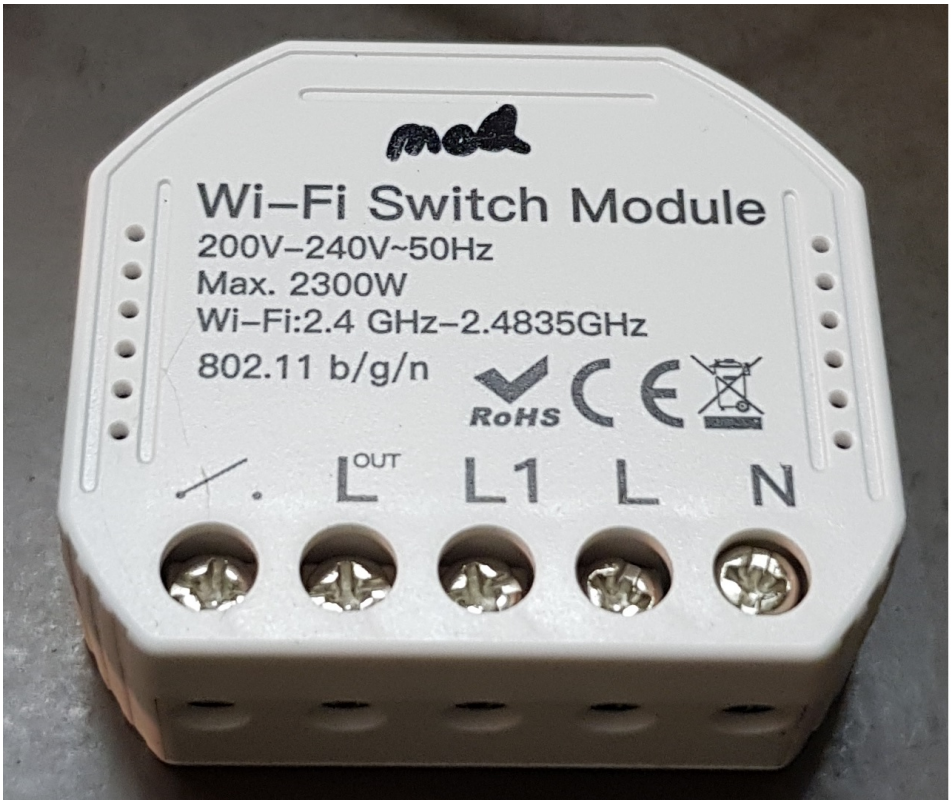
This device can be used if the `Beken/HLK-B30 WA2` is replaced by an `ESP8266` board. There are still several makes of this module, some are detailed in this discussion.

