

Commissioning the itho wifi add-on

Physical installation:

To install the add-on, follow these steps:

1. Remove the voltage from the itho box and make sure that the main PCB is accessible (see itho manual).
2. Install the add-on as shown on photo (see appendix B) on the main PCB of the itho
3. Switch the power back on
4. If initialisation is successful, the status LED lights up very briefly and then remains off. This is a sign that the communication between the itho main board and add-on has been successfully started.

Set add-on:

The add-on starts up a Wi-Fi access point if it cannot find a known Wi-Fi network. If an accesspoint is active the wifi LED on the add-on or Wemos flashes (see appendix A) 1 time per second.

The web server can be reached by connecting to the access point (via PC, tablet or mobile). The network name (SSID) starts with nrg-itho followed by 4 digits/letters.

The password for the network is: password

After connecting to the access point, use a browser to go to:

<http://nrg-itho-A1B2.local> (replacing A1B2 with the 4 digits/letters of the SSID)

In the unlikely event that this does not work, please browse to <http://192.168.4.1>.

On the wifi setup page you can configure the network you want to connect to. Save the settings.

Then, on the MQTT page, you can set and save the details of your MQTT environment if you wish (no reboot needed yet).

For hardware revision 2 it is also possible to activate RF support (if an RF module is present) under menu 'itho settings'.

Then restart the add-on via the menu 'reset' -> 'restart device' or after activating RF support. After about 20 seconds, the add-on is accessible again.

If you have activated RF support the add-on will check at startup whether the module is installed and then activate it. The RF module configuration will be deactivated if the module is not found successfully.

Usage:

The itho box can now be operated via the web interface (<http://nrg-itho-A1B2.local>, A1B2 replaced), via MQTT or HTML API.

This manual assumes that you have MQTT installed. If this is not the case, you will find an excellent example of how to install MQTT on, for example, a Raspberry PI via this link:
<https://randomnerdtutorials.com/how-to-install-mosquitto-broker-on-raspberry-pi/>

The MQTT "Command topic" accepts a value of 0 - 254 as a command, sent as a string or unsigned char.

Where 0 is the lowest setting (see itho manual) of the itho box and 254 the maximum setting.

A simple Node-red example flow is included in Appendix C.

Under the menu API you can find more information about the further possibilities of the MQTT API and the HTML API.

Important to note:

Commands from the add-on are only accepted if the itho box is in the medium / 2 / standard position (via remote or 3 position switch), this is how itho designed it and as yet there seems to be no possibility to work around this.

Hmmm, but....?

Further questions, feedback and code modifications via info@nrg.watch or
<https://www.github.com/arjenhiemstra/ithowifi>

On tweakers.net there is a thread on the forum about this add-on. There is also more information about the use of this add-on in combination with Home Assistant, Domoticz other systems. You can also go there for questions.

The link is:

https://gathering.tweakers.net/forum/list_messages/1976492/0

Additional information hardware revision 2

RF remote support (hardware revision 2 only - experimental!):

It is possible to solder a CC1101 RF module on the bottom of the add-on. Maybe you have ordered an add-on with this module already present. This module can receive the RF signals from itho remote controls. At the moment this function is limited and works with at least one type of remote control (see Appendix D), but possibly more types. If possible, further support for itho RF controls will be added in the future.

To use the RF function effectively it is necessary to transfer the itho remote control association from the itho box to the add-on, this is done as follows:

1. Decontaminate the remote control by sending a leave command within the first 2 minutes after switching on the itho box (on the remote control you do this by pressing all 4 buttons at the same time).
2. If you have not already done so; further set the add-on module and (finally) activate the RF module under the menu "itho settings".
3. The add-on reboot
4. If the RF module is correctly detected, the option to manage itho remote controls appears in the same menu. Only add remote controls after the itho box is out of learn/leave mode (so at least 2 minutes after switching on), otherwise the remote control will be reconnected to the itho.
5. Put the add-on in learn/leave mode
6. Send a learn command with your remote (press 2 diagonally opposite buttons simultaneously).
7. If all goes well, your remote ID should be on the first position (see picture below), if not repeat step 6. If it still doesn't work after several attempts, the remote may not be supported (yet).

