

# ThermIQ

ThermIQ-MQTT

These instructions are downloaded from:

[http://www.thermiq.net/ThermIQ\\_MQTT\\_Installation.pdf](http://www.thermiq.net/ThermIQ_MQTT_Installation.pdf)

Rev B8

WEB

Download ThermIQ2

• Step 1

Configure ThermIQ2  
webserver

• Steps 2-8

ThermIQ-MQTT/ROOM

HW

Configuration

• Steps 10-12

Installation in  
heatpump

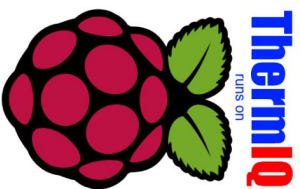
• Steps 15-19

ThermIQ-  
ROOM

• Steps 20-25

# Install ThermIQ2 Webserver

- Raspberry



- Download instructions from <http://www.thermiq.net/ThermIQ2-installation-for-Raspberry-PI.pdf>

1

OR

- Windows

RUNS ON  
**XAMPP**

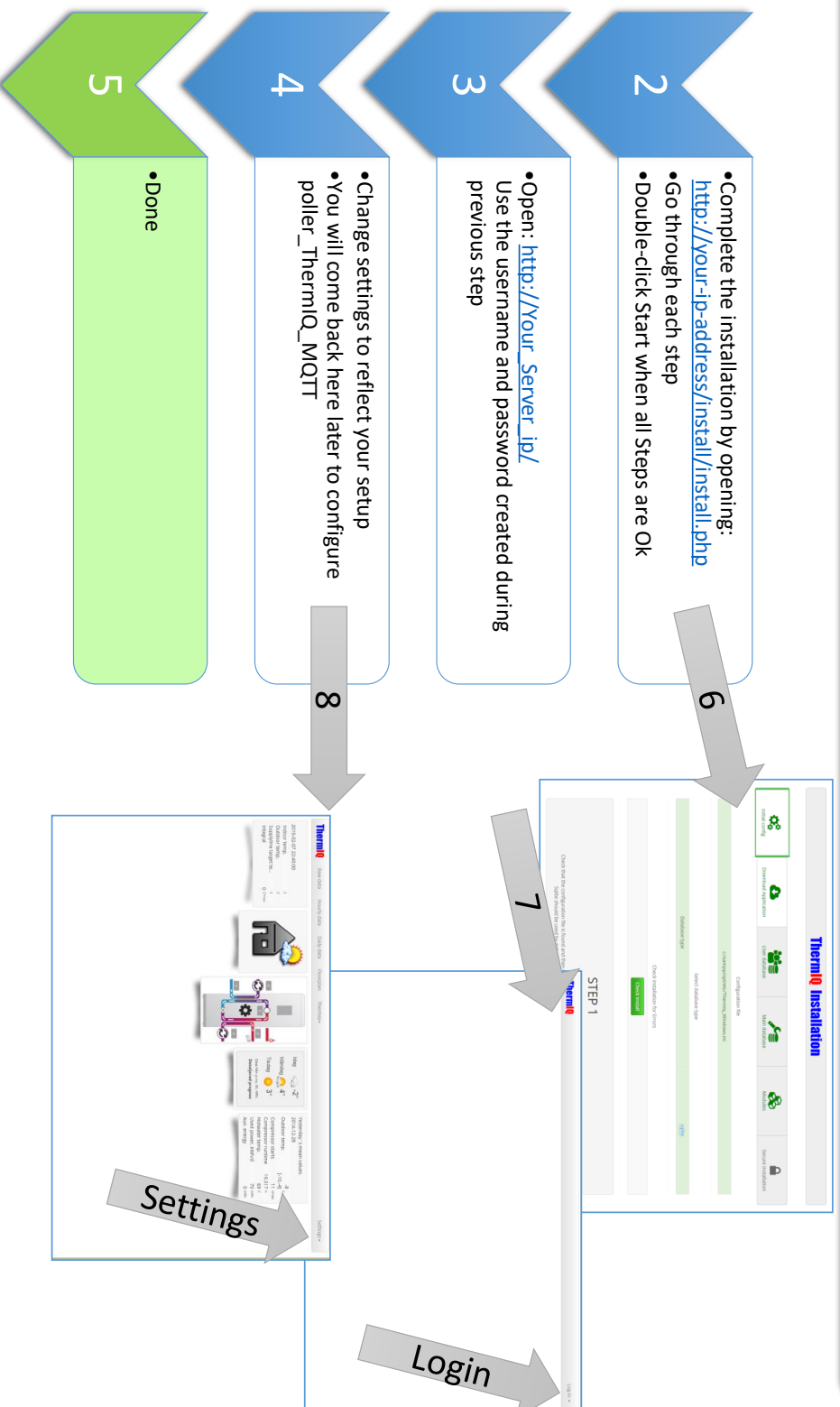


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- Follow instructions from <http://www.thermiq.net/ThermIQ2-installation-for-Windows-XAMPP.pdf>

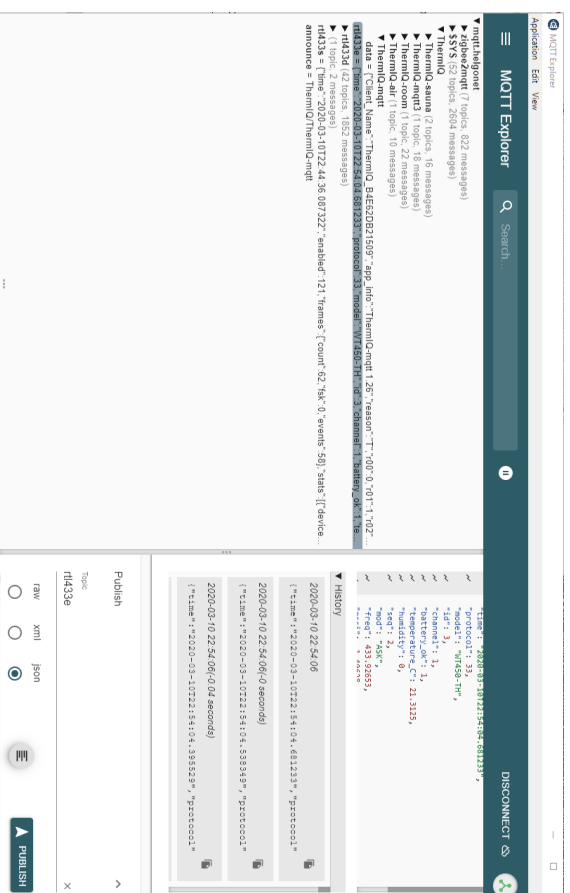
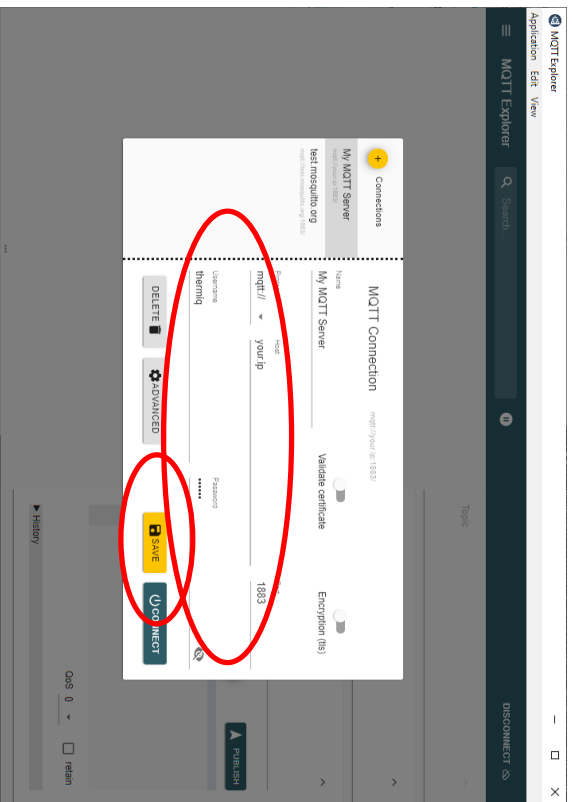
# Configure ThermIQ Webserver



