

AZ Touch MOD

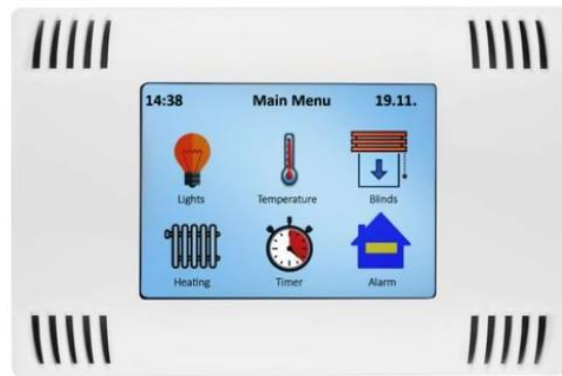
Commissioning

AZ Touch MOD

2.4" or 2.8" touch display



2,4"



2,8"

Areas of application

Education and teaching: Use in schools, universities and training institutions to teach the basics of electronics, programming and embedded systems. Research and development: Use in research and development projects to create prototypes and experiments in the fields of electronics and computer science. Prototype development: Use in the development and testing of new electronic circuits and devices. Hobby and Maker Projects: Used by electronics enthusiasts and hobbyists to develop and implement DIY projects.

Required knowledge and skills

Basic understanding of electronics and electrical engineering. Knowledge of programming, especially in the C/C++ programming language. Ability to read schematics and design simple circuits. Experience working with electronic components and soldering.

Operating conditions

The product may only be operated with the voltages specified in the data sheet to avoid damage. A stabilized DC power source is required for operation. When connecting to other electronic components and circuits, the maximum current and voltage limits must be observed to avoid overloads and damage.

Environmental conditions

The product should be used in a clean, dry environment to avoid damage caused by moisture or dust. Protect the product from direct sunlight (UV)

Intended Use

The product is designed for use in educational, research and development environments. It is used to develop, program and prototype electronic projects and applications. The Sensor product is not intended as a finished consumer product, but rather as a tool for technically savvy users, including engineers, developers, researchers and students.

Improper foreseeable use

The product is not suitable for industrial use or safety-relevant applications. Use of the product in medical devices or for aviation and space travel purposes is not permitted

disposal

Do not discard with household waste! Your product is according to the European one Directive on waste electrical and electronic equipment to be disposed of in an environmentally friendly manner. The valuable raw materials contained therein can be recycled become. The application of this directive contributes to environmental and health protection. Use the collection point set up by your municipality to return and Recycling of old electrical and electronic devices. WEEE Reg. No.: DE 62624346

electrostatic discharge

Attention: Electrostatic discharges can damage the product. Note: Ground yourself before touching the product, such as by wearing an anti-static wrist strap or touching a grounded metal surface.

safety instructions

Although our product complies with the requirements of the RoHS Directive (2011/65/EU) and does not contain any hazardous substances in quantities above the permitted limits, residues may still be present. Observe the following safety instructions to avoid chemical hazards: Caution: Soldering can produce fumes that can be harmful to health. Note: Use a solder fume extractor or work in a well-ventilated area. If necessary, wear a respirator mask. Caution: Some people may be sensitive to certain materials or chemicals contained in the product. Note: If skin irritation or allergic reactions occur, stop use and, if necessary, consult a doctor. Caution: Keep the product out of the reach of children and pets to avoid accidental contact and swallowing of small parts. Note: Store the product in a safe, closed container when not in use. Attention: Avoid contact of the product with food and drinks. Note: Do not store or use the product near food to prevent contamination. Although our product complies with the requirements of the RoHS Directive (2011/65/EU) and does not contain any hazardous substances in quantities above the permitted limits, residues may still be present. Observe the following safety instructions to avoid chemical hazards: Caution: Soldering can produce fumes that can be harmful to health. Note: Use a solder fume extractor or work in a well-ventilated area. If necessary, wear a respirator mask. Caution: Some people may be sensitive to certain materials or chemicals contained in the product. Note: If skin irritation or allergic reactions occur, stop use and, if necessary,

consult a doctor. Caution: Keep the product out of the reach of children and pets to avoid accidental contact and swallowing of small parts. Note: Store the product in a safe, closed container when not in use. Attention: Avoid contact of the product with food and drinks. Note: Do not store or use the product near food to prevent contamination. The product contains sensitive electronic components and sharp edges. Improper handling or assembly can result in injury or damage. Observe the following safety instructions to avoid mechanical hazards: Attention: The product's circuit board and connectors may have sharp edges. Use caution to avoid cuts. Note: Wear appropriate protective gloves when handling and assembling the product. Caution: Avoid excessive pressure or mechanical stress on the board and components. Note: Only mount the product on stable and flat surfaces. Use appropriate spacers and housings to minimize mechanical stress. Attention: Make sure the product is securely fastened to prevent accidental slipping or falling. Note: Use appropriate support or secure mounting in enclosures or on mounting plates. Caution: Make sure all cable connections are connected securely and correctly to avoid strain and accidental unplugging. Note: Route cables so that they are not under tension and do not pose a tripping hazard. The product operates with electrical voltages and currents that, if used improperly, can result in electric shocks, short circuits or other hazards. Observe the following safety instructions to avoid electrical hazards: Attention: Use the product only with the specified voltages. Note: The performance limits of the product can be found in the associated data sheet Caution: Avoid short circuits between the connectors and components of the product Note: Make sure that no conductive objects touch or bridge the circuit board. Use insulated tools and pay attention to the arrangement of connections. Caution: Do not perform any work on the product when it is connected to a power source. Note: Disconnect the product from power before making any circuit changes or connecting or removing components. Caution: Do not exceed the specified current ratings for the product's inputs and outputs. Note: The performance limits of the product can be found in the technical specifications or in the data sheet Attention: Make sure that the power sources used are stable and correctly sized. Note: Only use tested and suitable power supplies to avoid voltage fluctuations and overloads. Attention: Maintain sufficient distance from live parts to avoid accidental contact. Note: Ensure that the cabling is arranged safely and clearly according to the voltage used. Caution: Use insulating housings or protective covers to protect the product from direct contact. Note: Place the product in a non-conductive case to avoid accidental touching and short circuits. The product and the components on it may become warm during operation. Improper handling or overloading the product can result in burns, damage or fire. Observe the following safety instructions to avoid thermal hazards: Caution: Make sure the product is used within recommended operating temperatures. Note: The recommended operating temperature range is typically between -40°C and +85°C. Check the specific information in the product data sheet. Attention: Do not place the product near external heat sources such as radiators or direct sunlight. Note: Ensure that the product is operated in a cool and well-ventilated area. Attention: Make sure the product is well ventilated to avoid overheating. Note: Use fans or heat sinks when operating the product in a closed enclosure or in an environment with limited air circulation. Attention: Mount the product on heat-resistant surfaces and in heat-resistant housings. Note: Use enclosure materials that can withstand high temperatures to avoid damage or fire hazard. Caution: Implement temperature monitoring when using an enclosure and, if necessary, protection mechanisms that shut down the product if it overheats. Note: Note: Use temperature sensors and appropriate software to monitor the temperature of the product and shut down the system if necessary. Caution: Avoid overloads that can cause excessive heating of components. Note: To prevent overheating, do not exceed the specified current and voltage limits. Caution: Short circuits can generate significant heat and cause fires. Note: Make sure that all connections are correct and secure and that no conductive objects can accidentally cause short circuits.

