

ThermIQ2 installation for Raspberry Pi, version 2.3

This installation description is valid for ThermIQ and ThermIQ-MQTT using a Raspberry pi as web and database server.

Installation prerequisites:

1. An out-of-the-box Raspberry Pi3 or better
2. A micro-USB power adaptor
3. An Ethernet cable
4. A formatted SD-card of 8GB or more
5. SD card writer, Etcher or similar
6. A ThermIQ or ThermIQ-MQTT card
7. telnet/ssh client, in windows: i.e telnet.exe or Putty. Mac: terminal
8. Optional: USB Keyboard and HDMI Cable

Configuration (expect about 30 min-1h installation time)

Help and instructions in black

Things to write down in green. You might use the table at last page

Actual commands/actions in blue

1. Start on your PC by downloading and installing **Raspbian "Buster" Lite** or “Raspbian Stretch Lite” from:

<http://www.raspberrypi.org/downloads>

Raspbian “Jessie” is no longer supported for new installations making Raspbian “Buster/Stretch” mandatory.

There are good guides on the raspberry.org site on how to format and write the image to a SD-Card i.e by using etcher from <https://www.balena.io/etcher/>

Add a file called “SSH” to the boot partition (The readable part of the newly created SD-Card). This will enable SSH terminal access which we will use to login.

2. Connect the Raspberry to the network, insert the SD-card and power it on. Start the telnet client, putty.exe, or similar on your PC and connect to the Raspberry using SSH protocol on port 22.
You have to find out the ip-address given to it by dhcp. Either by having a monitor connected or by checking your router to see if you can find it there.

Once connected it will prompt you for a user and password.

3. Log in with

user: pi

password: raspberry

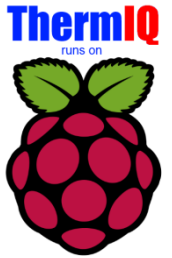
At the prompt type:

sudo raspi-config

In Raspi-config do (Meny layout differs slightly between releases):

1. Change user password -> Type a new password
2. Localization Options
 - a. Change timezone
 - b. Adjust keyboard to match your setup
3. Advanced Options
 - a. Expand filesystem
4. Boot options (Boot to Console only, Do not enable auto-login)
 - a. -> Desktop /CLI -> Console
5. Optional, Change hostname now as rest of installation depends on it
 - a. -> Network Options->Change Hostname

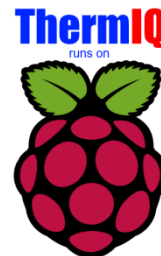
Write down password!



Then **Finish** and reboot

4. Fixed IP-address

If you have an older router it might give different IP-addresses to the Raspberry PI efter reboot. If that is the case you need to enable a fixed IP address to your PI.



5. Now it's time to install the ThermIQ sw package

Connect and login to the Raspberry with Telnet.

Type:

```
cd /tmp
```

```
sudo rm setup_script
```

```
sudo wget http://www.thermiq.net/getThermIQ2.php?setup=raspberry -O setup_script
```

```
sudo chmod a+x setup_script
```

If installing for ThermIQ-USB card type:

```
sudo ./setup_script 2>&1 | sudo tee /var/thermiq_install.log
```

If installing for ThermIQ-MQTT card type:

```
sudo ./setup_script --thermiq_mqtt --mosquitto 2>&1 | sudo tee /var/thermiq_install.log
```

```
cd /etc/mosquitto
```

```
sudo mosquitto_passwd -c /etc/mosquitto/passwd thermiq
```