Replace your-ip-address with the actual  
ip-address of your Webserver

# Install MQTT Explorer

- MQTT Explorer is a powerful tool setting up and debugging the MQTT Broker used by ThermIQ-MQTT.
- Install MQTT Explorer from: <http://https://mqtt-explorer.com/>
  - Create an MQTT Connection using the credentials from your installation
  - Do NOT use mqtt.s and/or a Certificate until you got it working without
- Look for two Topics: announce and ThermIQ/ThermIQ-mqtt
- There should be an announce when ThermIQ-MQTT is properly configured (see next page)



# ThermIQ-MQTT Messaging (Version >2.12)

COMMAND	JSON PAYLOAD	DESCRIPTION
• read		// Read all register
• write	<code>{"r05":10,"r3f":22}</code>	// Write to register r with address in hex and data in decimal form
• write	<code>{"d5":10,"d63":22,"d11}</code>	// Write to register d with address in decimal and data in decimal form
• write	<code>{"display":"Some text"}</code>	// Writes "Some text" to display
• set	<code>{"INDR_T":20.3}</code>	// Set actual indoor temp, only functional together with Room sensor option (ThermIQ-Room)
• set	<code>{"REGFORMAT":1}</code>	// Change Register notation in the data payload from hex to decimal, i.e r20 -> d32. Set to 0 to get back to hex
• info		// Get node info including heap and uptime
• update		// Attempt fw update
• reset		

Topic

ThermIQ / ThermIQ-mqtt data

Value

<> ☰

```
{
  "Client_Name": "ThermIQ_B4E6DB21509",
  "App_Info": "ThermIQ-mqtt 1.26",
  "Reason": "T",
  "r00": 0,
  "r01": 0,
  "r02": 1,
  "r03": 3,
  "r04": 2,
  "r05": 5,
  "r06": 6,
  "r07": 7,
  "room": 0
}
```

QoS: 0  
2020-03-10 23:08:48

History 6

Note that register can be either hex (rXX) or decimal (dDD) any parsing must handle both formats

Publish

Topic

ThermIQ/ThermIQ-mqtt/write

X

raw ☐ xml ☐ json ☒

[{"r80":10,"r84":22}]

☰

PUBLISH

QoS 0 ▾ ☐ retain

Topic

announce

Value

<> ☰

2020-03-10 23:14:47  
ThermIQ/ThermIQ-mqtt

QoS: 0  
2020-03-10 23:14:47

History

ThermIQ/ThermIQ-mqtt

# Thermia status registers (read only)

Reg (Dec)	Reg (Hex)	Content	Type
0	r00	Outdoor temp.	C
1	r01	Indoor temp.	C
2	r02	Indoor temp., decimal	0.1C
3	r03	Indoor target temp.	C
4	r04	Indoor target temp., decimal	0.1C
5	r05	Supplyline temp.	C
6	r06	Returnline temp.	C
7	r07	Hotwater temp.	C
8	r08	Brine out temp.	C
9	r09	Brine in temp.	C
10	r0a	Cooling temp.	C
11	r0b	Supplyline temp., shunt	C
12	r0c	Electrical Current	A
13	r0d		
r0d:0		Aux. heater 3 kW	Boolean
r0d:1		Aux. heater 6 kW	Boolean
14	r0e	Supplyline target temp.	C
15	r0f	Supplyline target temp., shunt	C
16	r10		
r10:0		Brinepump	Boolean
r10:1		Compressor	Boolean
r10:2		Flowlinepump	Boolean
r10:3		Hotwater production.	Boolean
r10:4		Auxiliary 2	Boolean
r10:5		Shunt -	Boolean
r10:6		Shunt +	Boolean
r10:7		Auxiliary 1	Boolean
17	r11		
r11:0		Shuntgroup -	Boolean
r11:1		Shuntgroup +	Boolean
r11:2		Shunt cooling -	Boolean
r11:3		Shunt cooling +	Boolean
r11:4		Active cooling	Boolean
r11:5		Passive cooling	Boolean
r11:6		Alarm	Boolean