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Foreword

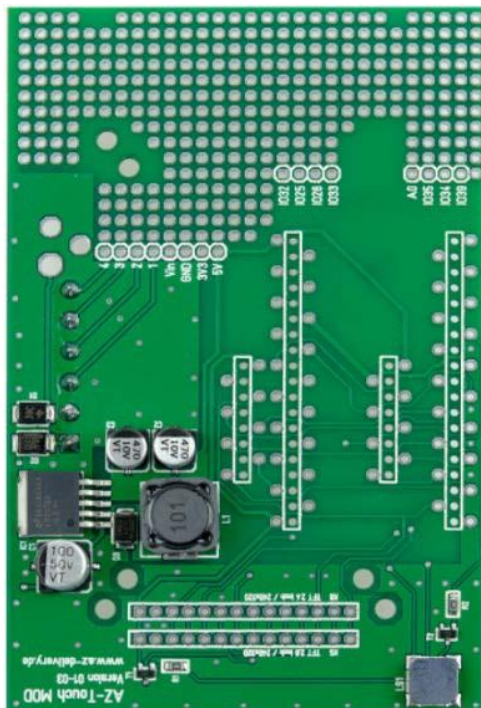
These instructions only refer to the product: AZ-Touch MOD with 2.4 inch display or 2.8 inch display.

The AZ-Touch MOD is compatible with the following microcontrollers:

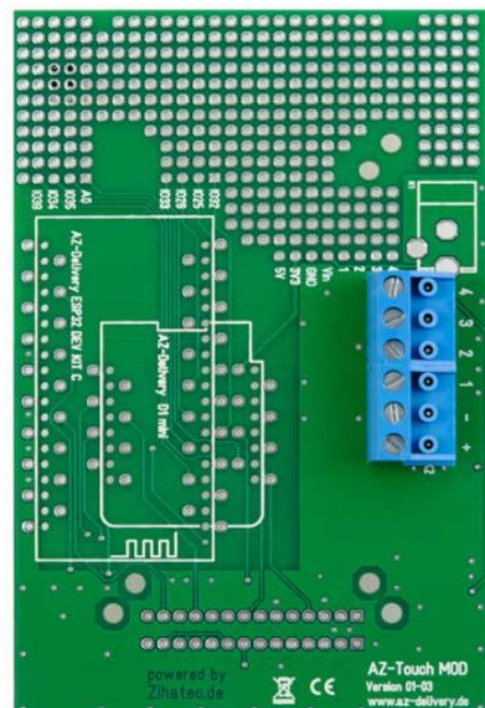
- D1 Mini ESP8266MOD 12-F
- D1 Mini V3
- D1 Mini Pro
- ESP32 Dev Kit C V2
- ESP32 Dev Kit C V4

The board has two sides:

Top side



Bottom side



Scope of delivery

Delivery includes:

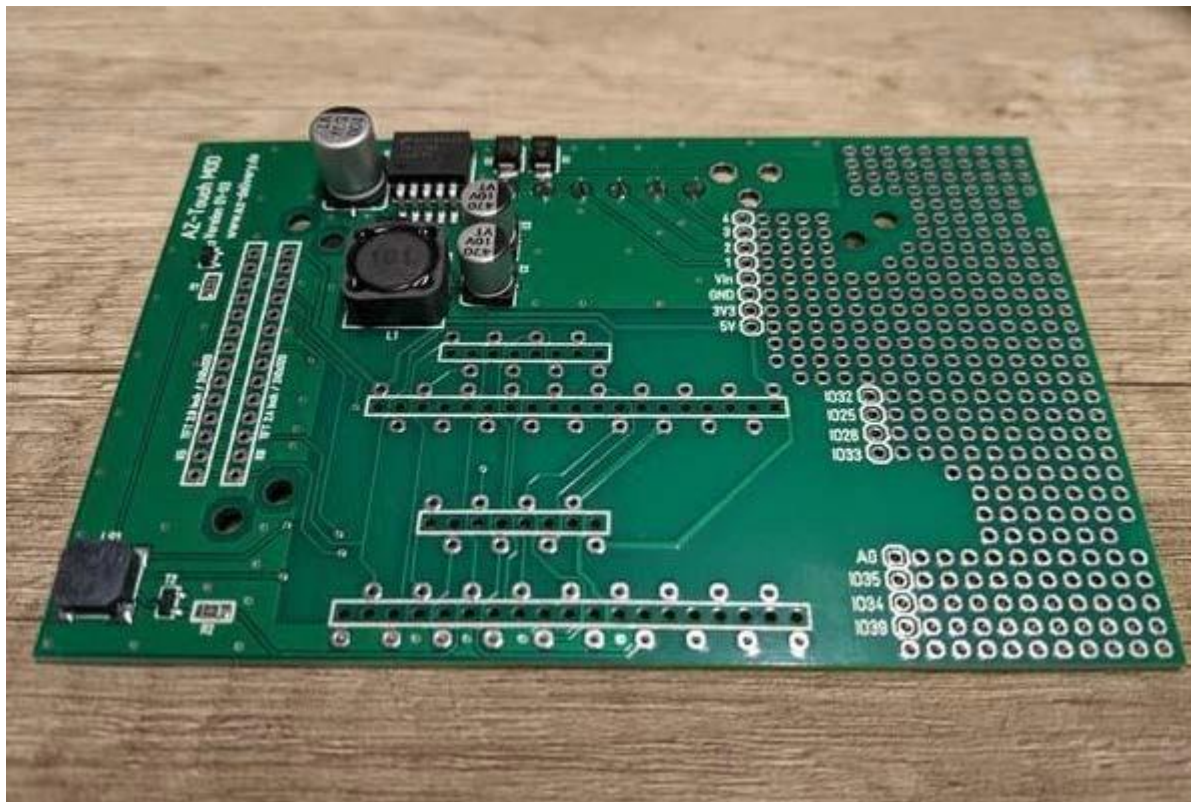
1. 1x pre-assembled AZ-Touch MOD board
2. 2x Centipede socket connector 8 Pin
3. 2x Centipede female connector 19 Pin
4. 1x 14 pin female connector
5. 1x TFT touch screen 2.4 inch or 2.8 inch (depending on variant)
6. 1x housing cover with cut-out for 2.4 or 2.8 inch TFT
7. 1x rear side of housing
8. 4x plastic spacers
9. 8x fixing screws

Note: If anything is missing from your delivery, please contact our free customer service at:

<https://www.az-delivery.de/pages/technische-fragen>

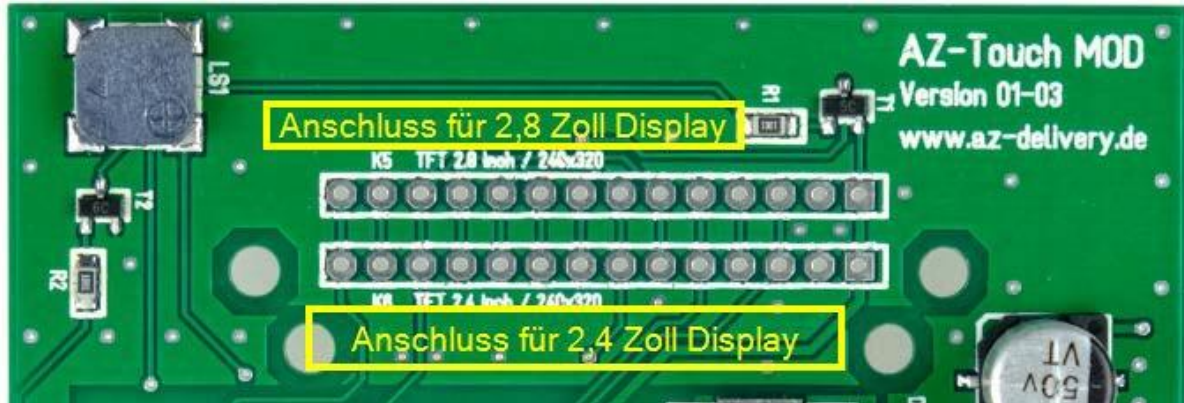
Assembly

Since the components are already assembled on the board, only the socket connectors need to be soldered. These are all plugged into the top of the board and soldered to the bottom:

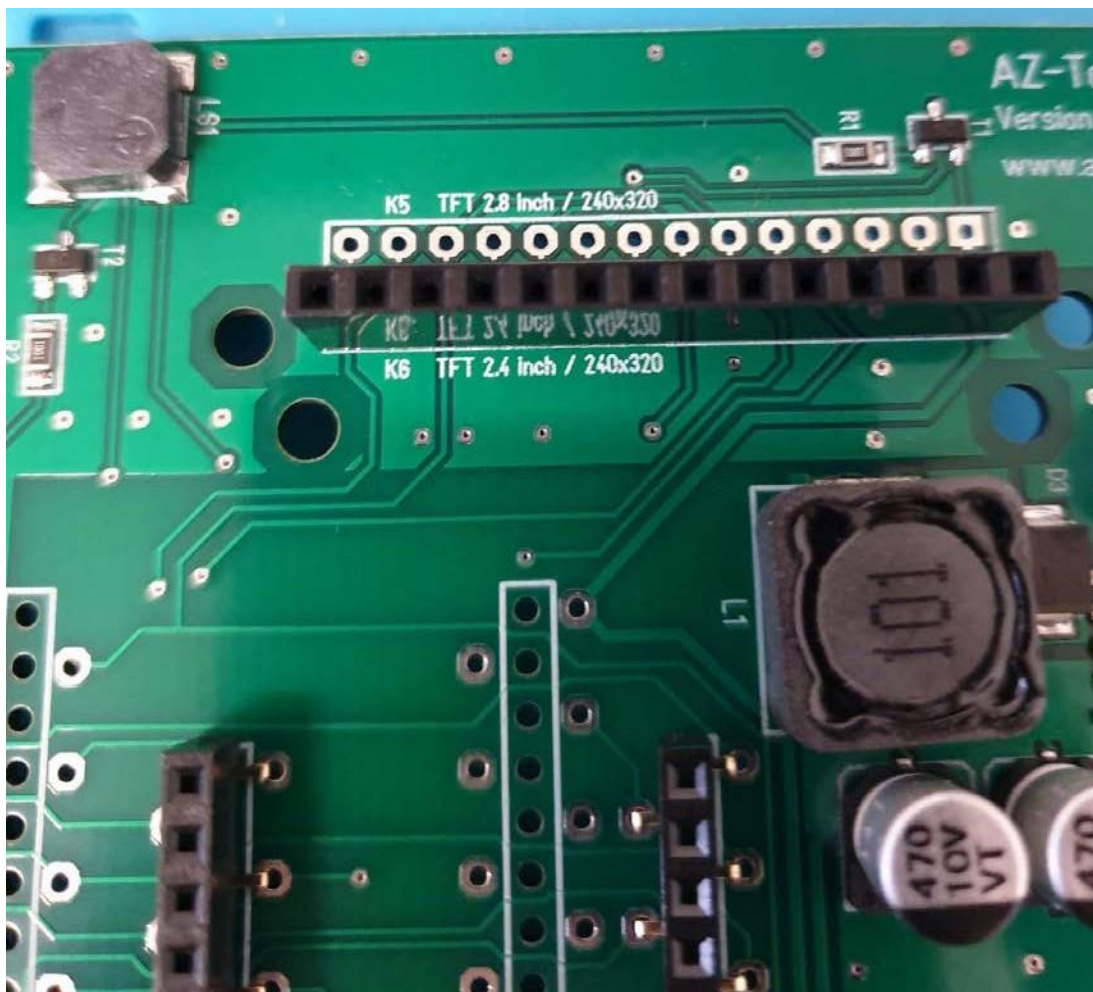


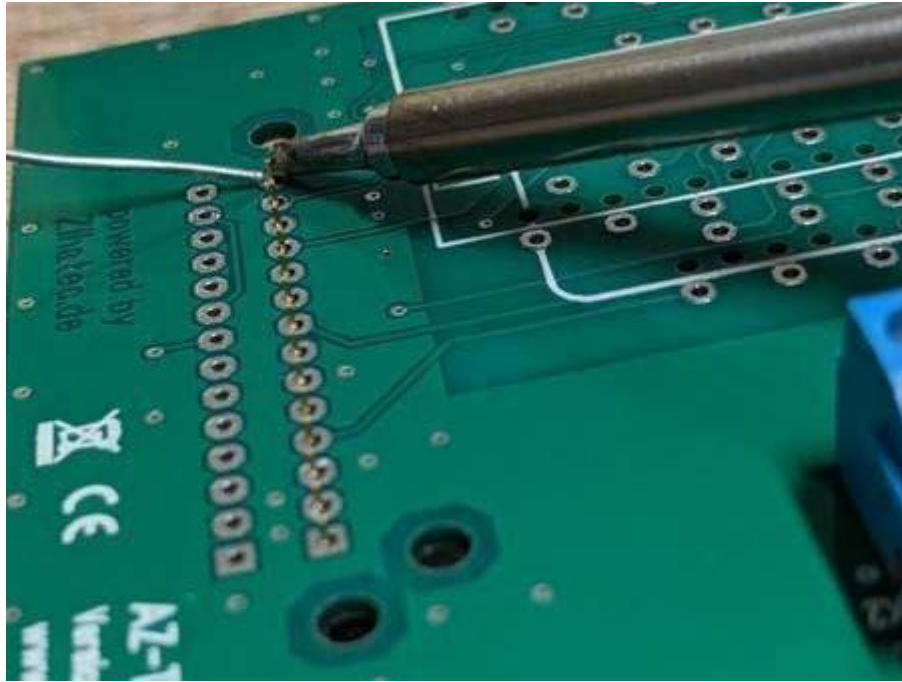
AZ Touch MOD

The first step was to solder the socket connector for the display. Connection options have been provided for both display variants. The following illustration shows the connections for the displays, choose the connection that fits your display size:



Insert the 14 pin female connector from the top and solder it from the bottom.

