MaxAir – Home Assistant Integration

MaxAir can be configured to enable monitoring and control from Home Assistant. There are currently two ways of achieving this integration, the first is by using MQTT together with a Mosquitto Broker and the second is to use HTTP together with the Homebridge add-on.

MQTT/Mosquitto Broker

This integration requires Home Assistant together with a Mosquitto Broker running on the same or separate device. Please see the document 'Setup Guide MQTT Devices' for details of basic MQTT setup. The MaxAir Gateway script /var/www/gateway.py together with the Python library paho-mqtt are used to send and receive MQTT data, the MaxAir service HA_integration.service is used to pass data between MaxAir and Home Assistant using MQTT as the transport mechanism.

MaxAir will require an account on the Mosquitto Broker which it can access.

Functionalities

- MaxAir CPU Usage - sensor
- MaxAir CPU Load (1m, 5m and 15m) - sensors
- MaxAir CPU temperature - sensor
- MaxAir Memory Use - sensor
- MaxAir Swap Usage - sensor
- MaxAir Disk Use - sensor
- MaxAir Host Ip - sensor
- MaxAir Last Boot - sensor
- MaxAir Network throughput (up & down) - sensors
- MaxAir Wifi Strength - sensor
- MaxAir updates - sensor
- Boiler or HVAC Status - binary sensor
- Climate entity for each zone with the following attributes
    - Away Status (this is the same for all zones)
    - Zone Current Mode (this is the same for all zones)
    - Zone Current Temperature (for each zone)
    - Zone Target Temperature (for each zone)
    - Zone Current Status (for each zone)
    - Zone Boost (for each zone)
    - Zone Live Temperature (for each zone)
    - Zone sensor Last Seen time and date (for each zone)
    - Zone sensor battery percentage (for each zone using a MySensor sensor)
    - Zone sensor battery voltage (for each zone using a MySensor sensor)
- Temperature sensor for each stand-alone temperature sensor in MaxAir with the following attributes
    - Sensor Current Temperature (for each zone)
    - Sensor Last Seen time and date (for each zone)
    - Sensor battery percentage (for each zone using a MySensor sensor)
    - Sensor battery voltage (for each zone using a MySensor sensor)
- Humidity sensor for each stand-alone humidity sensor in MaxAir with the following attributes
    - Sensor Current Humidity (for each zone)
    - Sensor Last Seen time and date (for each zone)
    - Sensor battery percentage (for each zone using a MySensor sensor)
    - Sensor battery voltage (for each zone using a MySensor sensor)

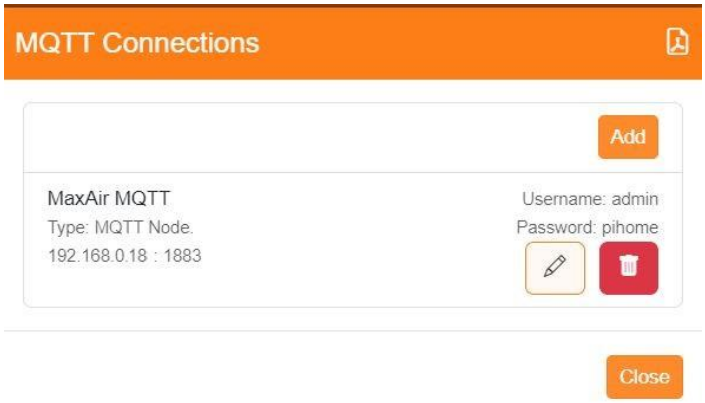
Setup

There are two possible setup scenarios –

1. A Mosquitto broker has already been installed and configured.
2. No Mosquitto broker has been installed.

The Mosquitto broker has already been installed

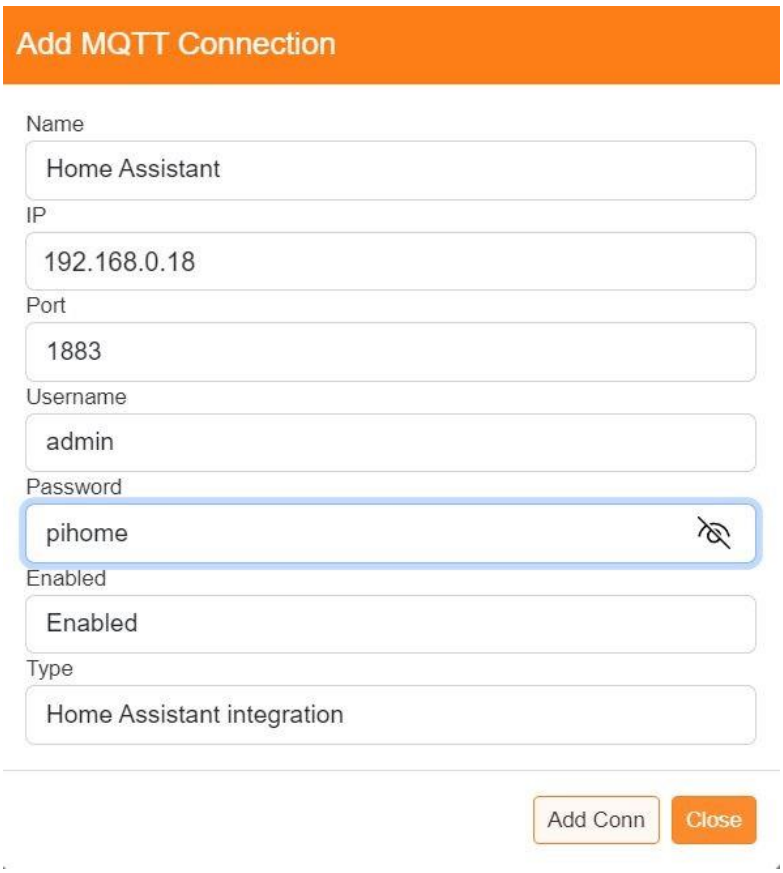
In this case in all probability a MQTT Connection has already been created for MQTT sensors and/or relays as per the document 'Setup Guide MQTT Devices', if so then a second MQTT Connection to the broker will be required for Home Assistant Integration.



From the Settings/System Configuration menu, select MQTT (this example shows one connection has already been configured for MQTT nodes).

Click on the 'Add' button to create a new connection.

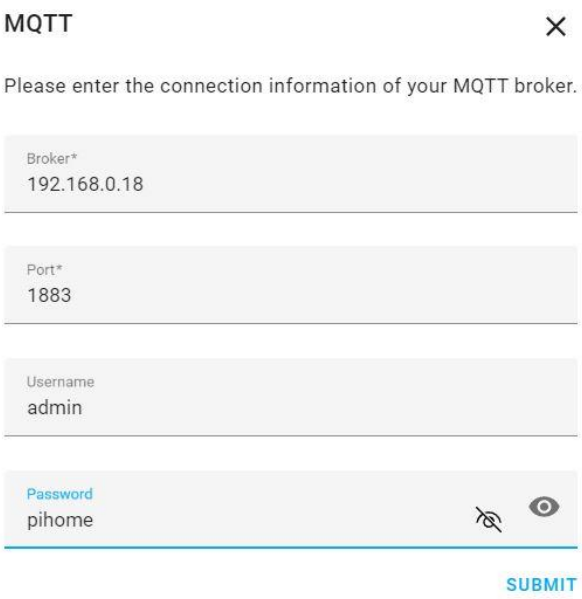
Create a new connection for Home Assistant using the details for your already configured Mosquitto broker. The type needs to be selected as 'Home Assistant integration'.



Home Assistant

In Home Assistant follow the steps below to connect to an existing Mosquitto broker:

1. Navigate in your Home Assistant frontend to Settings -> Devices and Sevices and click on "+ ADD INTEGRATION".
2. Select 'MQTT' from the dropdown list.
3. Enter the details for the MQTT Home Assistant connection you created above and click on the ‘SUBMIT’ button to create the Integration.