and enter your mqtt password

Write down mqtt pw

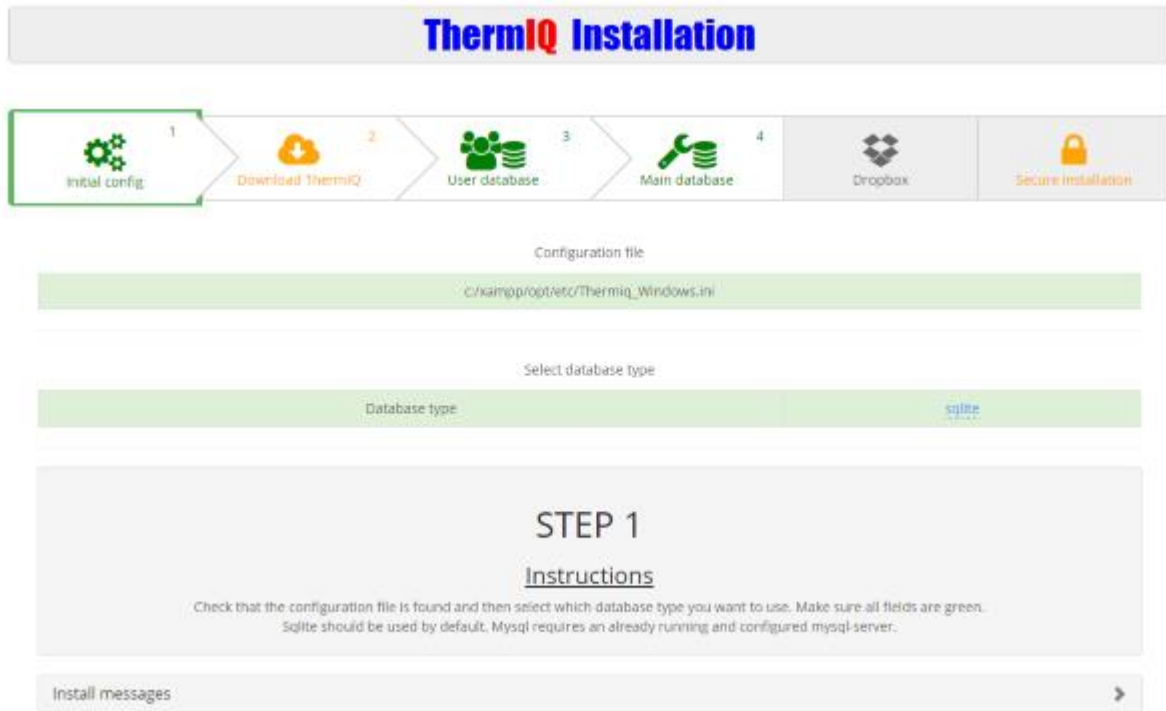
This will take 10-30 minutes.

When finished you should connect the ThermIQ-USB interface to the USB port of the Raspberry and type

```
sudo reboot
```

That's all setup needed on the Raspberry!

6. Open link: <http://<your-ip-address>/install/install.php> in a web-browser with the IP address from bullet 4. A page like this will open:



Follow the steps 1-4 shown in the browser to complete the installation until all items are green, write down your data in the table below. Use “sqlite” as database type unless you already have a MySQL database setup and know how to administrate it.

For MySQL you need to create two new databases, ‘thermiq’ and ‘thermiq_userdb’

Each step will be enabled as the previous step is completed but a manual “reload” of the page is sometimes needed. Here you can also setup a Dropbox backup account and secure the installation page with a password.

Bullet	Step	Key	Value
3	-	Raspberry username	pi
3	-	Raspberry password	
4	-	Raspberry IP-address	
5		Mqtt user	thermiq
		Mqtt password	
5		MQTT Public cert	/etc/mosquito/ca.crt
6	2	Order email	
6	2	License key	
6	3	Administrator login name	
6	3	Administrator login password	
6	6	Installation username	
6	6	Installation password	

7. Hardware Installation:

ThermIQ: Connect the ThermIQ board to the heatpump, place the Raspberry inside the heatpump and power the Raspberry with the USB-charger. More instructions at: www.thermiq.net/installation2.pdf

ThermIQ-MQTT: Configure and connect your ThermIQ-MQTT card according to these instructions: www.thermiq.net/installation_mqtt.pdf

8. Open link: <http://<your-ip-address>> in a web-browser with the IP address from step 4

Login with:

- a. User: as given during Bullet 6, Step 3
- b. Password: as given during Bullet 6, Step 3
- c. Check the different settings in the right corner drop down menu
- d. Select "[Poller settings](#)" and configure what devices to collect data from.
- Select one of ThermIQ or ThermIQ_MQTT depending on your hardware.
- e. Select "[Widget settings](#)" and enable the widgets you want to see on the home page

Done 😊

Now is a good time to check out the RaspberryPI home page at <http://www.raspberrypi.org> where there's a lot of information available especially in the forum i.e :

- How to secure your Raspberry from intruders.
- How to setup a free dynamic ip service if you want your pi to be easily accessible from the internet

and don't forget to check out the ThermIQ forum at www.ThermIQ.net

Note 1: If you want to access your ThermIQ remotely, you can open your router/firewall using “port forwarding” for the ip-address and port above. But please be aware of the potential security risks this enables.

Note 2: The MQTT server installed is from mosquitto.org, it is configured to enable both open and encrypted connections using self-signed certificates in `/etc/mosquitto/certs/`. These certificates can be regenerated by logging in with ssh as pi and typing

```
cd
cd certs
generate-CA.sh
cp -f *.cert `hostname`.key /etc/mosquitto/certs/
systemctl restart mosquitto.service
```

ThermIQ_MQTT will only be able to use encrypted “MQTTS” connection if the raspberry has a public IP-address or port forward from one. Edit `/usr/sbin/generate-CA.sh` to add the IP-address in ‘IPLIST’ and hostname in ‘HOSTLIST’ before regenerating certificates then copy `ca.crt` to all mqtt clients.