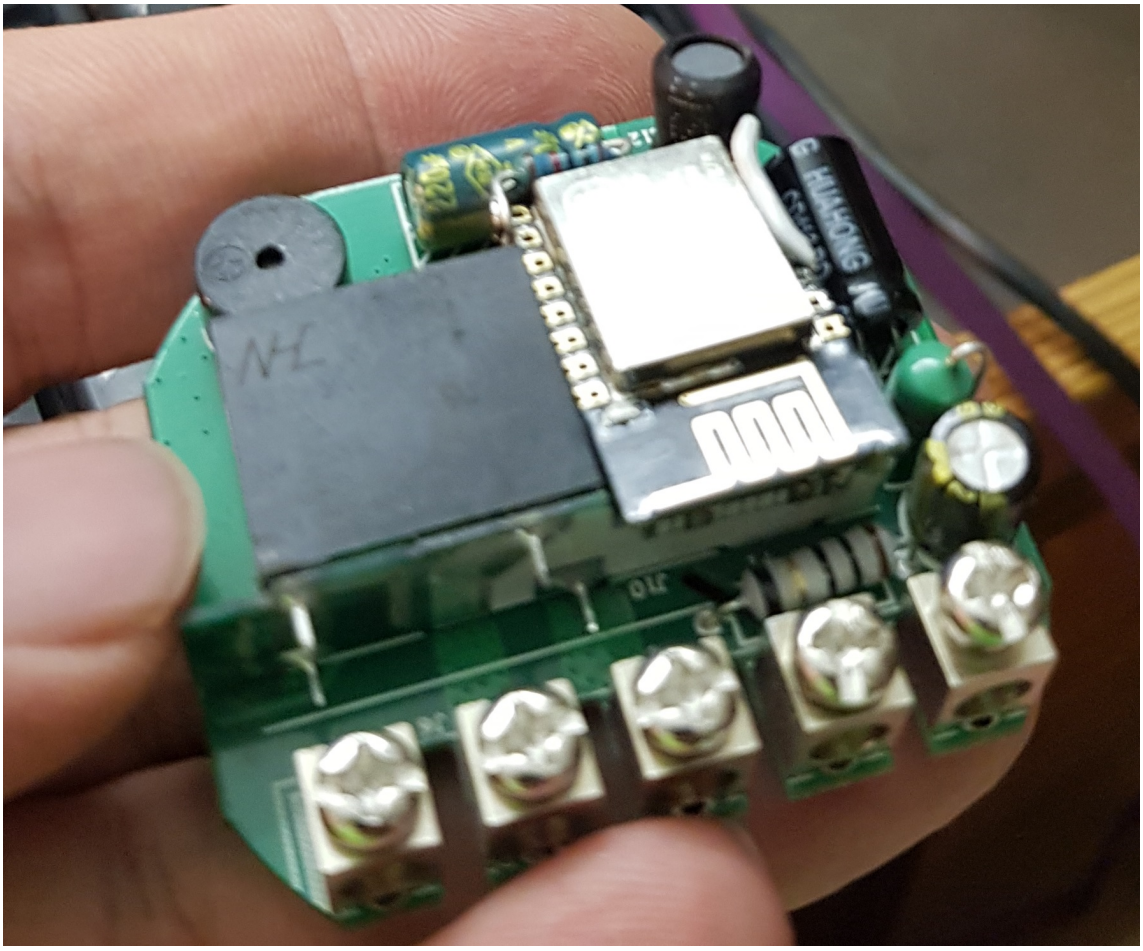
How to make it work?

These instructions are for the relays bought in March 2020 at MOES direct store (aliepress). They are called "MS-104", and they look like this:



As mentioned above, to make it work with tasmota the Beken chip module has to be replaced with an ESP module (ESP12E used here, but probably any of the ESP modules would do.) You will need a steady hand, tools for soldering, some additional cutting tool (like dremel), some wires, 10K resistance, knife and maybe some tool to tear off isolation from the wires. After the procedure described below, the module will look

the same outside, inside like this:



Downsides of this modification:

- There is a minimal delay when switching on/off using the physical switch (half a second?) (maybe there was a delay with the original HW as well, but I cannot check this anymore)
- You cannot reset the module from outside anymore as with the original hard/software delivered. If you ever have to, you have to take it out again!
- As the buzzer is not required anymore I did not invest in connecting it.