The Mosquitto broker has not been installed

This example assumes that you are only using MQTT for Home Assistant Integration (ie. No MQTT sensors and/or relays).

Home Assistant

In Home Assistant follow the steps below to install the Mosquito MQTT add-on:

1. Navigate in your Home Assistant frontend to Settings -> Add-on Store.
2. Find the "Mosquitto broker" add-on and click it, BUT DO NOT START IT YET.
3. Click on the "INSTALL" button.
4. Navigate in your Home Assistant frontend to Settings -> Add-ons -> Mosquitto broker.
5. Click on Configuration and edit the configuration file as needed. Below is an example of a basic configuration that supports the MaxAir Home Assistant integration.

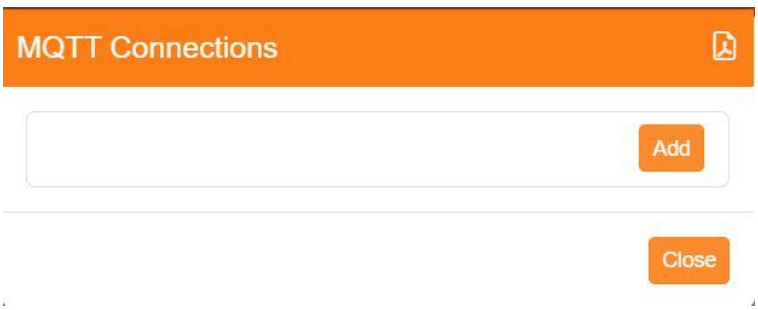
```
logins:
  - username: admin
    password: pihome
customize:
  active: false
  folder: mosquitto
certfile: fullchain.pem
keyfile: privkey.pem
require_certificate: false
anonymous: false
```

6. Start the add-on. Have some patience and wait a couple of minutes.
7. Check the add-on log output to see the result.
8. Navigate in your Home Assistant frontend to Configuration -> Integrations.
9. MQTT should appear as a discovered integration at the top of the page. Select it and check the box to enable MQTT discovery, and hit submit.

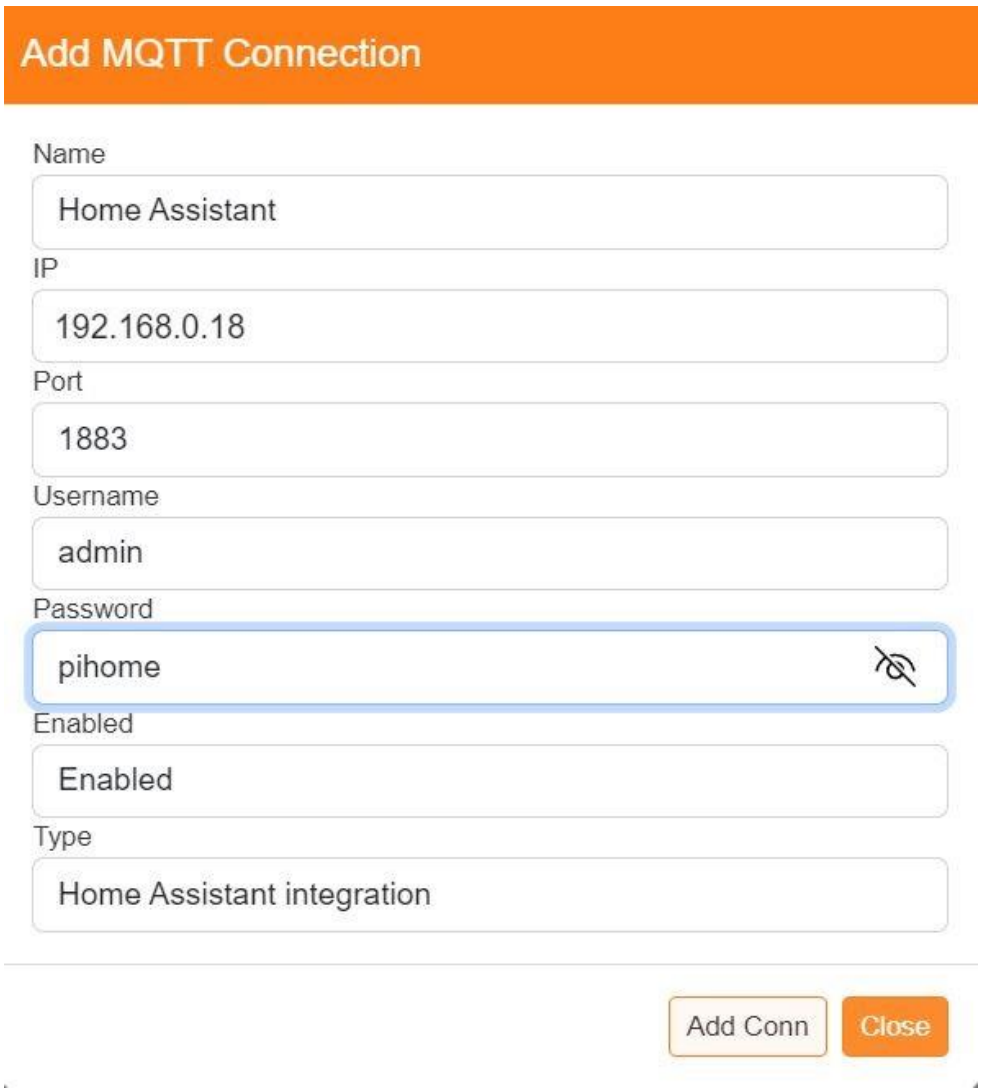
Configure MaxAir to Communicate Using MQTT

Create an MQTT Connection

From Settings/System Configuration/MQTT select ‘Add’



The example shown is using the Mosquitto Broker with an IP address of 192.168.0.18, default Port number of 1883, the Username and Password were as setup when configuring the Mosquitto broker, the connection is Enabled and the Type is selected as ‘Home Assistant integration’.