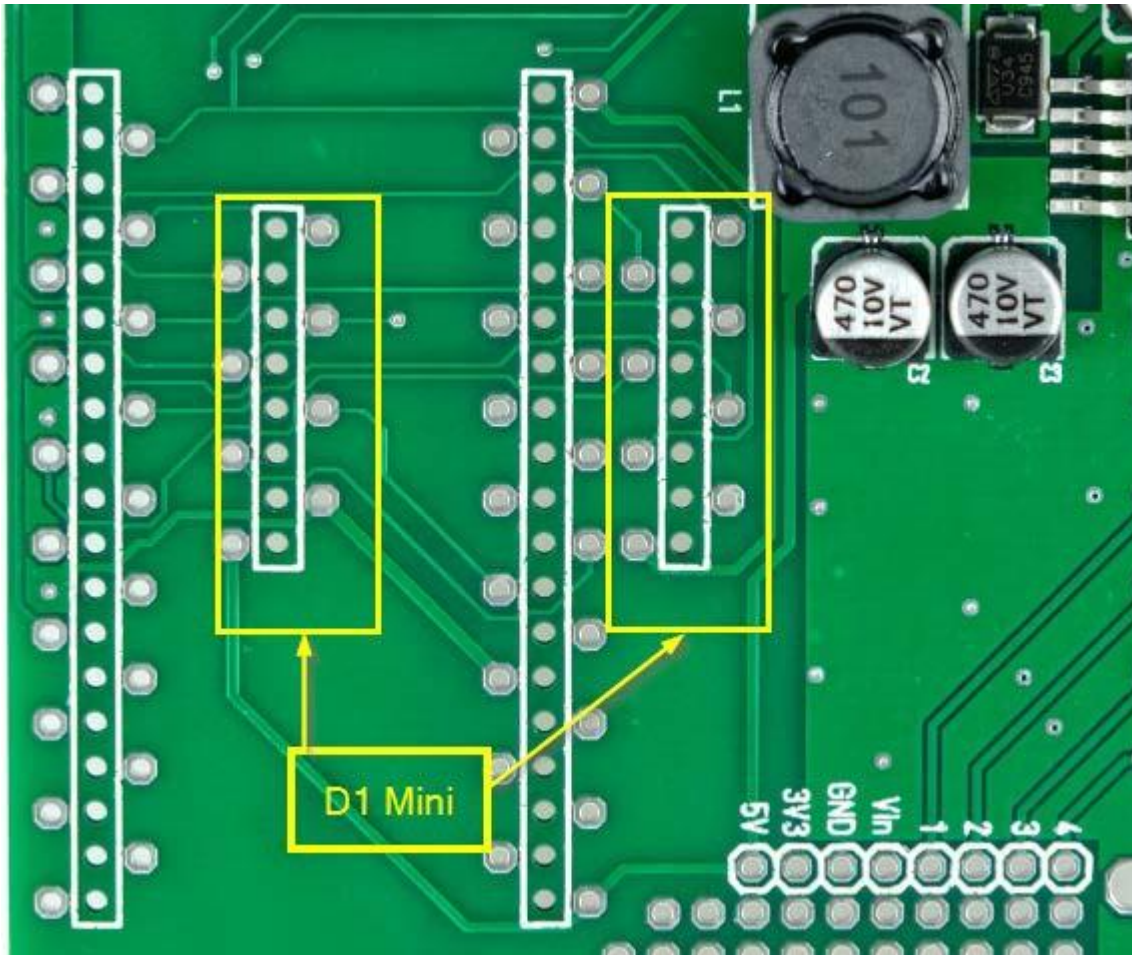


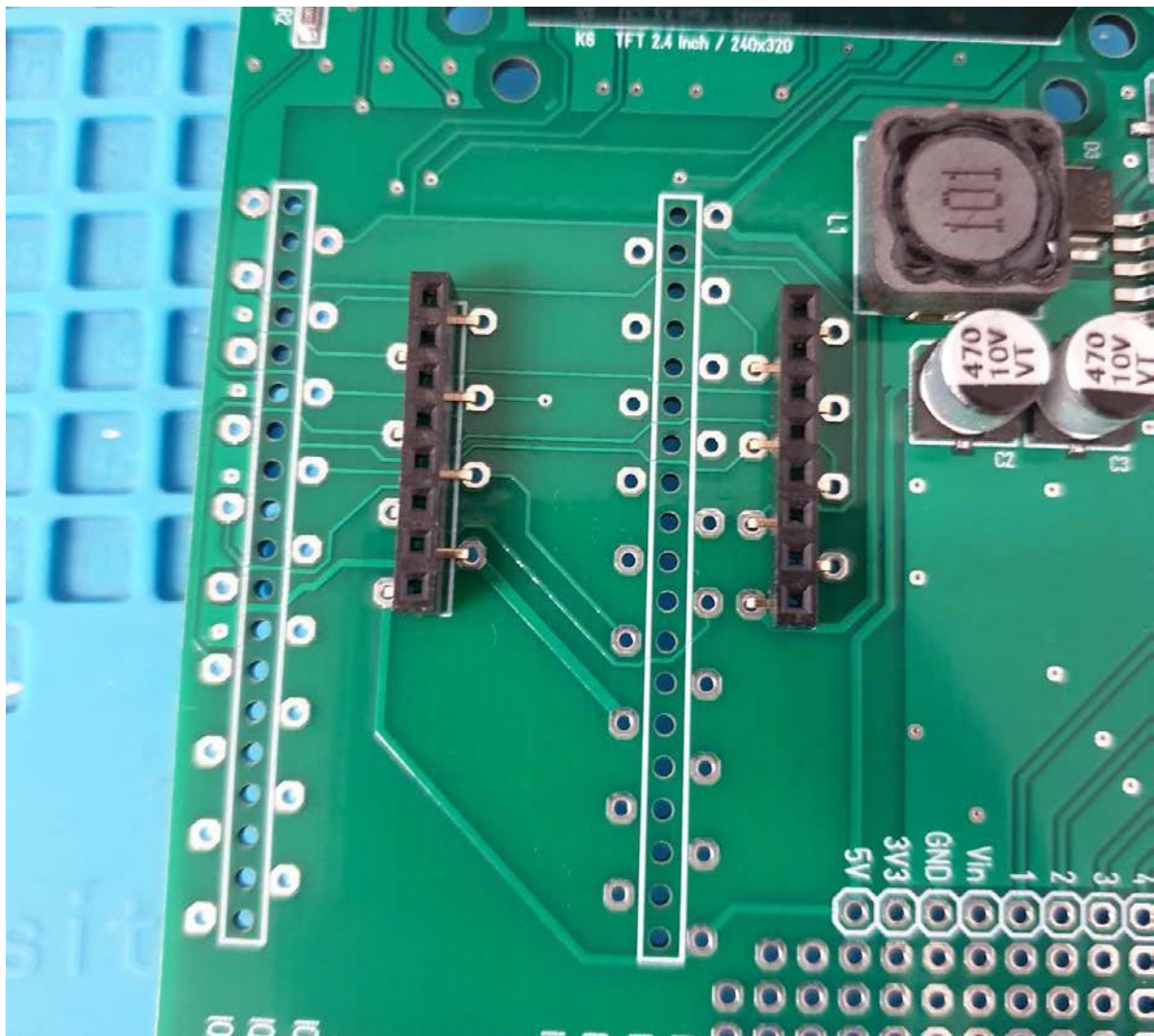


During the soldering process, make sure that the socket connector is flush with the surface.

