	Cable color	NodeMCU	Description		
1	black	N.C.	Optional Interrupt line – not used <sup>1</sup>		
2	brown	D1	SCL – I2C clock		
3	red	D2	SDA – I2C data		
4	orange	3,3V	3,3V power supply		
5	yellow	GND	Ground connection		



<sup>1</sup> If you want, you can connect this wire with a GPIO of your choice. In our programming example we don't use this line!

# 2.) Mechanical assembly in RasPiBox enclosure



2.1) Remove the old front glass from top shell

### Press the glass careful with your thumbs out of the top shell.

## 2.2) Assemble the Display Shield

Remove the protection foil from the double adhesive tape first:



Glue the shield into the top shell:



Place it exactely as in the picture above and close as possible to the left wall!

Please note: The OLED Shield have to be placed exactly on the expected position.

## 2.3) Assemble the new front plate



Press the glass careful with your fingers from the top into the top shell.

### 3. Install the drivers for NodeMCU

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.



### 4. Preparation of Arduino IDE for NodeMCU

The NodeMCU 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:

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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.					
More info					
esp8266 by ESP8266 Community					
Boards included in this package: Generic FSD8266 Module, Olimex MOD-WIEI-FSD8266(-DEV), NodeMCU 0.9 (FSD-12 Module), NodeMCU 1.0 (FSD-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), Wifinto, ESPDuino, 4D Systems gen4 IoD Range, DigiStump Oak.					
Online help More info					
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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.

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}	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			

### 5. Programming

### 5.1) Install Adafruit SSD1306 Library

Start by installing the support library for the OLED display, you'll need it to talk to the OLED controller chip. We are using the Adafruit SSD1306 library repository on GitHub if you're interested in looking at the code. You can download the library also directly as ZIP file via this link:

#### https://github.com/adafruit/Adafruit\_SSD1306/archive/master.zip

Rename the uncompressed folder Adafruit\_SSD1306 and check that the Adafruit\_SSD1306 folder contains Adafruit\_SSD1306.cpp and Adafruit\_SSD1306.h

Place the Adafruit\_SSD1306 library folder your arduinosketchfolder/libraries/ folder.

## 5.2) Install Adafruit GFX Library

You will need to do the same for the Adafruit\_GFX library available here: <u>https://github.com/adafruit/Adafruit-GFX-Library/archive/master.zip</u>

Rename the uncompressed folder Adafruit\_GFX and check that the Adafruit\_GFX folder contains Adafruit\_GFX.cpp and Adafruit\_GFX.h

Place the Adafruit\_GFX library folder your arduinosketchfolder/libraries/ folder like you did with the SSD1306 library

### 5.3) Install Adafruit MCP23008 Library (for standard version only)

You will need to do the same for the Adafurit\_MCP23008 library available here: <a href="https://github.com/adafruit/Adafruit-MCP23008-library/archive/master.zip">https://github.com/adafruit/Adafruit-MCP23008-library/archive/master.zip</a>

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Rename the uncompressed folder Adafruit\_MCP23008 and check that the Adafruit\_MCP23008 folder contains Adafruit\_MCP23008.cpp and Adafruit\_MCP23008.h

Place the Adafruit\_MCP23008 library folder your arduinosketchfolder/libraries/ folder like you did with the libraries above

### 5.4) Run the demo

After installing the Adafruit libraries, restart the Arduino IDE. You should now be able to access the sample code by navigating through menus in this order: File $\rightarrow$ Sketchbook $\rightarrow$ Libraries $\rightarrow$ Adafruit\_SSD1306 $\rightarrow$ SSD1306...

You have to download our sample code for the NodeMCU & OLED Shield from <a href="https://www.hwhardsoft.de/english/projects/display-shield/">https://www.hwhardsoft.de/english/projects/display-shield/</a>

now. Please open this sample in the Arduino IDE. After compilation and upload you have to press the 3 buttons to view different screens.

Our demo contains only some samples of the possiblities of the Adafruit GFX engine. Please visit this link of additional informations about the Adafruit library:

https://learn.adafruit.com/monochrome-oled-breakouts/arduino-library-and-examples