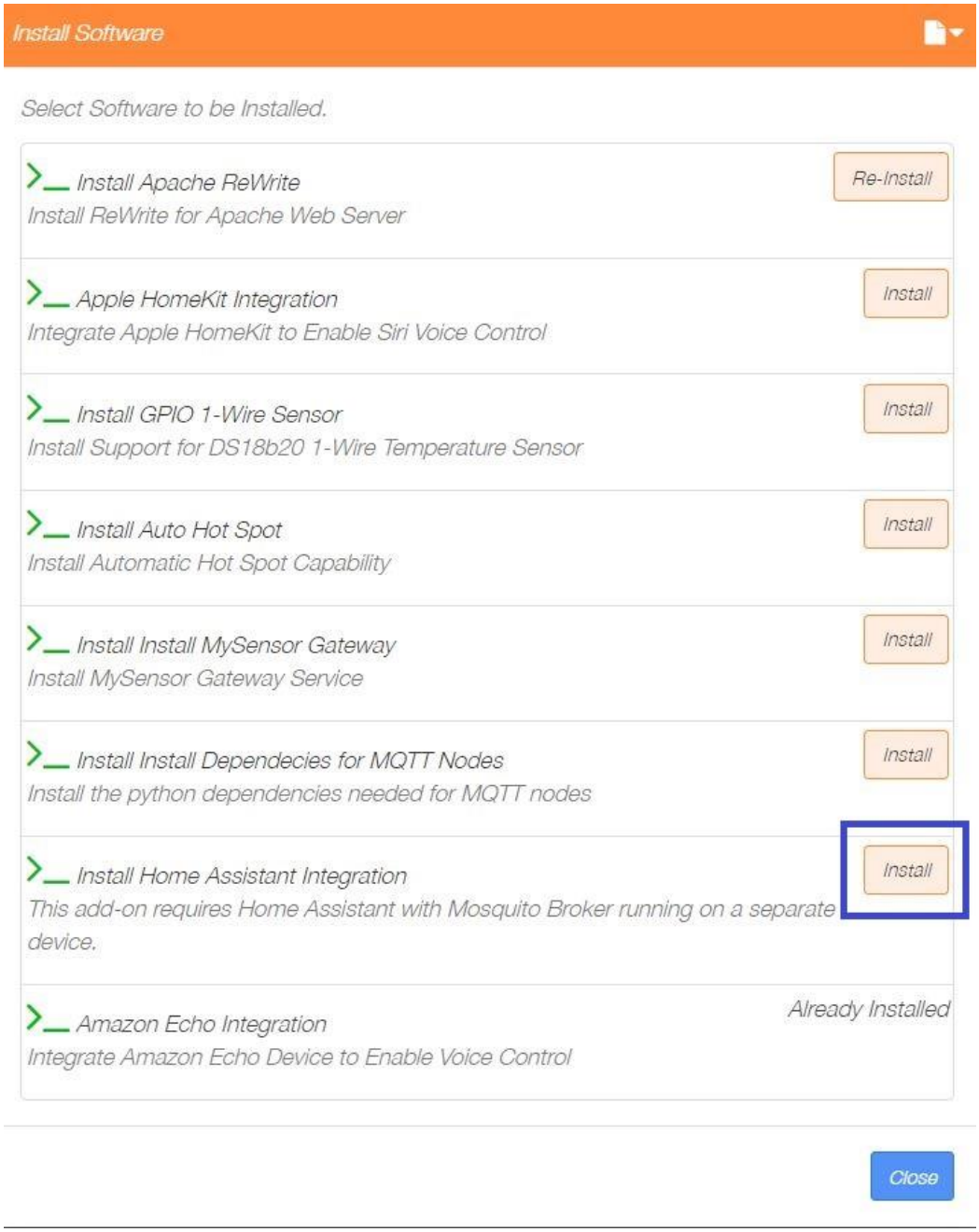


Install the MaxAir Home Assistant Integration Service

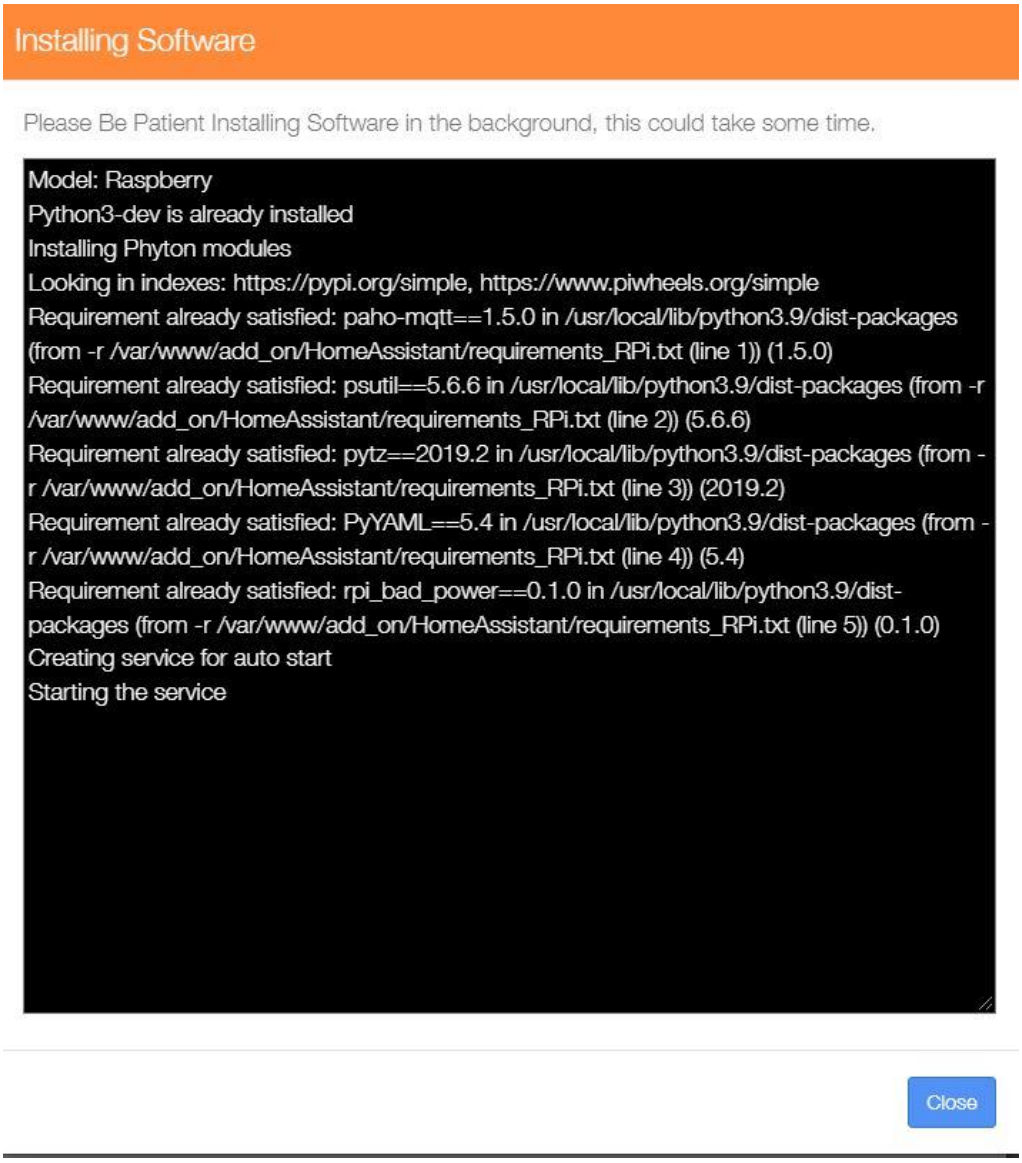
From Settings/System Maintenance/Install Software and select the 'Install' option for 'Install Home Assistant Integration'.

This will install any required dependencies, install and start the service.

Please note that this integration will search for new zones and sensors only at start up. If new sensors or zones are added to the system reboot the system or restart the integration using 'systemctl restart HA_integration.service'.



The installation will start and run as a scheduled background task, please be patient, once complete the ‘Installing Software’ dialogue will be updated.



Creation of Home Assistant Entities

The Home Assistant entities will be automatically created via MQTT auto discovery.

climate.maxair_bedroom MaxAir Bedroom	auto	hvac_modes: auto, off, heat, dry, fan_only min_temp: 7 max_temp: 35 target_temp_step: 1 preset_modes: none, away current_temperature: 16.5 temperature: 15 hvac_action: idle preset_mode: none aux_heat: off last_seen: 2021-10-10 17:23:16 batt_level: 40.00 batt_voltage: 2.46 friendly_name: MaxAir Bedroom supported_features: 81
binary_sensor.maxair_boiler MaxAir Boiler	off	friendly_name: MaxAir Boiler device_class: heat
binary_sensor.maxair_under_voltage MaxAir Under Voltage	off	friendly_name: MaxAir Under Voltage icon: mdi:raspberry-pi device_class: problem
sensor.maxair_cpu_usage MaxAir Cpu Usage	37.9	unit_of_measurement: % friendly_name: MaxAir Cpu Usage icon: mdi:memory
sensor.maxair_disk_use MaxAir Disk Use	79.1	unit_of_measurement: % friendly_name: MaxAir Disk Use icon: mdi:micro-sd
sensor.maxair_host_architecture MaxAir Host Architecture	armv6l	friendly_name: MaxAir Host Architecture icon: mdi:chip
sensor.maxair_host_ip MaxAir Host Ip	192.168.1.2	friendly_name: MaxAir Host Ip icon: mdi:lan

The Climate entity allows to trigger the MaxAir Boost function (Aux Heat in Home Assistant) for each zone, adjust the Live Temperature for each zone (Temperature in Home Assistant), enable or disable the MaxAir Away status (Pre-set in Home Assistant) and change the MaxAir Mode (Operation in Home Assistant).