Socket connectors for D1 Mini

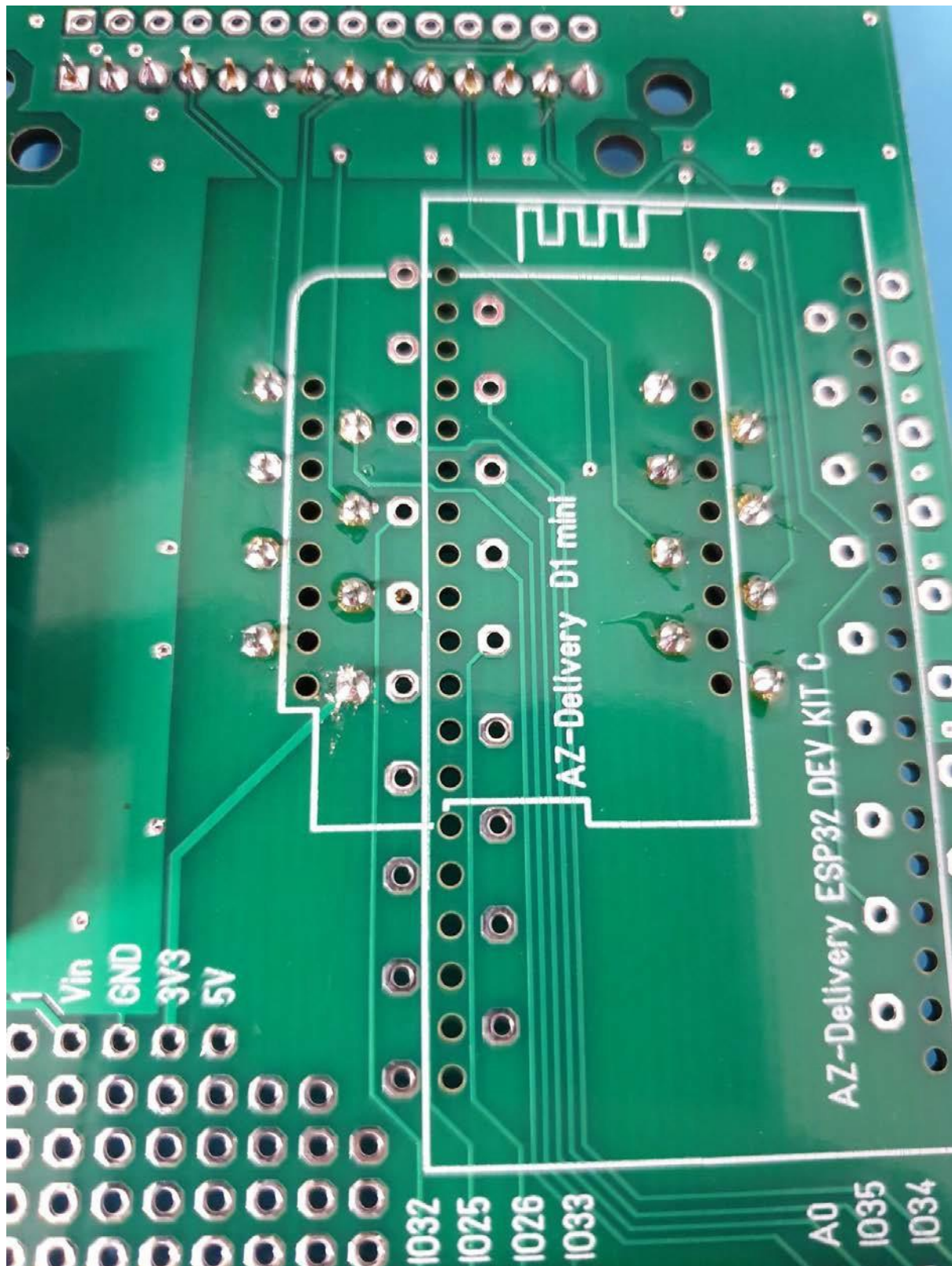
The 8 pin Centipede socket connectors are used for the D1 Mini. Like the 14 pin female connector for the display, these are plugged into the top of the board and soldered from the bottom.





(top)

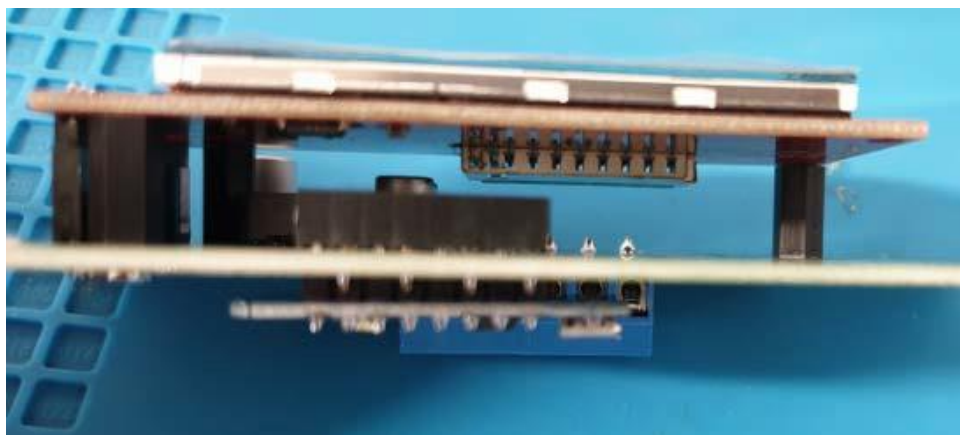
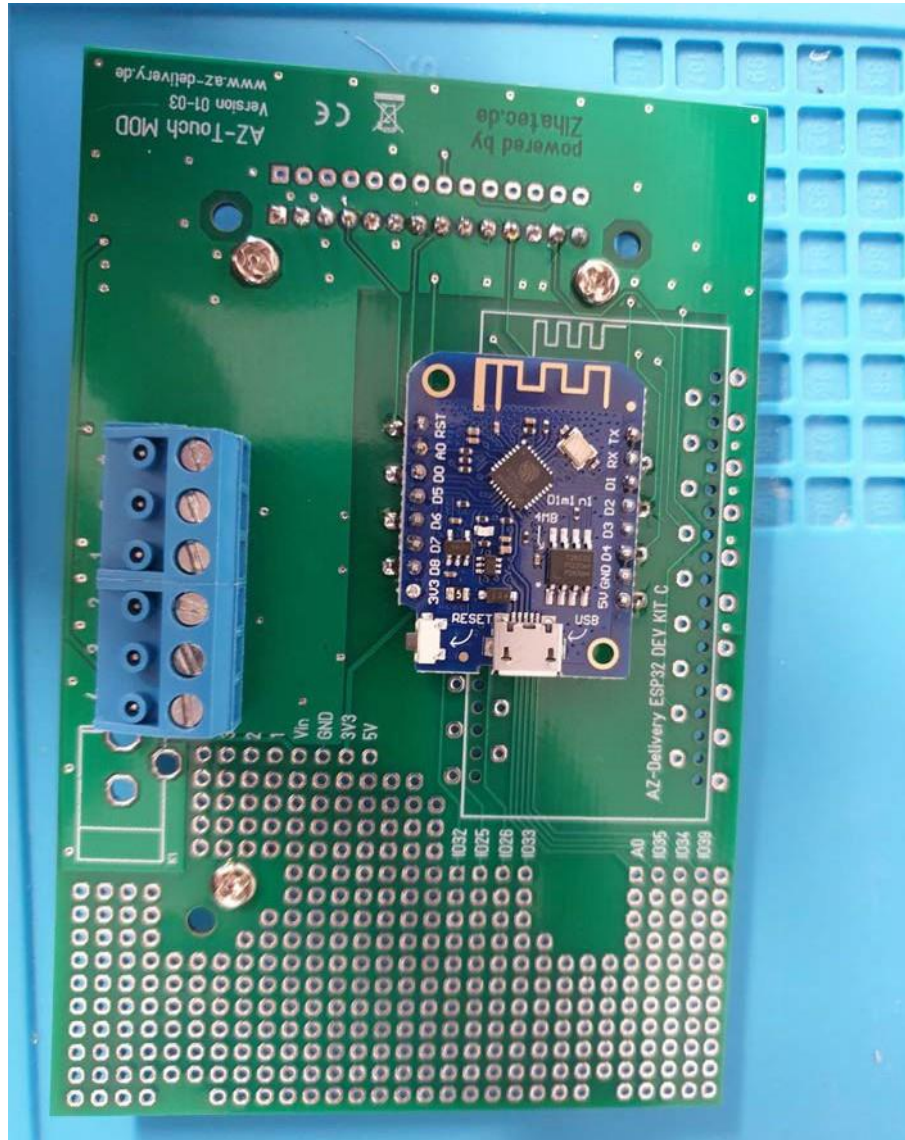
If everything is soldered correctly, the underside looks like this:



During the soldering process, make sure that the socket connectors lie flush.