Reg (Dec)	Reg (Hex)	Content	Type
18	r12	PWM Out	Units
19	r13:0	Alarm highpr.pressostate	Boolean
r13:1		Alarm lowpr.pressostate	Boolean
r13:2		Alarm motorcircuit breaker	Boolean
r13:3		Alarm low flow brine	Boolean
r13:4		Alarm low temp. brine	Boolean
20	r14		
r14:0		Alarm outdoor t-sensor	Boolean
r14:1		Alarm supplyline t-sensor	Boolean
r14:2		Alarm returnline t-sensor	Boolean
r14:3		Alarm hotw. t-sensor	Boolean
r14:4		Alarm indoor t-sensor	Boolean
r14:5		Alarm incorrect 3-phase order	Boolean
r14:6		Alarm overheating	Boolean
21	r15	DEMAND1	
22	r16	DEMAND2	
23	r17	Pressurepipe temp.	C
24	r18	Hotw. supplyline temp.	C
25	r19	Integral	C*min
26	r1a	Integral, reached A-limit	
27	r1b	Defrost	*10s
28	r1c	Minimum time to start	min
29	r1d	Program version	
30	r1e	Flowlinepump speed	%
31	r1f	Brinepump speed	%
32	r20	STATUS3	

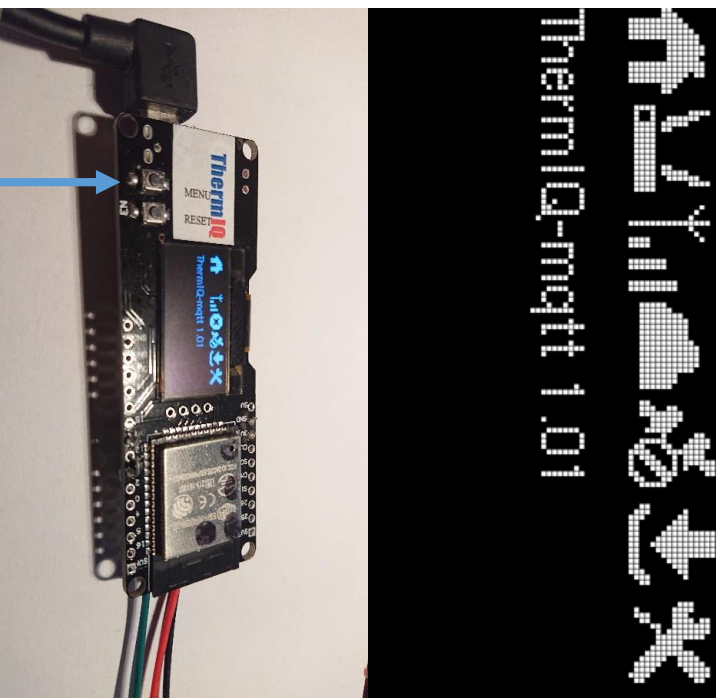
# Thermia control registers (read/write)

Reg (Dec)	Reg (Hex)	Content	Type
d50	r32	Indoor target temp.	C
d51	r33	Mode	lge #
d52	r34	Curve	*
d53	r35	Curve min	*
d54	r36	Curve max	*
d55	r37	Curve +5	*
d56	r38	Curve 0	*
d57	r39	Curve -5	*
d58	r3a	Heatstop	C
d59	r3b	Temp. reduction	C
d60	r3c	Room factor	*
d61	r3d	Curve 2	*
d62	r3e	Curve 2 min	*
d63	r3f	Curve 2 max	*
d64	r40	Curve 2, Target	C
d65	r41	Curve 2, Actual	*
d66	r42	Outdoor stop temp. (20=-20C)	C
d67	r43	Pressurepipe, temp. limit	C
d68	r44	Hotwater statemp.	C
d69	r45	Hotwater operating time	min
d70	r46	Heatpump operating time	min
d71	r47	Legionella interval	days
d72	r48	Legionella stop temp.	C
d73	r49	Integral limit A1	C*min
d74	r4a	Hysteresis, heatpump	C
d75	r4b	Returnline temp., max limit	C
d76	r4c	Minimum starting interval	min
d77	r4d	Brinetemp., min limit (-15=OFFV)	C
d78	r4e	Cooling, target	C
d79	r4f	Integral limit A2	10C*min
d80	r50	Hysteresis limit, aux	C
d81	r51	Max step, aux	# steps
d82	r52	Electrical current, max limit	A
d83	r53	Shunt time	s
d84	r54	Hotwater stop temp.	C
d85	r55	Manual test mode	mode #
d86	r56	DT_LARMOFF	
d87	r57	Language	language #
d88	r58	SERVFAS	
d89	r59	Factory settings	setting #