If Not installing Homebridge, go to Page 14

HTTP/Homebridge

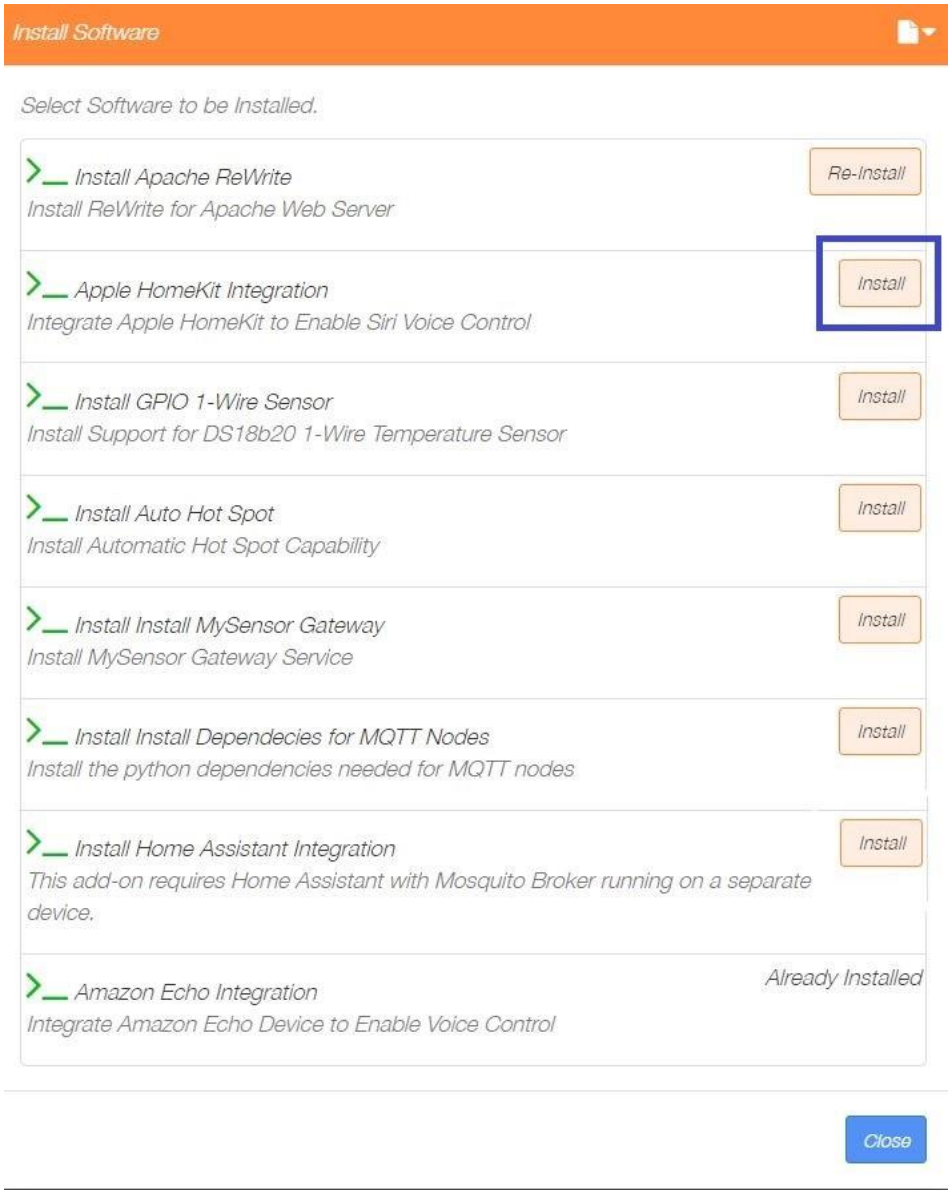
The ‘homekit’ add-on was initially created to allow voice control using Apple’s Siri, the add-on uses ‘Homebridge’ together with its associated ‘Webhooks’ plugin to create a HomeKit Bridge device, this can then be accessed using Apple’s HomeKit app.

Home Assistant has a ‘Homekit Controller’ add-on which enables communication with Homekit compliant devices and hence can be used as a mechanism for integration of MaxAir with Home Assistant.

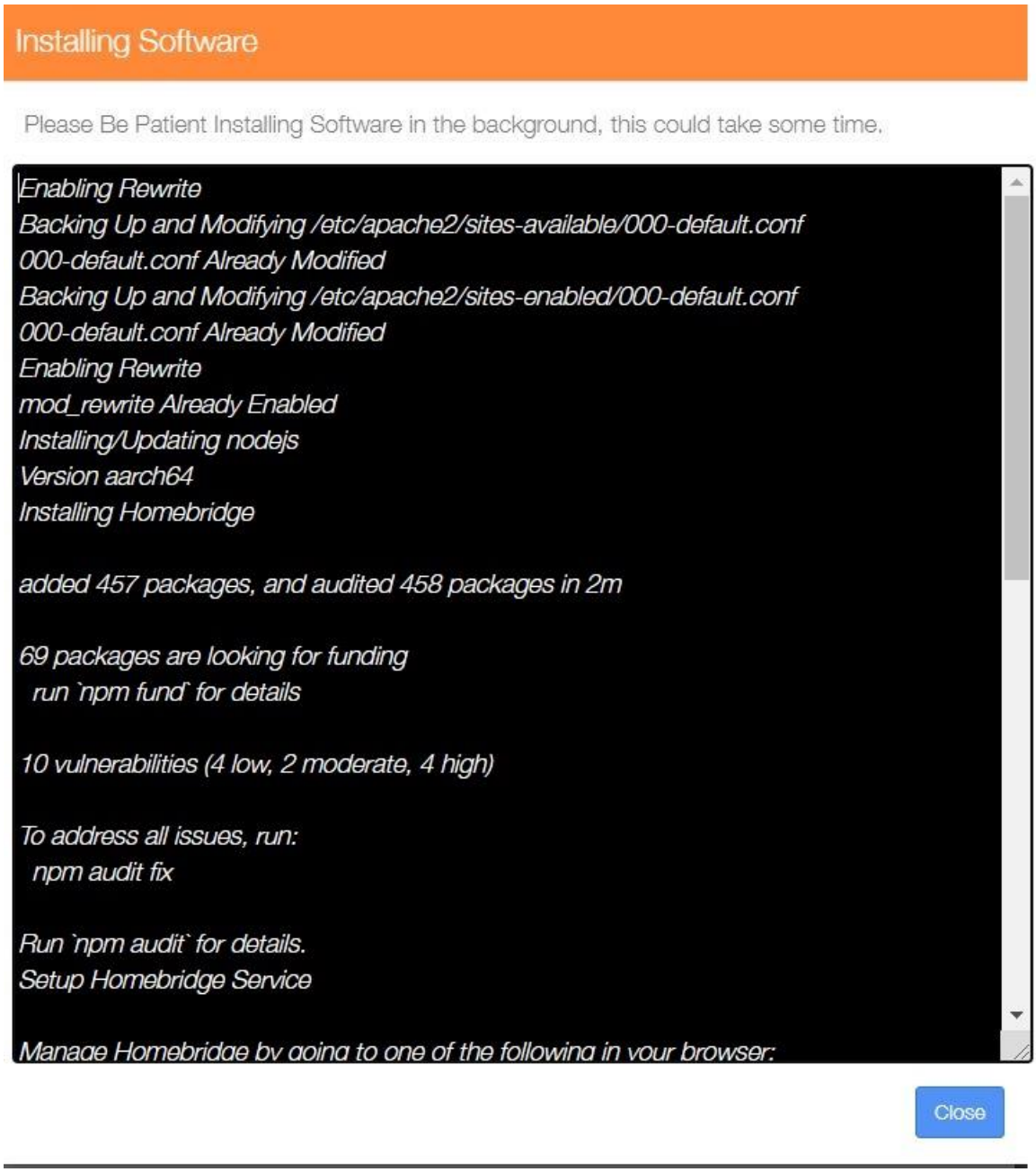
Setup

Homebridge plus Webhooks Plugin

From Settings/System Maintenance/Install Software and select the ‘Install’ option for ‘Apple HomeKit Integration’.