There is a debug option to make RF commands visible in the web interface by issuing one of the following commands:

<http://nrg-itho-A1B2.local/api.html?debug=level1>

Debug level 1 displays all recognised itho remote commands incl. remote ID

<http://nrg-itho-A1B2.local/api.html?debug=level2>

Debug level 2 shows all RF packets coming from a set remote (see <https://github.com/arjenhiemstra/ithowifi/tree/master/remotes>) for more details on how to use this)

<http://nrg-itho-A1B2.local/api.html?debug=level3>

Debug level 3 displays all RF packets being processed (this is likely to include many non-ITO related packets)

<http://nrg-itho-A1B2.local/api.html?debug=level0>

With this command you turn off the debug option again

FTDI header:

If you want to flash new firmware yourself and you cannot or do not want to use the firmware update option via the web interface, it is possible to flash the ESP module using a USB-TTL serial adapter. Make sure you use an adapter that can deliver the following power at 3.3 volts (around 300mA is recommended).

An auto reset/flash mode circuit is provided to allow for easy flashing from within the Arduino environment.

Failsafe boot:

In the unlikely event that the module becomes inaccessible due to incorrect configuration, it is possible to boot the module in failsafe mode. The file system with the configuration files is formatted and the module starts a simplified web interface with which it is possible to flash a new firmware.

To activate this mode, connect the two metal surfaces on the PCB that say failsafe. The easiest way is to use a soldering iron and some solder.

The add-on then starts an access point as it did the first time, and the firmware upload option can then be accessed via:

<http://192.168.4.1/update>

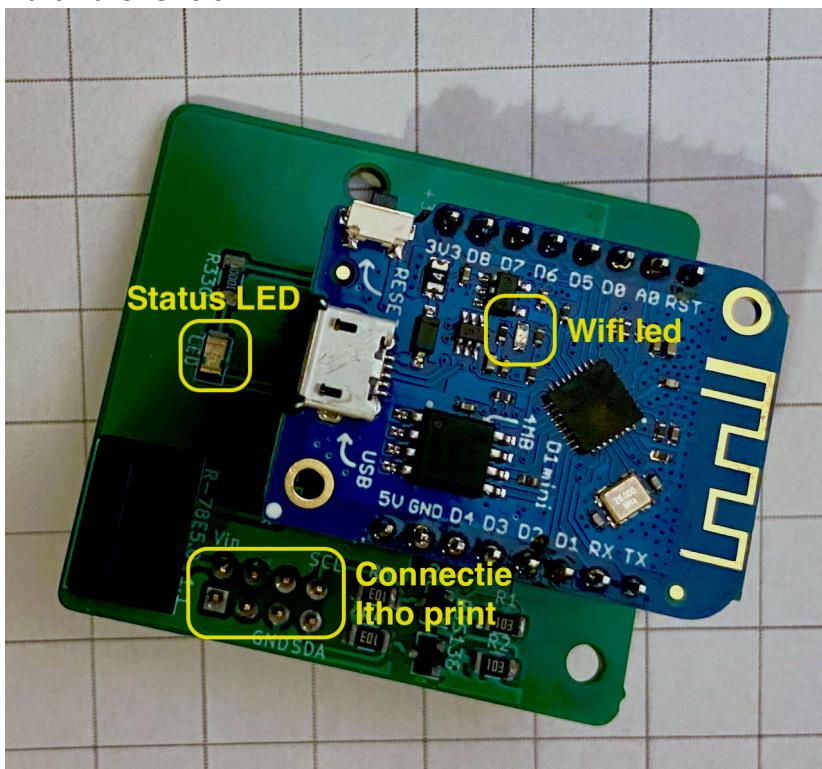
After this procedure, remove the solder joint and put the module back into operation as described on the first page.

This method is only available if an "official" firmware or a firmware based on it is used.

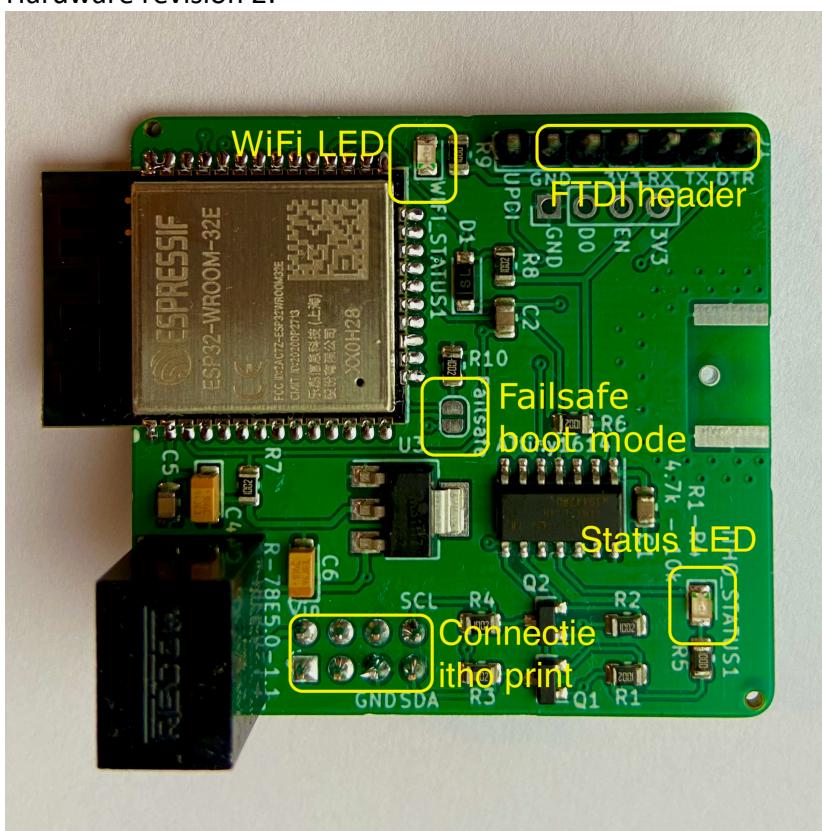
Appendix A:

(The picture may differ slightly from the product you received, but the effect is the same)

Hardware revision 1:

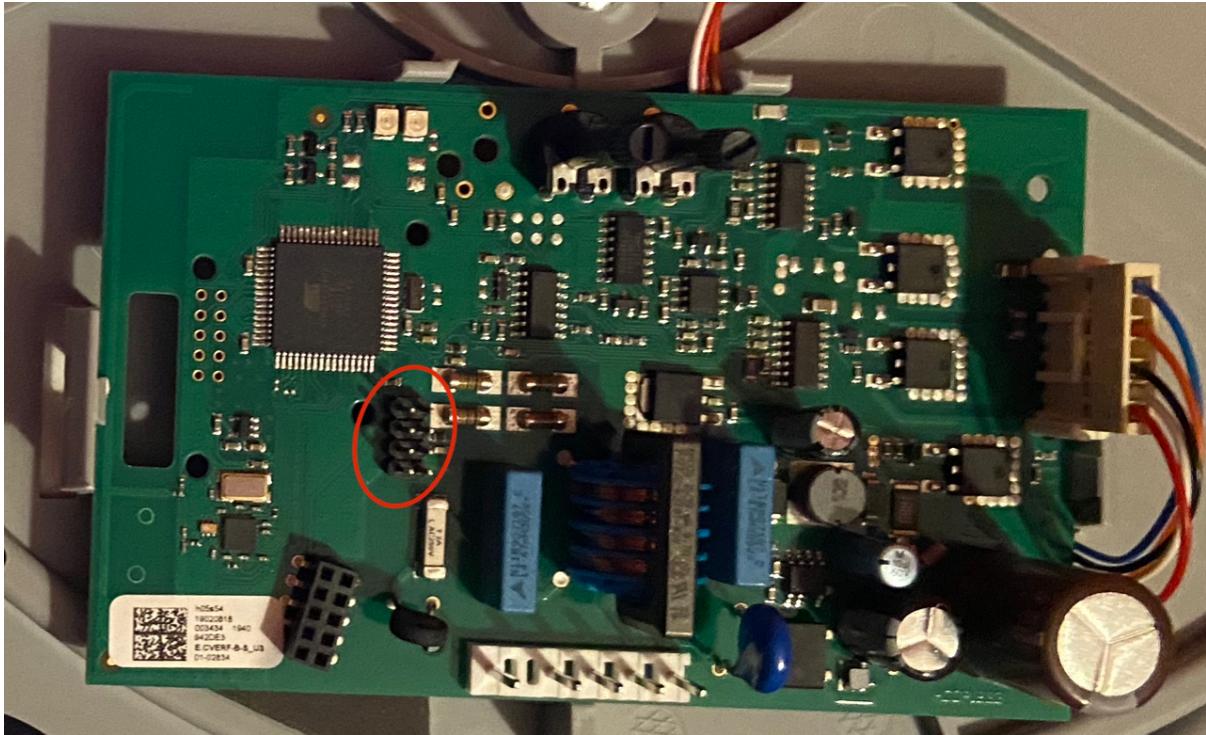


Hardware revision 2:

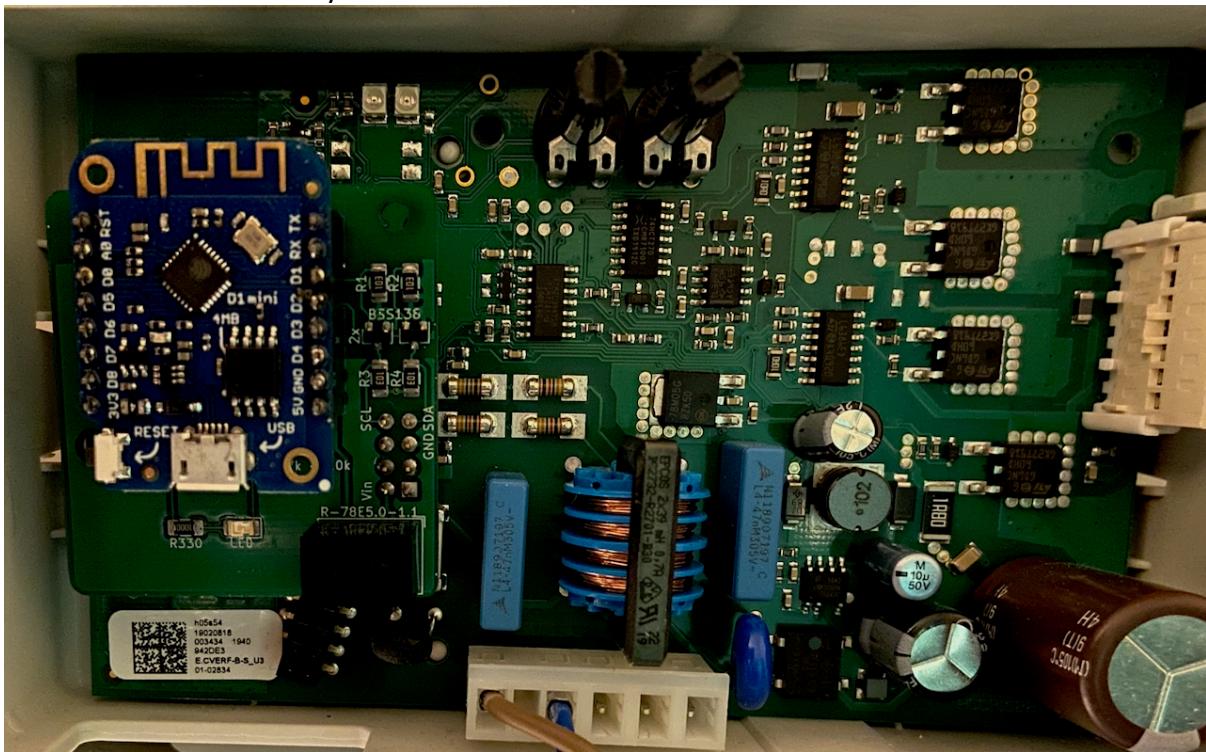


Appendix B:

Installation header for the add-on in the red circle. Depending on the production date of the itho box, the print may look slightly different.



Add-on installed correctly:



Appendix C: Node-red example

```
[{"id":"78e45008.cda2f","type":"mqtt  
out","z":"79360772.4553e8","name":"itho","topic":"itho/cmd","qos":0,"retain":true,"br  
oker":"b4eed736.102278","x":430,"y":1000,"wires":[]},{ "id": "98cc2161.c3896", "type": "injec  
t", "z": "79360772.4553e8", "name": "itho level  
127", "topic": "", "payload": "127", "payloadType": "str", "repeat": "", "crontab": "", "once": false,  
"onceDelay": 0.1, "x": 170, "y": 1000, "wires": [{"id": "78e45008.cda2f"}]}, {"id": "5a4ffa98.c88454", "ty  
pe": "inject", "z": "79360772.4553e8", "name": "itho level  
254", "topic": "", "payload": "254", "payloadType": "str", "repeat": "", "crontab": "", "once": false,  
"onceDelay": 0.1, "x": 170, "y": 1060, "wires": [{"id": "78e45008.cda2f"}]}, {"id": "1e824b95.a04104", "t  
ype": "inject", "z": "79360772.4553e8", "name": "itho level  
0", "topic": "", "payload": "0", "payloadType": "str", "repeat": "", "crontab": "", "once": false, "once  
Delay": 0.1, "x": 160, "y": 940, "wires": [{"id": "78e45008.cda2f"}]}, {"id": "b4eed736.102278", "type": "  
mqtt-broker", "z": "", "name": "MQTT  
Server", "broker": "192.168.1.2", "port": 1883, "clientId": "", "useTls": false, "compatmode": fals  
e, "keepalive": 60, "cleansession": true, "birthTopic": "", "birthQos": 0, "birthPayload": "", "clo  
seTopic": "", "closeQos": 0, "closePayload": "", "willTopic": "", "willQos": 0, "willPayload": ""}]
```

Appendix D: Itho remotes tested and known to be working

RFT Remote W (536-0124)



RFT AUTO C02 (536-0150)