Red (Dec)	Reg (Hex)	Content	Type
d90	r5a	Calibration brine in sensor	C
d91	r5b		
d92	r5c		
d93	r5d		
d94	r5e		
d95	r5f		
d96	r60		
d97	r61	Heating system type 0=VL 4=D	type #
d98	r62	(bits cannot be accessed individually, only as integer)	
bit0		Add-on phase order measurement	Boolean
bit1		TILL2	Boolean
bit2		Add-on HGW	Boolean
bit3		TILL4	Boolean
bit4		TILL5	Boolean
bit5		TILL6	Boolean
bit6		Add-on Optimum	Boolean
bit7		Add-on flow guard	Boolean
d99	r63	Logging time	min
d100	r64	Brine run-out duration	*10s
d101	r65	Brine run-in duration	*10s
d102	r66	Legionella peak heating enable	Boolean
d103	r67	Legionella peak heating duration	h
d104	r68	Runtime compressor	h
d105	r69	DVP_MSD1	
d106	r6a	Runtime 3 kW	h
d107	r6b	DTS_MSD1	
d108	r6c	Runtime hotwater production	h
d109	r6d	DVV_MSD1	
d110	r6e	Runtime passive cooling	h
d111	r6f	DPAS_MSD1	
d112	r70	Runtime active cooling	h
d113	r71	DACT_MSD1	
d114	r72	Runtime 6 kW	h
d115	r73	DTS2_MSD1	
d116	r74	GrafCounterOffset	
d117- d127	r75- r7f	Unknown/Undocumented	

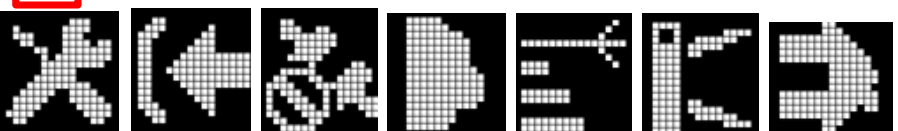


# ThermIQ-MQTT, menus and buttons



Hold menu button to move from Icon to icon

A flashing symbol indicates that something needs attention



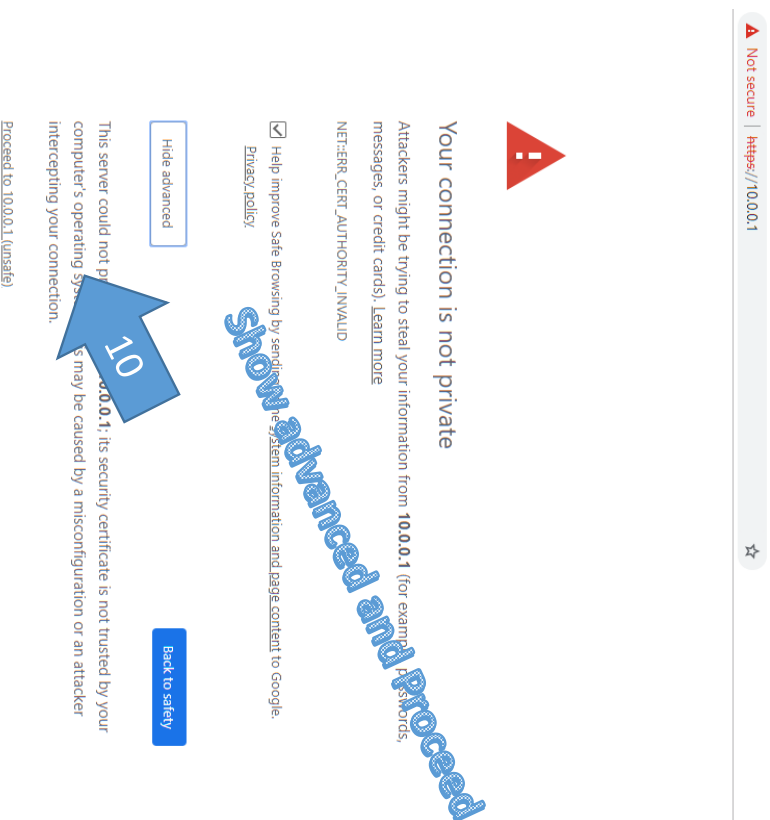
- ThermIQ-MQTT  
General info
- WiFi Config mode, Connect to “ThermIQ-cfg” and open <https://10.0.0.1> **Flashes when ready to connect to**
- WiFi network connection status  
**Flashes when unable to connect to configured network**
- MQTT Connection status  
Shows a cloud with X when unable to connect
- Heatpump connection status
- FW Upgrade mode
- Reset configuration  
**Reset configuration and redo Web configuration**