1. Remove the Beken chip module

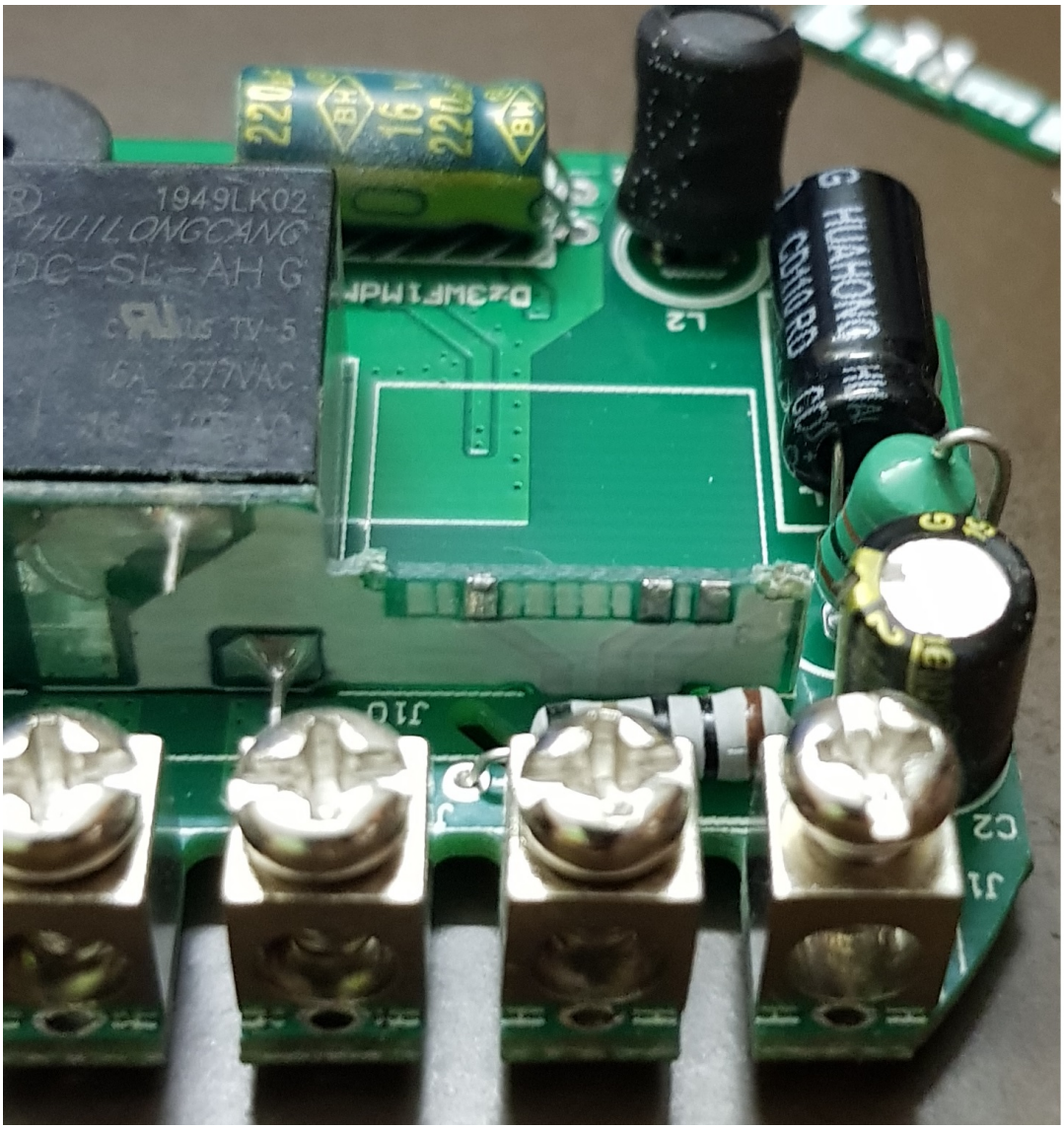
Although you CAN just pull the chip module up where the antenna is situated, until the hub board breaks, this is not recommended. In most if not all cases some of the contacts on the hub board or all below the soldered chip module will be teared off if you do so. These contacts are (left to right in the above picture) relay control, GND, VCC, we still require these. And you have little to no control where the hub board exactly breaks.