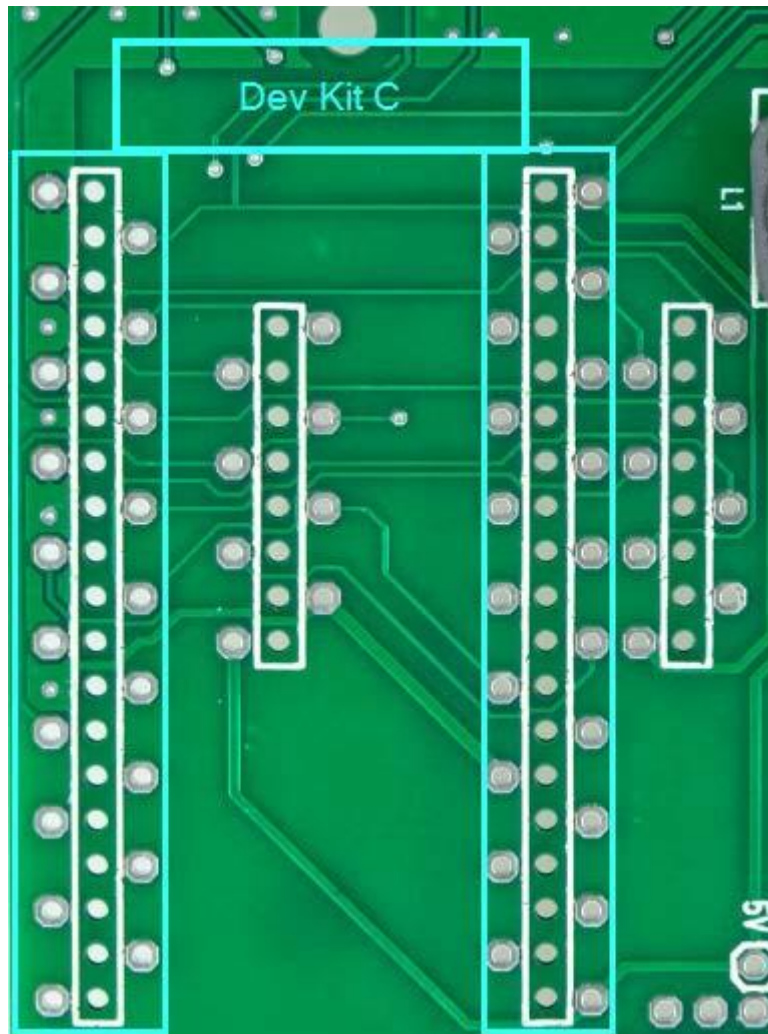
AZ Touch MOD

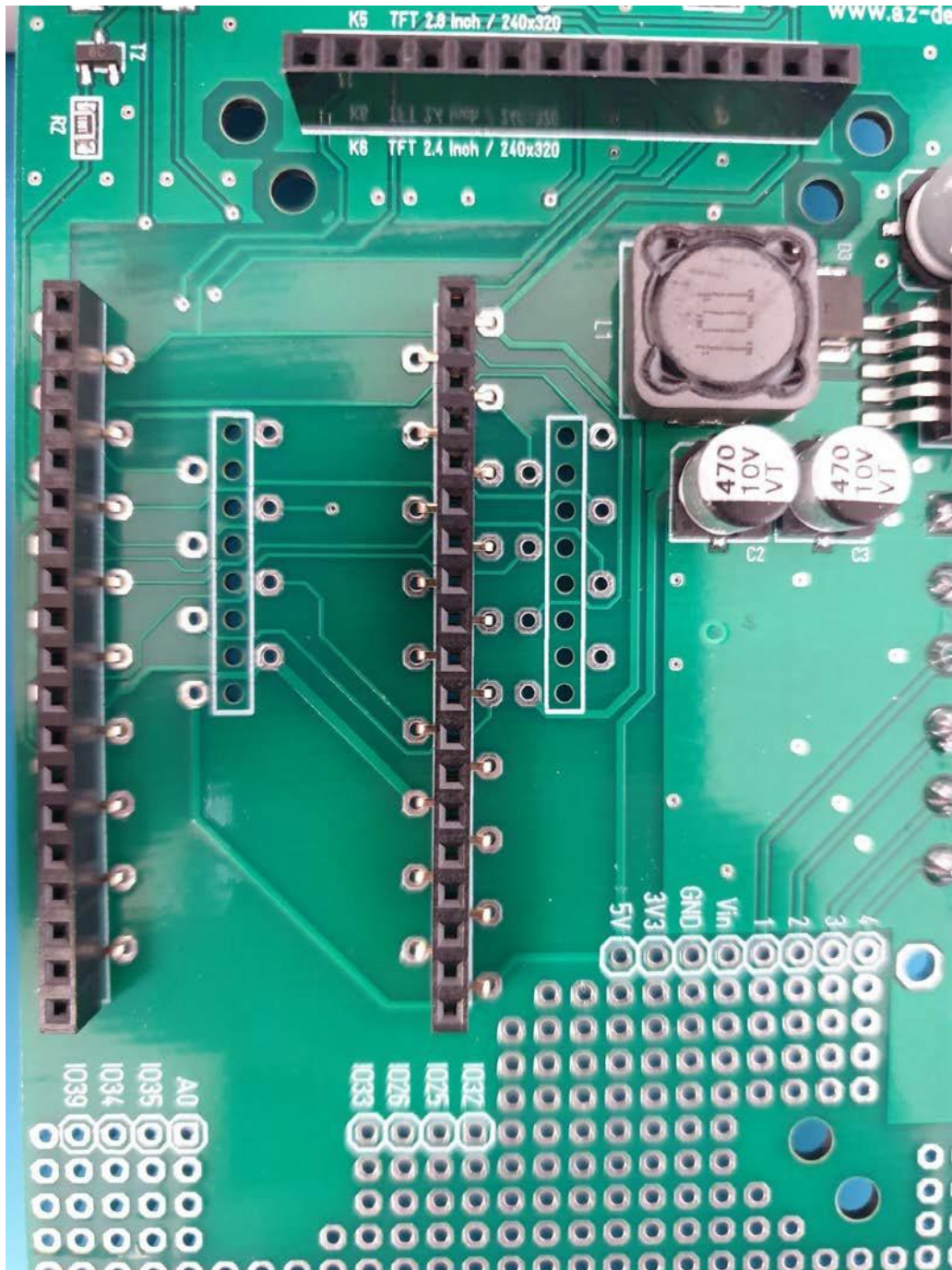
This completes the soldering work. Now the plastic spacers can be screwed on and the display can be attached to the top. The D1 Mini is inserted through the board from the underside, and the whole thing looks like this:



Socket connectors for ESP32 Dev Kit C

For the ESP32 Dev Kit C, the 19 pin Centipede socket strips are used. Like the 14 pin female connector for the display, these are plugged into the top of the board and soldered from the bottom.