## ThermIQ-MQTT Configuration

- ThermIQ-MQTT needs to be configured before connecting it to your heatpump
- Power ThermIQ-MQTT with a USB Charger.
- Connect with a PC or phone to the wifi network "ThermIQ-cfg"
- Open web-page <https://10.0.0.1>
- Enter your network data, see next page
- Check that ThermIQ-MQTT connects successfully to your WiFi network and to the MQTT Broker by using MQTT Explorer
- When connecting ThermIQ-MQTT will send a Topic named announce
- ThermIQ-MQTT will regularly send a Topic named ThermIQ/ThermIQ-MQTT/data  
With the data read from the Heatpump

# ThermIQ-MQTT, Web configuration

All configuration is done through the configuration web-page



Select or Enter your WiFi credentials  
Select DHCP Assigned IP or fill in your specifics

Your MQTT server must be  
specified with full address i.e

<mqtt://192.168.0.1:1883>

<mqtts://192.168.0.1:8883>

*Examples*

A CA Cert for your MQTT-server. Paste the text  
----- BEGIN CERTIFICATE -----  
.....  
----- END CERTIFICATE -----

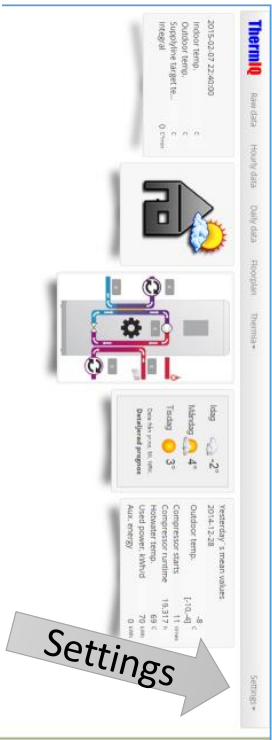
Do NOT use mqtts and/or a Certificate until you  
got it working without

# ThermIQ-Web, Poller settings

- Go to ThermIQ-WEB and select Settings
- Select Poller settings
- Use the data from previous page and fill in the poller\_ThermIQ\_MQT
- MQTTClient\_Name is specific for your ThermIQ in the form of (ThermIQ\_MACADR)
- MQTTNode is freely configurable
- The poller must be restarted before changes take effect.  
Type (in a shell):  
sudo systemctl restart ThermIQ\_MQT\_listener

- Debug (in a shell)

```
cd /usr/sbin
ThermIQ_MQT_listener -v
```



poller_ThermIQ_MQT		Action▼
MQTTServer_IP	192.168.2.32	
MQTTServer_Port	1883	
MQTTServer_User	thermiq	
MQTTServer_PW	yourpw	
MQTTServer_Cafile	Empty	
MQTTClient_Name	Thermiq_30AE4490B634	
MQTTNode	Thermiq/ThermIQ-mqt	