Therefore my recommendation is to cut the front part of the chip module off (red rectangle in the picture), and make a small cut right at the right side of the relay

(red line in the picture below):

Use a dremel kind of tool, like below, to cut:

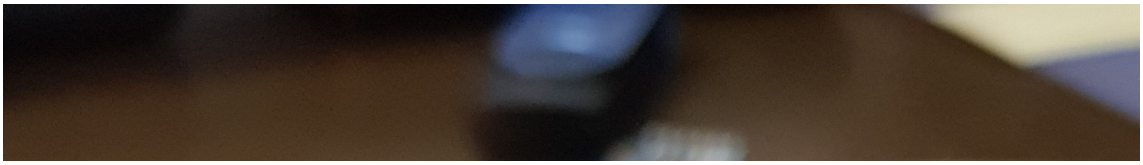
Cut the chip module close to the hub board. You want to keep the contacts below, but remove almost all of the module. After this, pull the chip module up. As most of the solder was cut off this way, the mechanical force when lifting the module should be small so the contacts are not teared off. After this, it should look like this (note the three soldered contacts on the hub board):

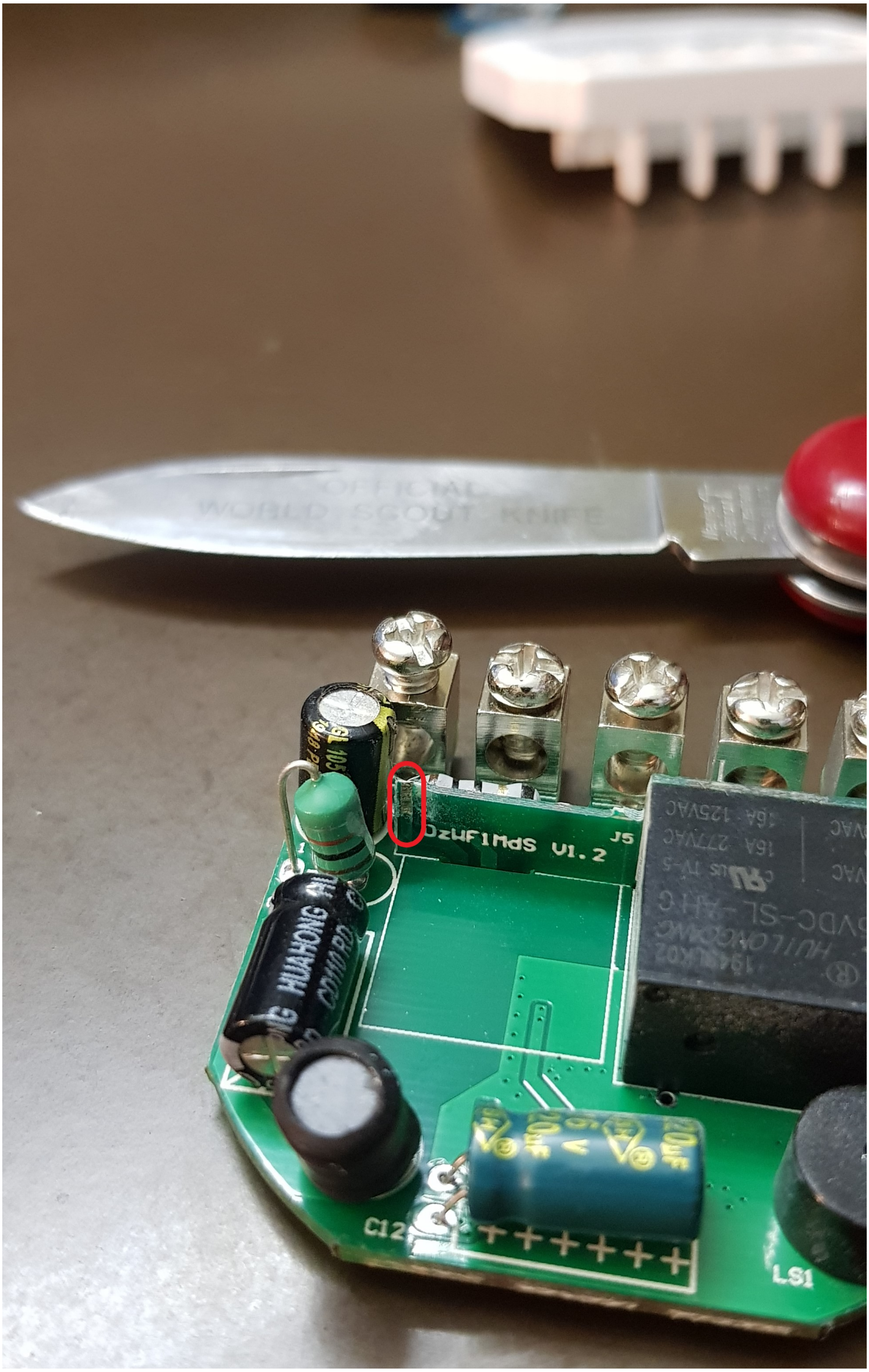


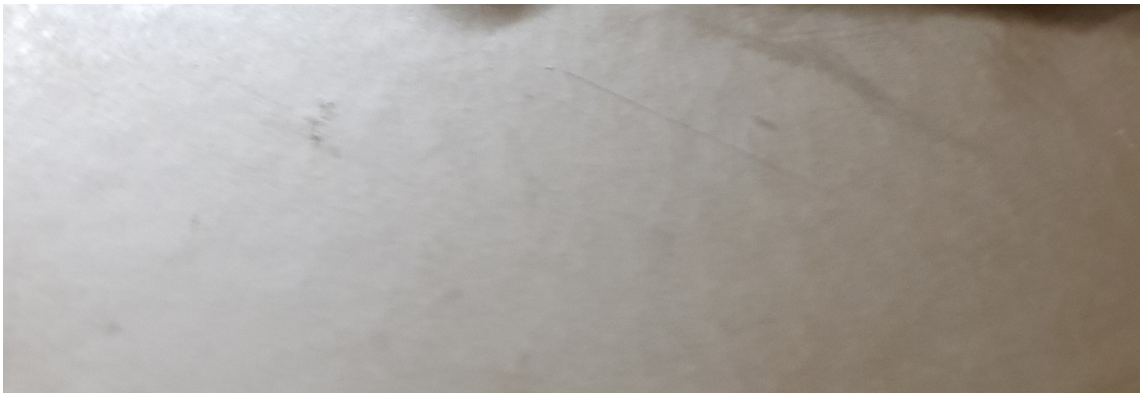
Again, these are (left to right) relay, GND, VCC.

2. Rebuild switch contact

There were two contacts above the chip module, switch input and buzzer. After the breaking of the hub board, we require the switch contact to be rebuilt, on the opposite side of the hub board. This can be achieved by scraping off the isolation (maybe with a knife like I did) at the red marked place in the picture:




OFFICIAL
WORLD SCOUT KNIFE
DzWF1MdS V1.2
J5
HUAHONG
C12
LS1



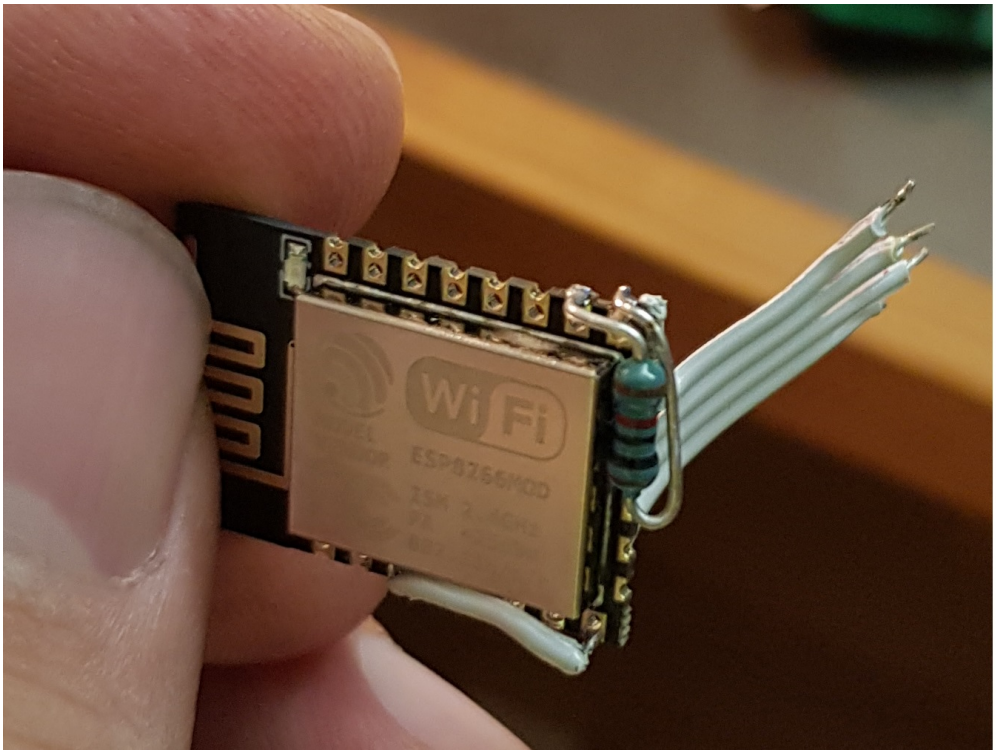
3. Prepare ESP module

Now if is time to prepare the ESP module. I will mostly not explain how to put tasmota on it, but you should be aware that the modules require some minimal components. These are

- Connect GPIO15 to GND (Yes; you can solder directly to the neighbour pin GND, but it is better using a resistor of 10K, just to avoid issues if you ever use GPIO15)
- Connect chip enable (EN) to VCC (can solder directly)

Without these two connections, the module is remaining "dead".

The next step is to connect some small wires to the ESP module. We will use these to connect the ESP module to the hub board. I chose a flat band cable from an old computer. You will need four contacts (VCC, GND, relay, switch). The cable should be about 3.2 cm long so it fits right in. Solder the cable to VCC, GPIO12, GPIO13, GND. This is for convenience, as three of the four contacts are at the same side of the board, making it easier with the flat band cable to solder. The result looks like this (note the 10K resistance GND-GPIO15):



I chose to solder everything at the side of the module, so I can still use my connectors if I have to program the module again. But this is a little tricky; you may be better off using the wholes on the module.