This will install any required dependencies, install and start the services for both Homebridge and the data transfer to Webhooks.

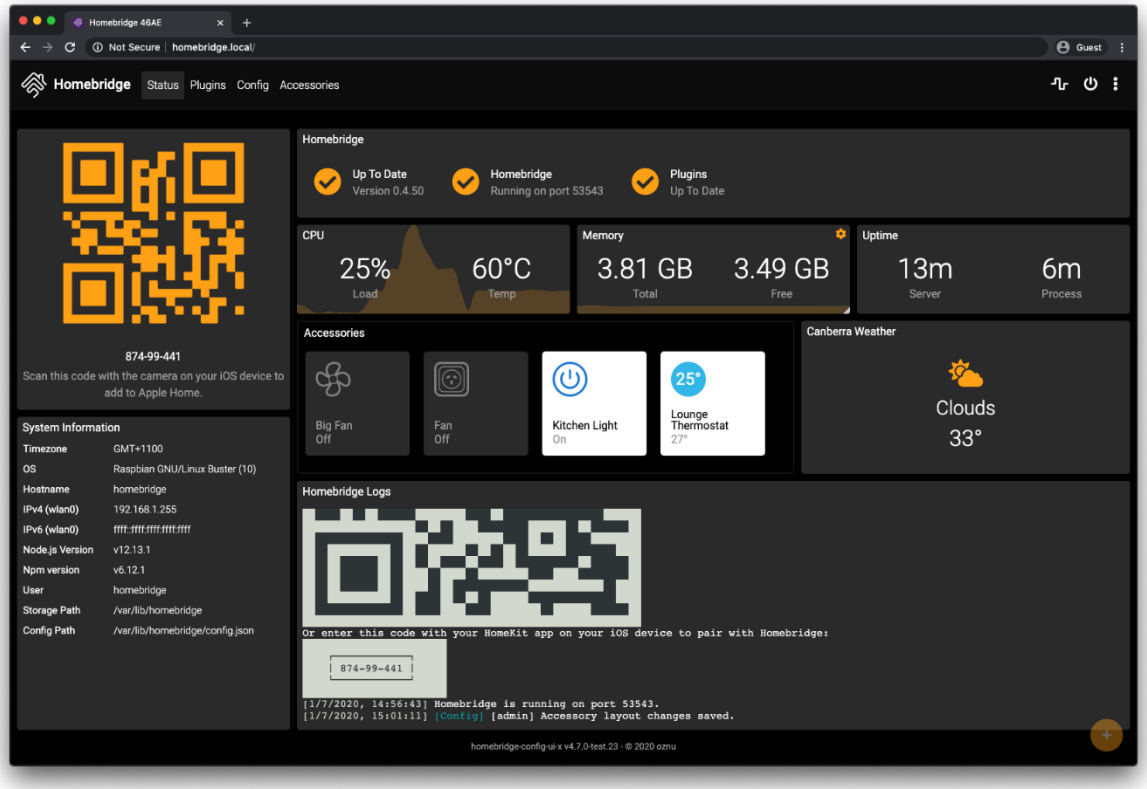


Please note that this integration will search for new zones and sensors only as part of the initial installation. If new sensors or zones are added to then the configuration file /var/lib/homebridge/config.json will need to be re-created, this can be achieved by at a console prompt issuing the command python3 /var/www/add_on/homekit/config_json.py.

The Homebridge UI web interface will allow you to install, remove and update plugins, and modify the Homebridge config.json and manage other aspects of your Homebridge service.

Login to the web interface by going to http://<ip address of your server>:8581.

The default user is **admin** with password **admin**.



Configuration Reference

This table contains important information about your setup.

	File Location / Command
Config File Path	/var/lib/homebridge/config.json
Storage Path	/var/lib/homebridge
Restart Command	sudo hb-service restart
Stop Command	sudo hb-service stop
Start Command	sudo hb-service start
View Logs Command	sudo hb-service logs
Systemd Service File	/etc/systemd/system/homebridge.service
Systemd Env File	/etc/default/homebridge

Example Configuration File

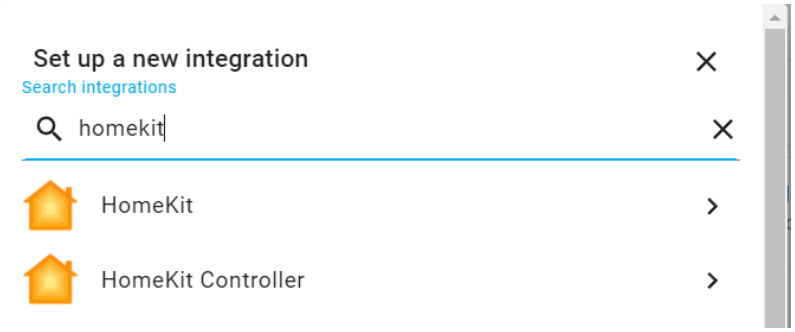
This configuration shows 2 switch zones to control Hot Water and Central Heating Boost, together with 2 temperature sensors.

```
{
    "bridge": {
        "name": "Homebridge 1DF9",
        "username": "0E:AC:C3:AA:1D:F9",
        "port": 51944,
        "pin": "942-89-721",
        "bind": [
            "wlan0"
        ]
    },
    "platforms": [
        {
            "platform": "config",
            "name": "Config",
            "port": "8581"
        },
        {
            "platform": "HttpWebHooks",
            "webhook_port": "51828",
            "cache_directory": "./.node-persist/storage",
            "https": false,
            "switches": [
                {
                    "id": "switch38",
                    "name": "Hot Water Zone",
                    "on_url": "http://127.0.0.1/api/boostSet?zonename=Hot Water&state=1",
                    "on_method": "GET",
                    "off_url": "http://127.0.0.1/api/boostSet?zonename=Hot Water&state=0",
                    "off_method": "GET"
                },
                {
                    "id": "switch39",
                    "name": "Central Heating Zone",
                    "on_url": "http://127.0.0.1/api/boostSet?zonename=Central Heating&state=1",
                    "on_method": "GET",
                    "off_url": "http://127.0.0.1/api/boostSet?zonename=Central Heating&state=0",
                    "off_method": "GET"
                }
            ],
            "sensors": [
                {
                    "id": "sensor35",
                    "name": "Bedroom&1 Temperature",
                    "type": "temperature"
                },
                {
                    "id": "sensor36",
                    "name": "Bedroom&2 Temperature",
                    "type": "temperature"
                }
            ]
        }
    ],
    "accessories": []
}
```

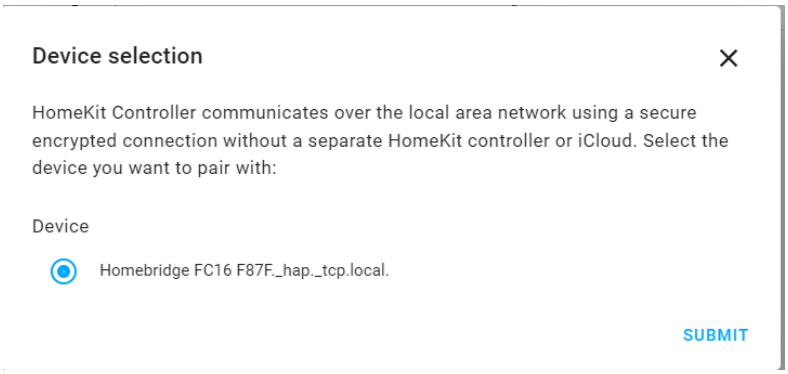
Home Assistant

In Home Assistant follow the steps bellow to install the HomeKit Controller Integration:

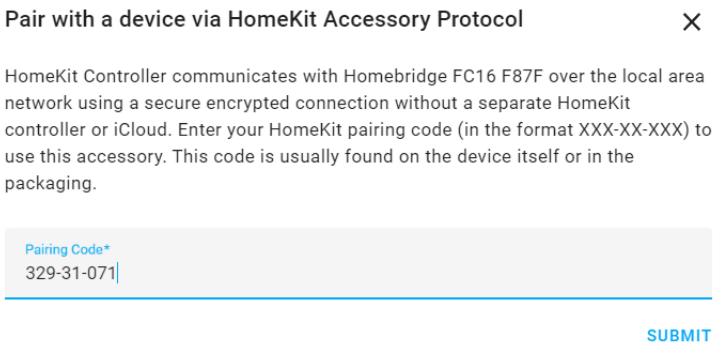
1. Navigate in your Home Assistant frontend to Configuration
2. Select the Devices and Services option
3. Click on + ADD INTEGRATION
4. Search for HomeKit Controller and select



5. Homebridge will be identified, click on SUBMIT



6. You will be prompted for a Pairing Code, this can be found on the Homebridge Status screen, enter and click on SUBMIT

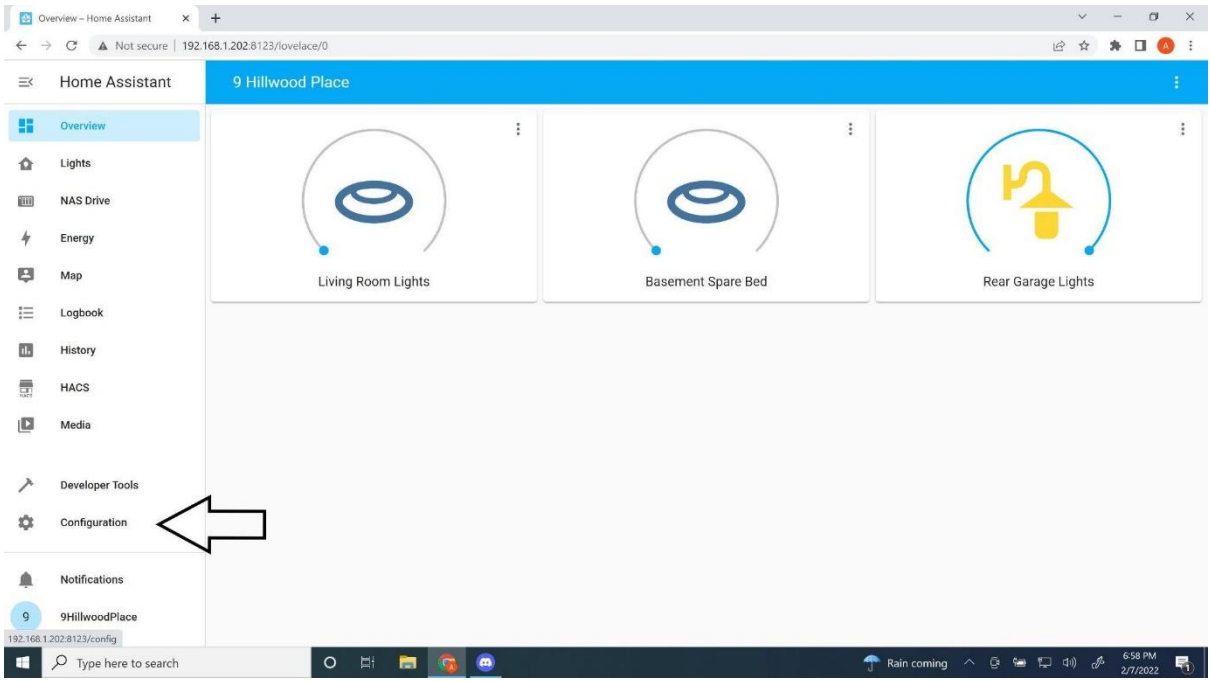


7. The setup should then complete, automatically creating the entities.

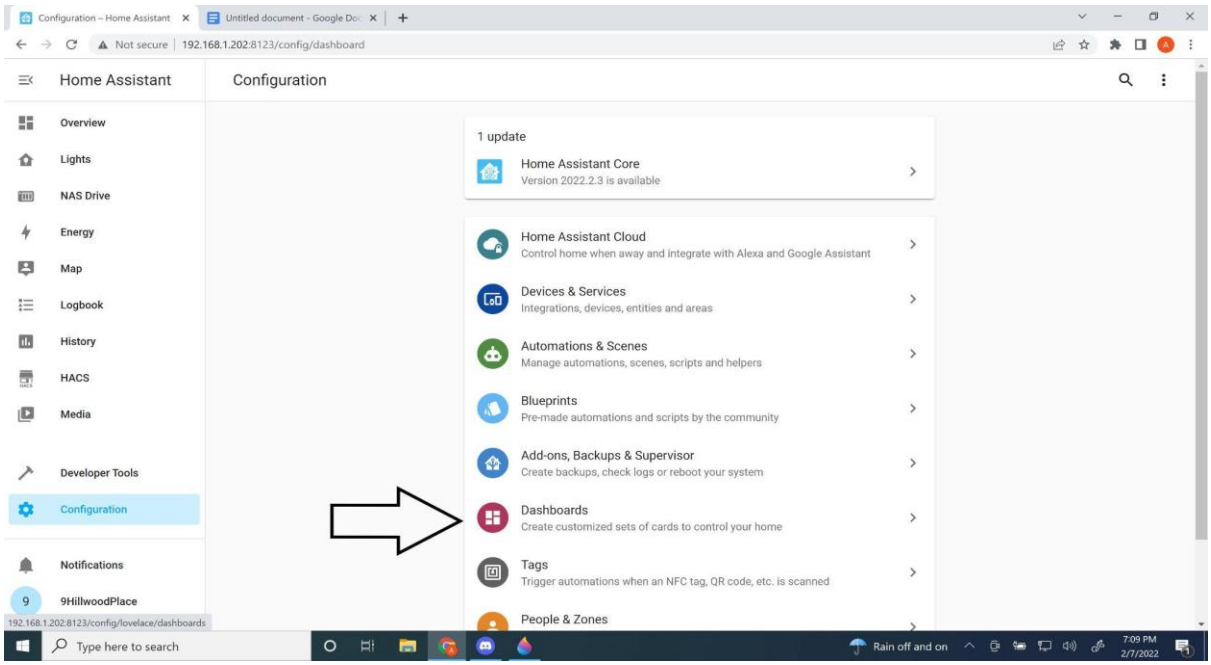
Creating a Home Assistant Dashboard

Get started with setting up a dashboard in home assistant for your MaxAir system. There is a default card created once the home assistant has imported the settings from MaxAir. Follow the directions below to start creating your MaxAir dashboard