# Install ThermIQ-MQTT in heatpump

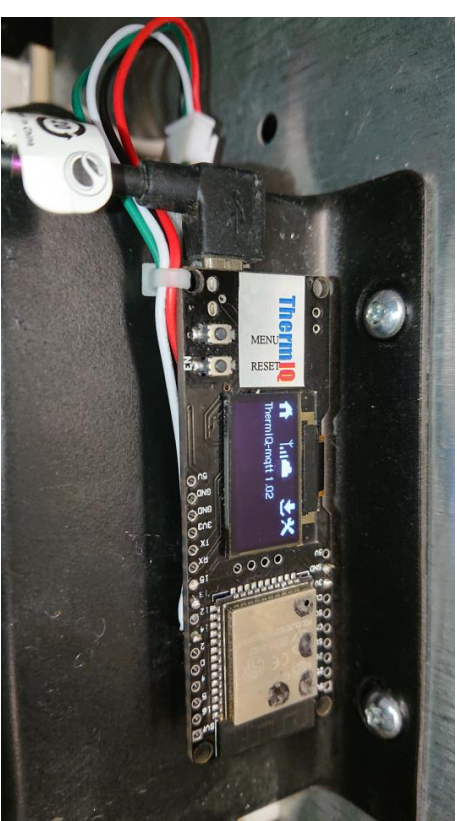
- Turn of heatpump and remove front cover

- Find the EXT connector on the main control-board and connect the cable on ThermIQ-MQTT board to the heatpump. Carefully verify that the connector is correctly inserted. The extension connector on ThermIQ-MQTT should be in the same direction as the one on the heatpump

- Connect other peripherals, i.e extension board(s) to the ThermIQ-board with the existing cable. Please note that you cannot connect a Thermia Online module together with ThermIQ as it will cause conflicts.

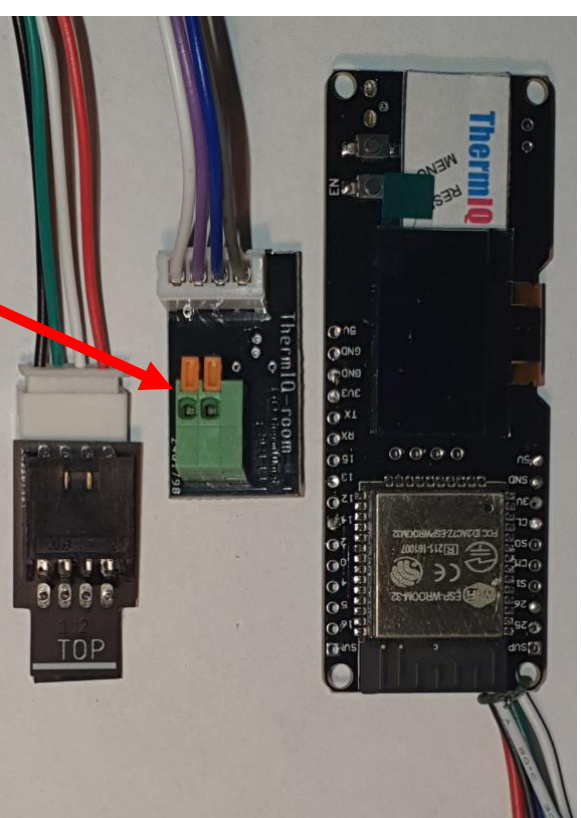
- Power ThermIQ-MQTT with a USB Charger capable of delivering 1A

- Turn on heatpump and check that ThermIQ-MQTT shows Connected to Heatpump
- Replace front cover



# Install ThermIQ-ROOM in heatpump

- 20 • Start by following instructions 15-18 for ThermIQ-MQT
- 21 • Connect the ThermIQ-room Interface to the free connector on ThermIQ (Grey-Blue-Violet-White)
- 22 • Check you heatpump manual to see where the Thermia Indoor unit should be connected. For most units this will be terminal 303/304
- 23 • Use a thin cable of approx. 40cm length to connect ThermIQ-ROOM to the heatpump. Gently push down the orange tab and insert the cable in the hole.
- 24 • Turn on heatpump and check that ThermIQ-ROOM shows Connected to Heatpump. By default the current room-temperature will be set 20.5
- 25 • Replace front cover



**DOWN**

# Configuring with MQTTS

- The connection to the MQTT Broker can be configured to use SSL encryption by using MQTTS and a Client certificate.
- The client certificate must be issued to the MQTT Broker and have a valid global domain name.
- The global domain name must resolve to the MQTT Broker
- The client certificate can be tested in MQTT Explorer
- The text in the certificate should be copy/pasted into the ThermIQ-MQTT Web configuration and MQTT Url should start with mqtt://
- Disable MQTT connections in mosquito.conf