4. Solder the cables to the hub board

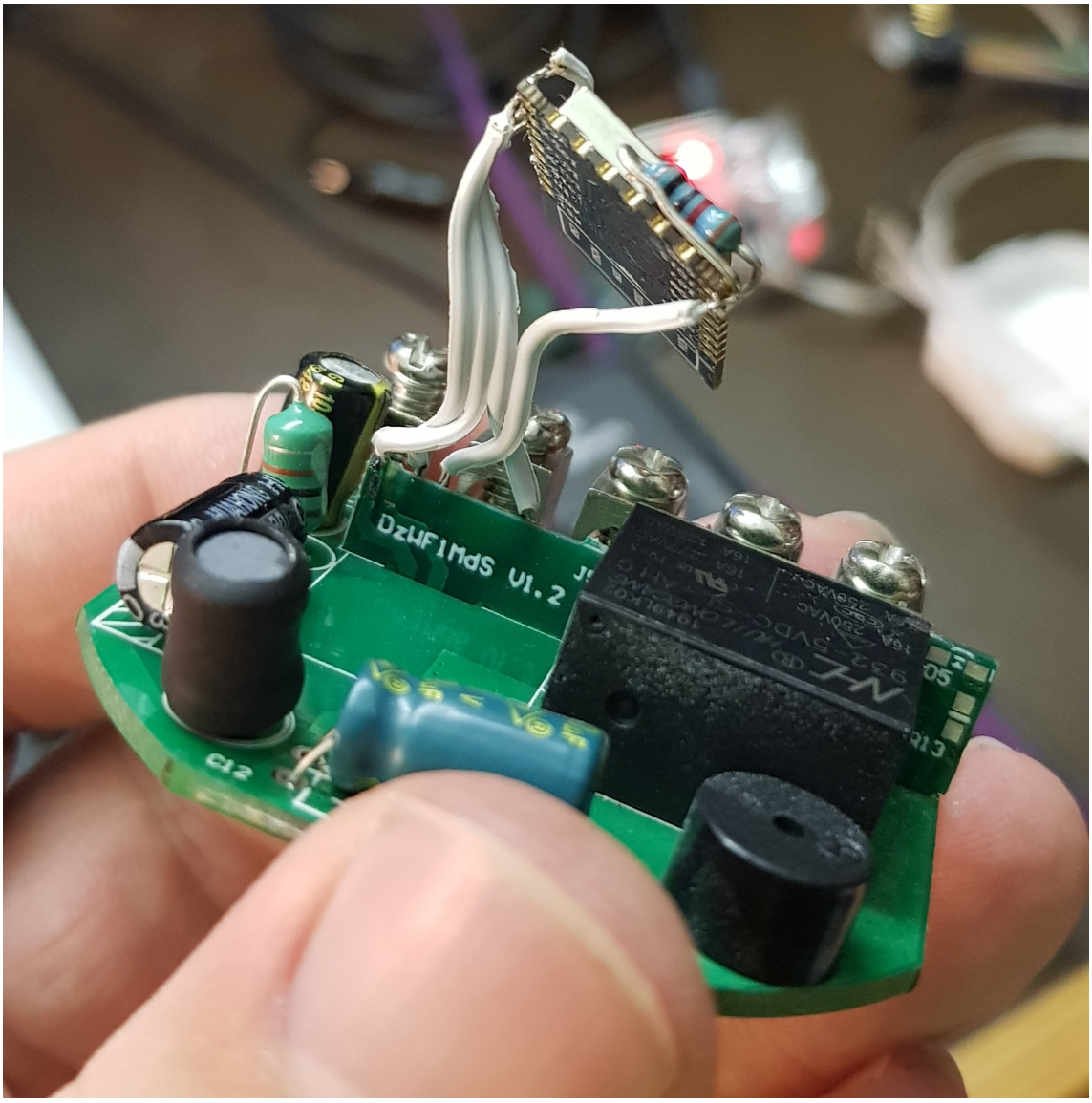
It should be clear now where to solder them. On the front of the hub board:

- VCC of the module to VCC on the hub board
- GND of the module to GND on the hub board
- GPIO12 or GPIO13 to relay

On the back of the hub board:

- GPIO13 or GPIO12 to switch contact

The result should look something like this:



In the picture, GPIO13 is connected to switch, GPIO12 is connected to relay. Check the contacts once more, and close the MS104 again in its original box.

Once this is completed, you are done with the hardware part!

5. Checkup

Once your module is closed, put the module to a test! Connect a 220V switch or pushbutton to it, and power it on. Connect to Tasmota Wifi (it will start with its usual WAP), put your WLAN settings, store them. Tasmota will reboot, and you can access its web interface on the DHCP address assigned to it. Everything working so far? Otherwise 99% sure you made some mistake in the wiring.

If ok, put the following configuration/template: {"NAME":"Moes MS-104","GPIO":[0,0,0,0,0,0,0,0,21,94,0,0,0],"FLAG":0,"BASE":18} (94 is for the switch (a counter actually), 21 for the relay; depends where you soldered what)

As the MS104 brings a pulse to the switch contact whenever the switch changes its state, tasmota can count the pulse. With the above configuration, on the main page you should see the counter tasmota now displays. Whenever you toggle the switch, tasmota increases the counter by one.

As we want it to change the relay state and not just count, we install the following rule on the console command line: rule1 ON Counter#c1>0 do Backlog POWER TOGGLE; Counter1 0 ENDON and then we activate it: rule1 on

Now, everytime the switch is toggled, the relay is toggled as well, which is what we want.

Congratulations!