- From home assistant, Select configuration from the left side pane



- Select Dashboards



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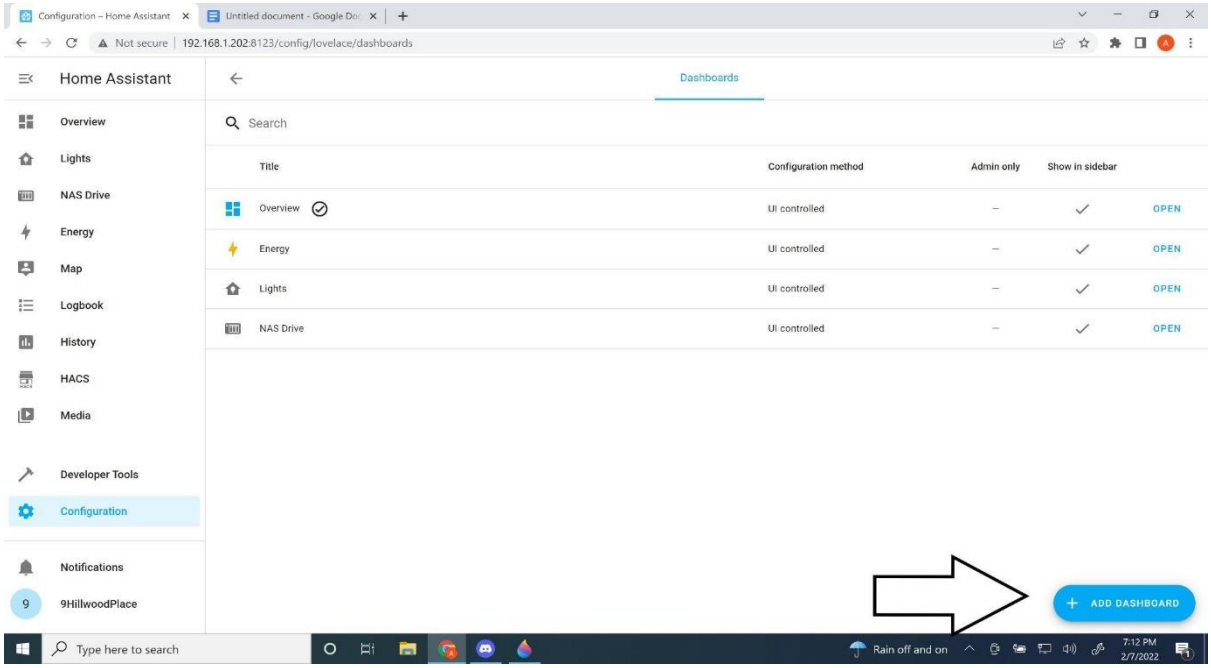
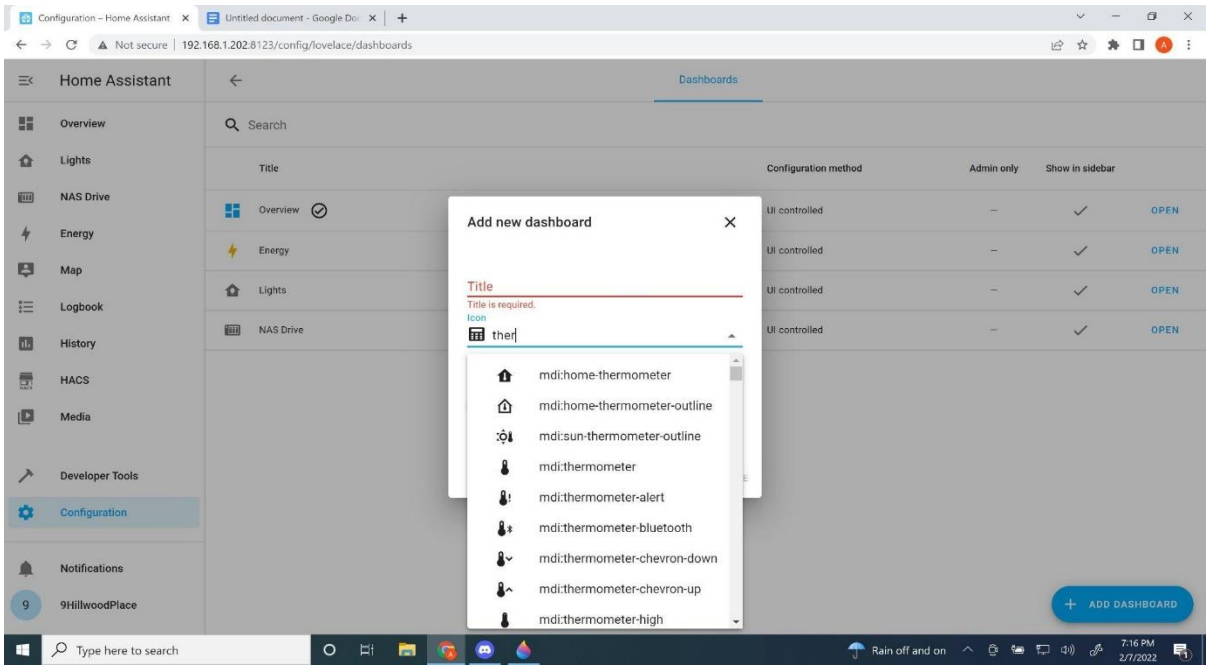
- Select Add Dashboard



- Give your dashboard a title and icon. Start typing THERM in icon to bring up temperature related icons or choose anyone you want. Then Click create.