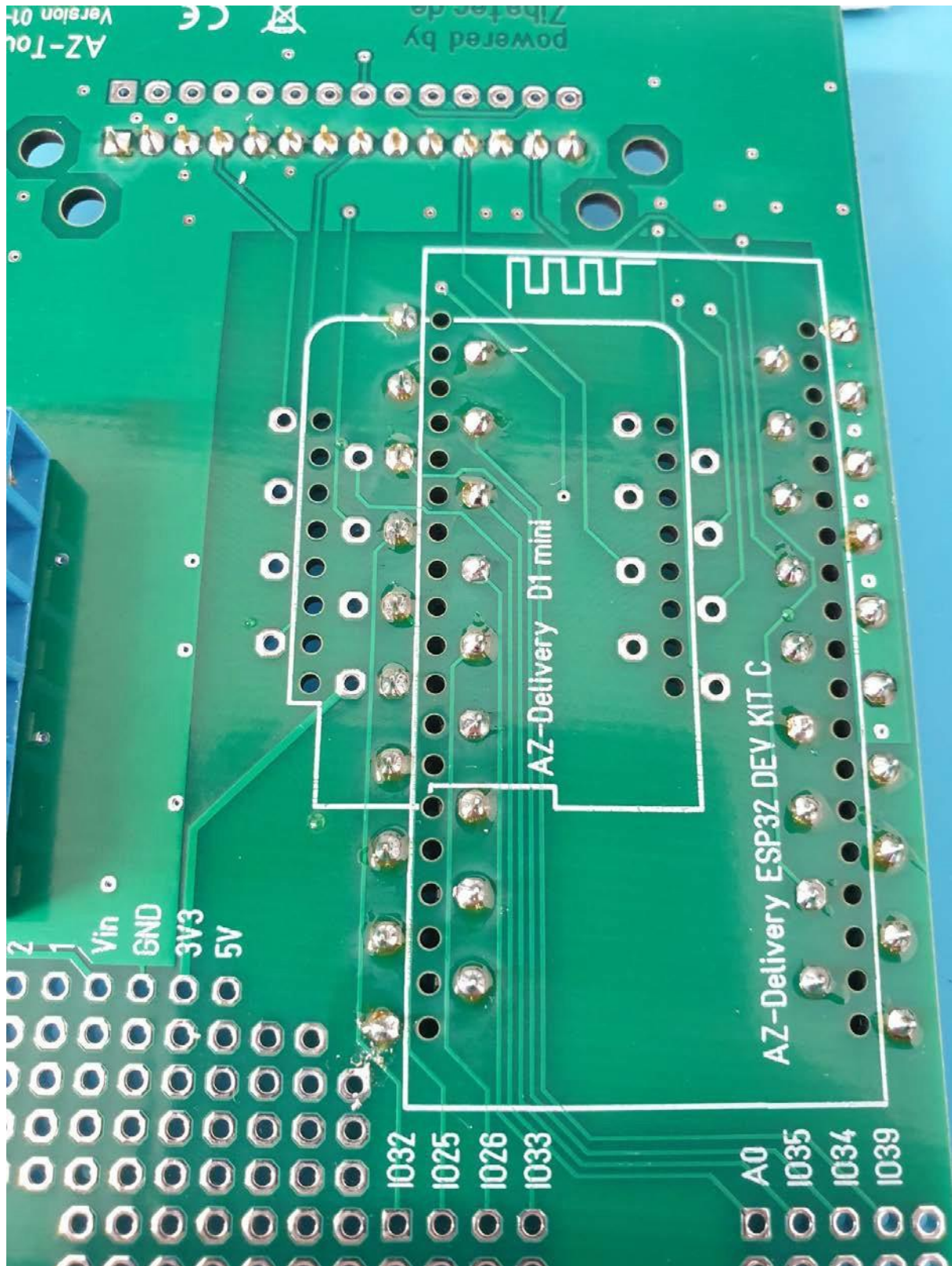




(top)

AZ Touch MOD

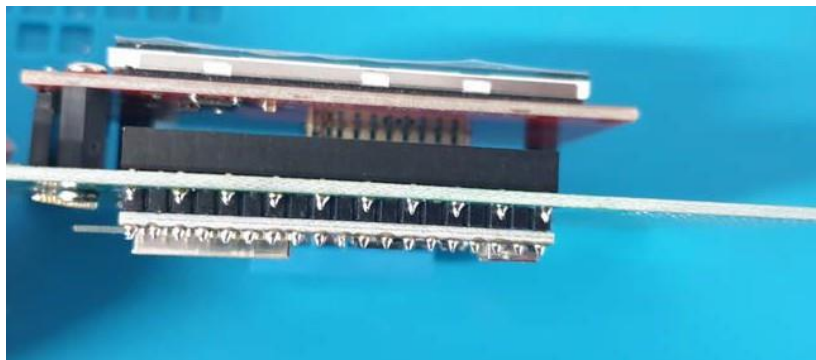
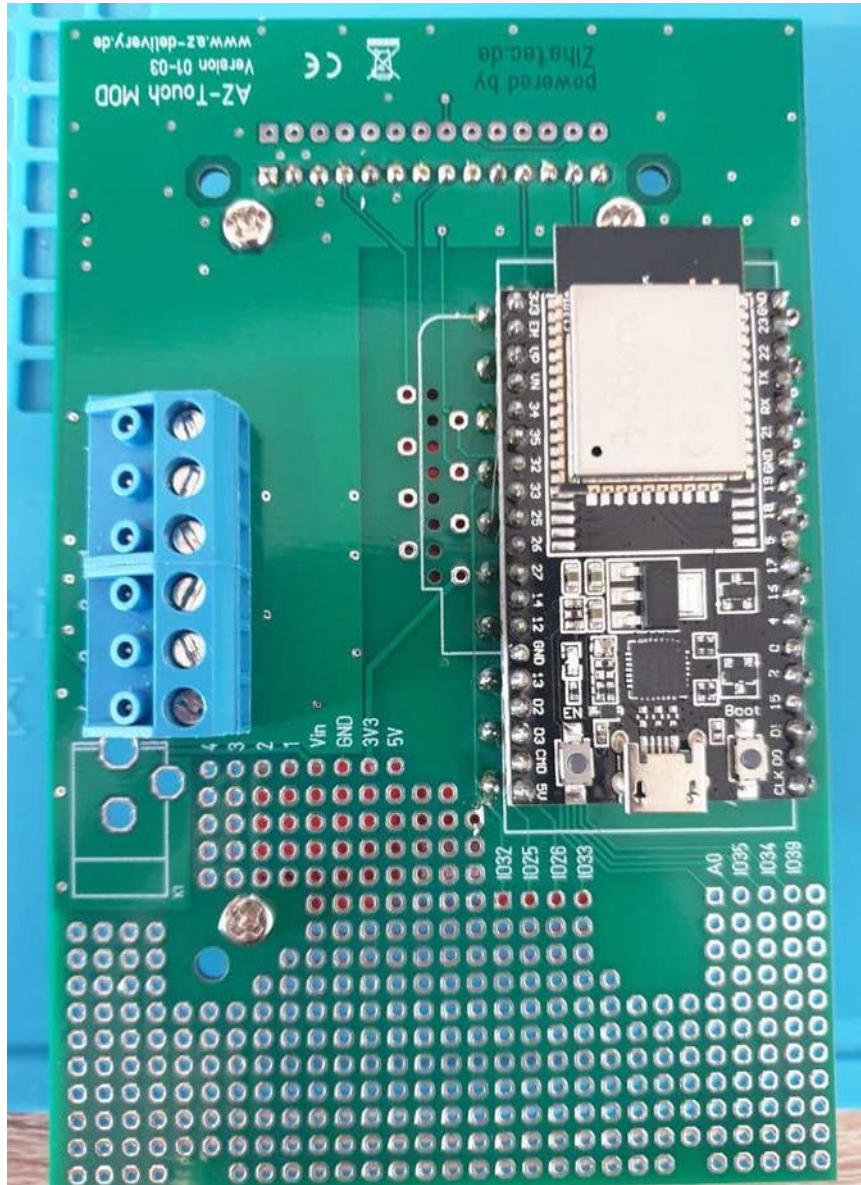
If everything is soldered correctly, the underside looks like this:



During the soldering process, make sure that the socket connectors are flush with each other.

AZ Touch MOD

This completes the soldering work. Now the plastic spacers can be screwed on and the display can be attached to the top. The ESP32 Dev Kit C is inserted through the board from the underside, and the whole thing looks like this:



Function test

After assembling the AZ-Touch, we recommend that you carry out a functional test in order to better isolate any errors. This is done by flashing a .BIN file to the microcontroller.

The pre-compiled firmware is a pre-configured "codelock". You can download the "AZ-Touch_TestFirmware.zip" [here](#).

You still need the "esphome-flasher" to be able to flash .BIN files directly to the ESP32 or ESP8266.

You can download it [here on GitHub](#).

Unzip the .ZIP file and start the esphome-flasher.

Enter the port to which the microcontroller is connected and select the appropriate .BIN file with "Browse".

ESP32/ESP8266 stands for the microcontroller.

big/small refers to the display size (big=2.8 inches, small=2.4 inches).