# Safety Fallback Mode

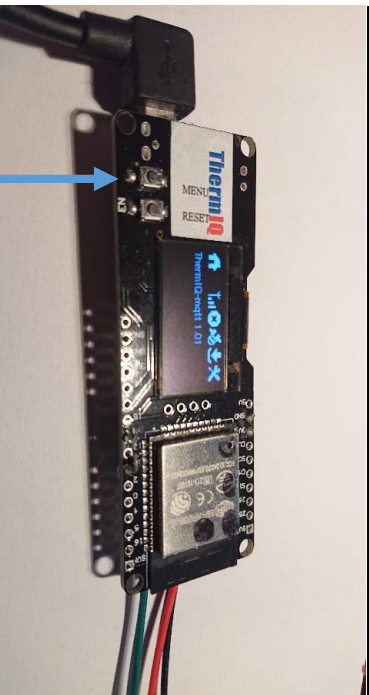


# ThermIQ-boot



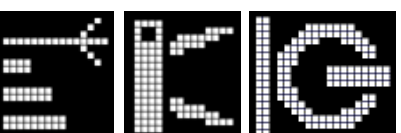
Safety fallback mode if ThermIQ-MQTT fails. Use the FW Upgrade function

ThermIQ-boot 1.01  
Starting WiFi in normal



Use menu button to move from Icon to icon

A flashing symbol indicates that something needs attention



- ThermIQ-boot General info
- WiFi Config mode, Connect to "ThermIQ-cfg" and open <https://10.0.0.1>. **Flashes when ready to connect to**
- WiFi network connection status.
- Flashes if unable to connect to the configured network**

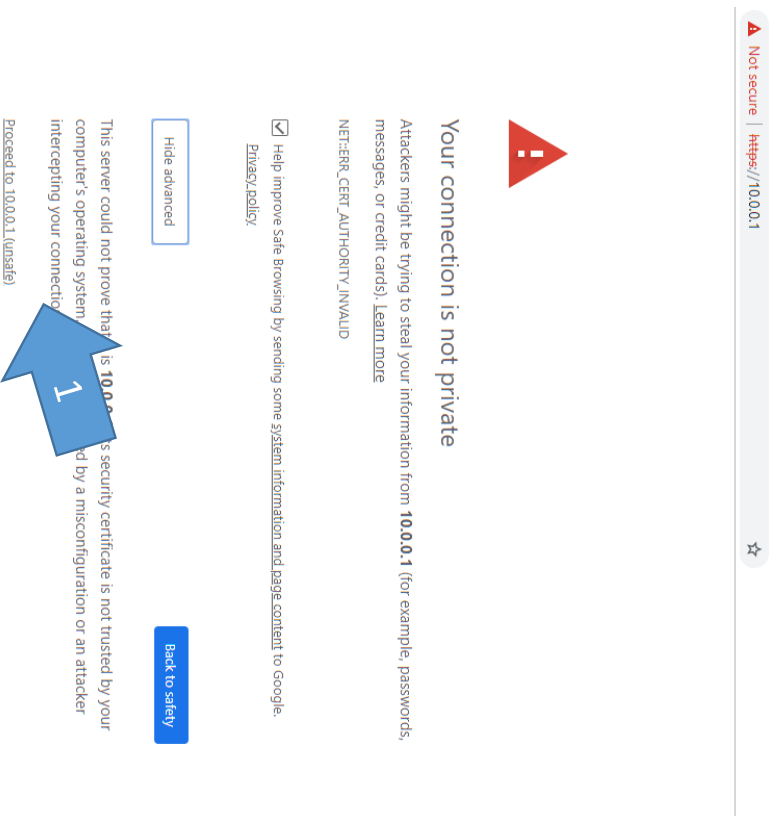


- Boat and App info
- FW Upgrade mode Load and upgrade the firmware
- **Reset configuration and redo Web configuration**



# ThermIQ-boot, Web configuration

## All configuration is done through the configuration web-page



ThermIQ-boot 1.02

Client\_Name: ThermIQ\_30AEA490B634

SSID: [Redacted]

Password: [Redacted]

DHCP Assigned IP: [Redacted]

Submit

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Enter your WiFi credential, select DHCP Assigned IP or fill in your specifics.