You can then start the flash process with the "Flash ESP" button. As soon as the flasher is finished, you can put the microcontroller back into the AZ-Touch and start it.

The functional test is considered passed if:

1. The display works and does not show an error
2. The touch function of the display is given
3. The buzzer makes sounds

Application example

One example each for the D1 Mini and ESP32 Dev Kit C is given here. Further examples can be found on the developer's page at:

<https://www.hwhardsoft.de/deutsch/projekte/arduitouch-esp/>
find.

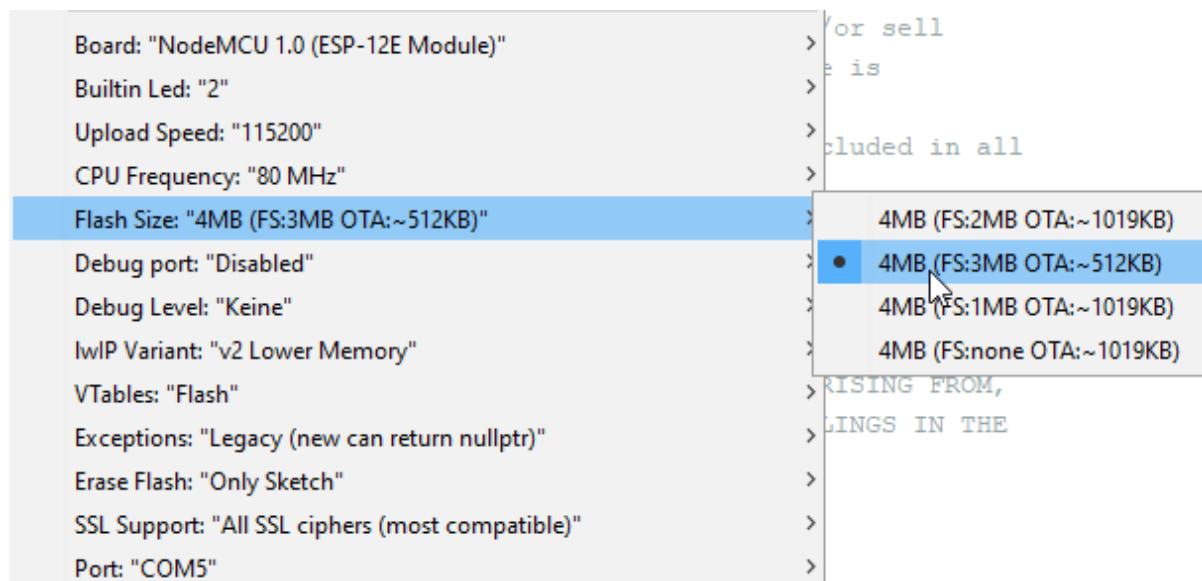
For the examples we assume that the Arduino IDE is installed and that you have installed the additional board resources for ESP8266 and ESP32.

If you have difficulties installing the Arduino IDE or starting up your microcontroller, please consult the corresponding ebook of the microcontroller.

D1 Mini

The example used for the D1 Mini is called "codelock" and you can download it [here](#). Unzip the .ZIP file and then you can open the "codelock.ino" with a double click.

Under Tools > Board you can select the board: "NodeMCU 1.0(ESP-12E). Flash size must be set to "4MB(FS:3MB OTA:~512KB)".



The following libraries must be installed:

Adafruit GFX Library:

<https://github.com/adafruit/Adafruit-GFX-Library/archive/master.zip>

Adafruit ILI9341 Library:

https://github.com/adafruit/Adafruit_ILI9341

XPT2046_Touchscreen by Paul Stoffregen:

https://github.com/PaulStoffregen/XPT2046_Touchscreen/blob/master/XPT2046_Touchscreen.h

AZ Touch MOD

Settings:

In lines 34-40 you can set your display size.

```
34 /*__Select your hardware version__*/  
35 // select one version and deselect the other versions  
36 #define AZ_TOUCH_ESP           // AZ-Touch ESP  
37 #define AZ_TOUCH_MOD_SMALL_TFT // AZ-Touch MOD with 2.4 inch TFT  
38 // #define AZ_TOUCH_MOD_BIG_TFT  // AZ-Touch MOD with 2.8 inch TFT  
39  
40 /*____End of hardware selection____*/
```

In line 69 you can enter the number that the lock accepts. The default setting is 42, but you can select a number between 0 and 999999.

ESP32 DevKit C

As an example, the "Weather Station" is used here, which you can download [here](#). Unpack the .ZIP file and open it.

"esp32-weather-station-color.ino" with a double click.

Under Tools > Board you can select the "ESP32 Dev Module". The following

libraries are required:

Mini Grafx by Daniel Eichhorn

<https://github.com/ThingPulse/minigrafx>

Json Streaming Parser by Daniel Eichhorn

<https://github.com/squix78/json-streaming-parser/blob/master/library.properties>

simpleDSTadjust by neptune2

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

ESP32 WetherStation modified by Zihatec

<https://github.com/HWHardsoft/ESP32 Weather Station>

Settings in the Settings.h:

Certain changes must be made in the Settings.h file.

```

23 // Setup
24 #define WIFI_SSID "*****"
25 #define WIFI_PASS "*****"
26 #define WIFI_HOSTNAME "WetterStation"
27
28 const int UPDATE_INTERVAL_SECS = 15 * 60; // Update every 10 minutes
29 const int SLEEP_INTERVAL_SECS = 0; // Going to Sleep after idle times, set 0 for dont sleep
30
31
32 // OpenWeatherMap Settings
33 // Sign up here to get an API key: https://docs.thingpulse.com/how-tos/openweathermap-key/
34 String OPEN_WEATHER_MAP_APP_ID = "Your-Key";
35 /*
36 Go to https://openweathermap.org/find?q= and search for a location. Go through the
37 result set and select the entry closest to the actual location you want to display
38 data for. It'll be a URL like https://openweathermap.org/city/2657896. The number
39 at the end is what you assign to the constant below.
40 */
41 String OPEN_WEATHER_MAP_LOCATION_ID = "2826099";
42 String DISPLAYED_CITY_NAME = "Name";
43

```

In lines 24 - 26 you can enter the WLAN access data for your network (SSID, password and host name).

You need an account with OpenWeatherMap to get an API key.

<https://docs.thingpulse.com/how-tos/openweathermap-key/>

You can enter this in line 34.

In lines 41 and 42 you can enter the name of your neighbourhood and the ID of the town. With [Find - OpenWeatherMap](#) you can search for your city.

In the URL you will find the ID, e.g. at

<https://openweathermap.org/city/2657896> the ID would be "2657896".

Finally, the "//" in line 93 must be removed and line 92 must be commented out.

```

90 #define HAVE_TOUCHPAD
91 #define TOUCH_CS 14
92 // #define TOUCH_IRQ 24 // enable this line for older ArduiTouch or AZ-Touch ESP pcb
93 #define TOUCH_IRQ 27 // enable this line for new AZ-Touch MOD pcb
94

```


Additional Notes

Upload the sketch:

For uploading the sketch, the microcontroller should not be connected to the AZ-Touch. The microcontroller can only be plugged into the AZ-Touch after successful uploading.

Power supply of the AZ-Touch MOD:

The power supply to the board is exclusively via the screw terminal, here you can apply between 9V and 35V voltage. Note the polarity.

A power supply via USB is not sufficient.

Now it's time to learn and create your own projects. You can do this with the help of many example scripts and other tutorials that you can find on the internet.

If you are looking for the high-quality products for Arduino and Raspberry Pi, AZ-Delivery Vertriebs GmbH is the right place for you. You will receive numerous application examples, complete installation instructions, eBooks, libraries and support from our technical experts.

<https://az-delivery.de>

Have fun!

Imprint

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