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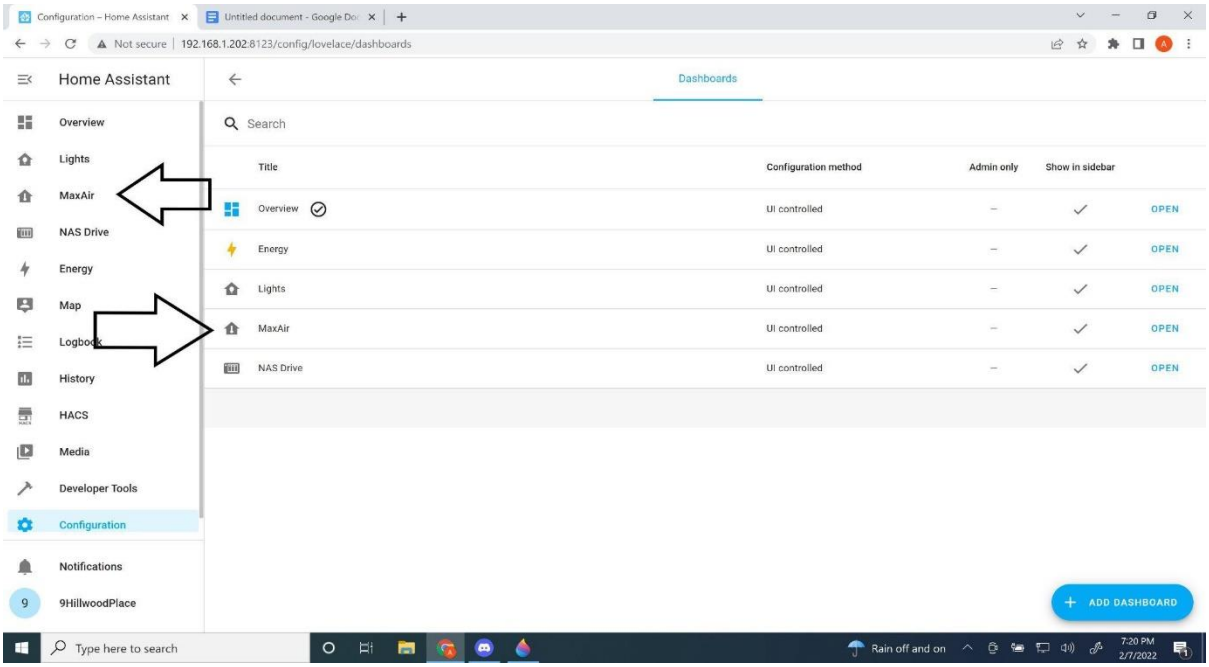
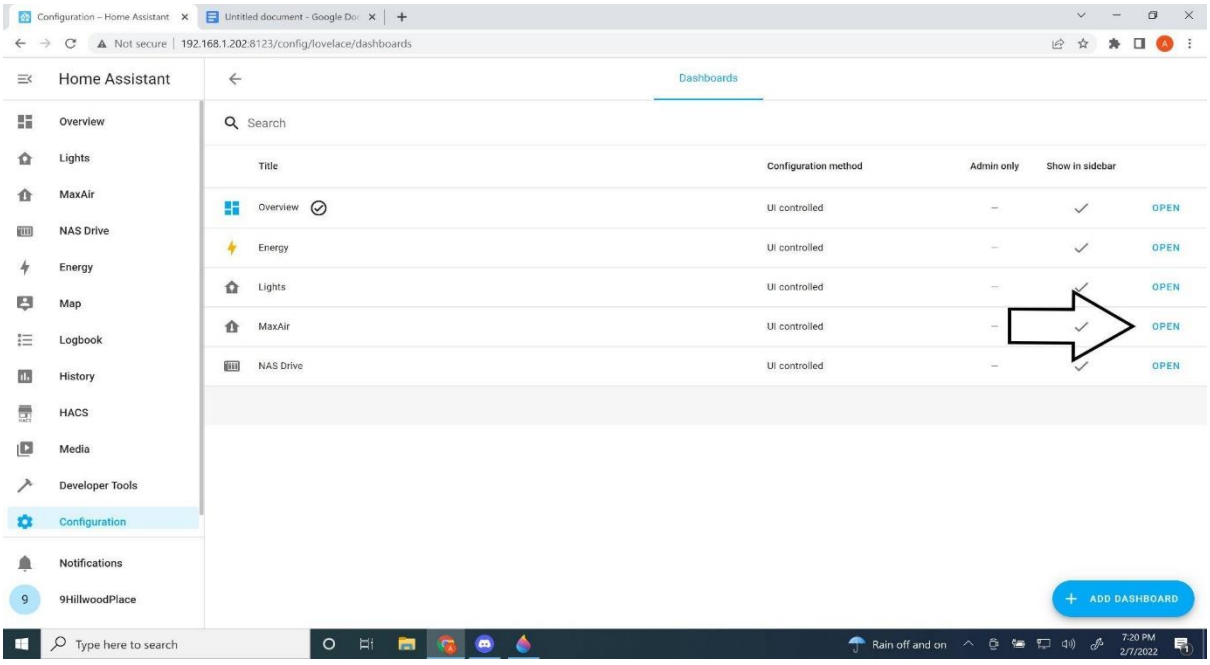
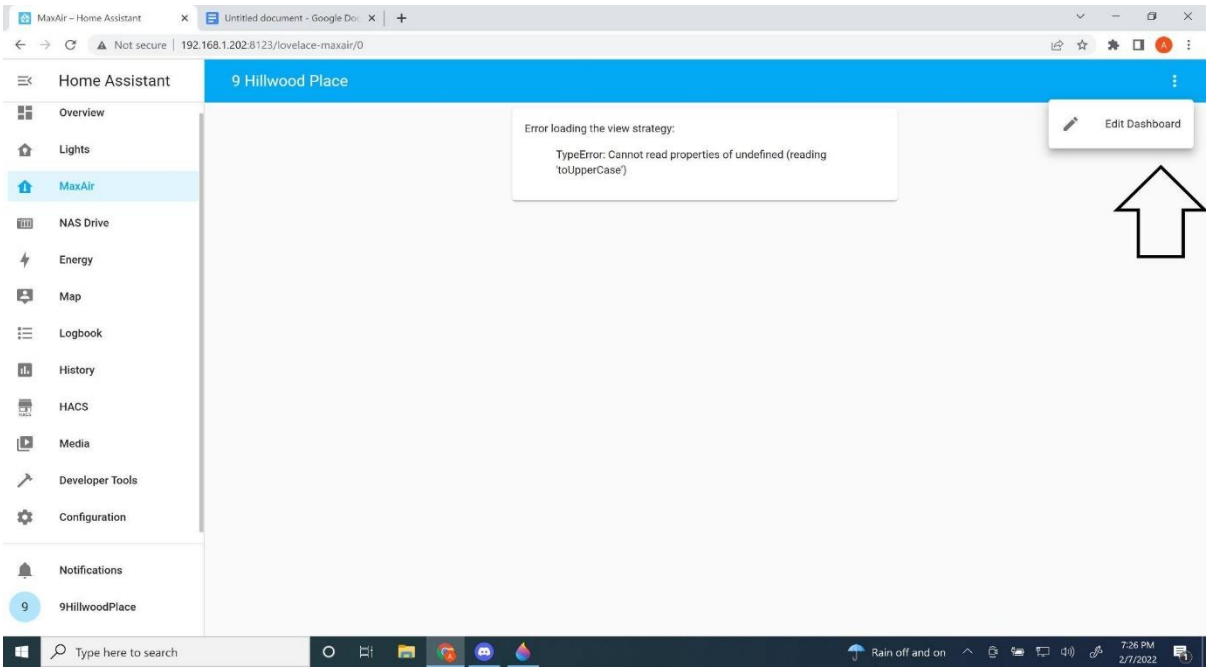
- You will see your newly created dashboard which will appear in the left pane and in the dashboard setting page



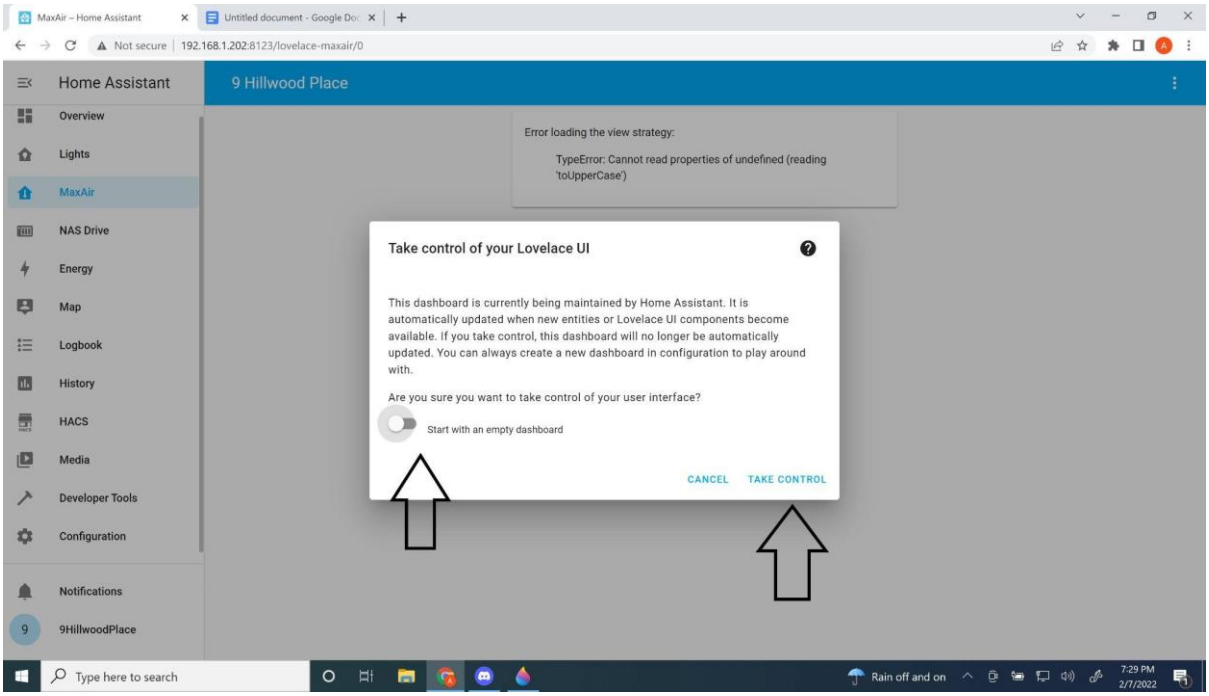
Click open



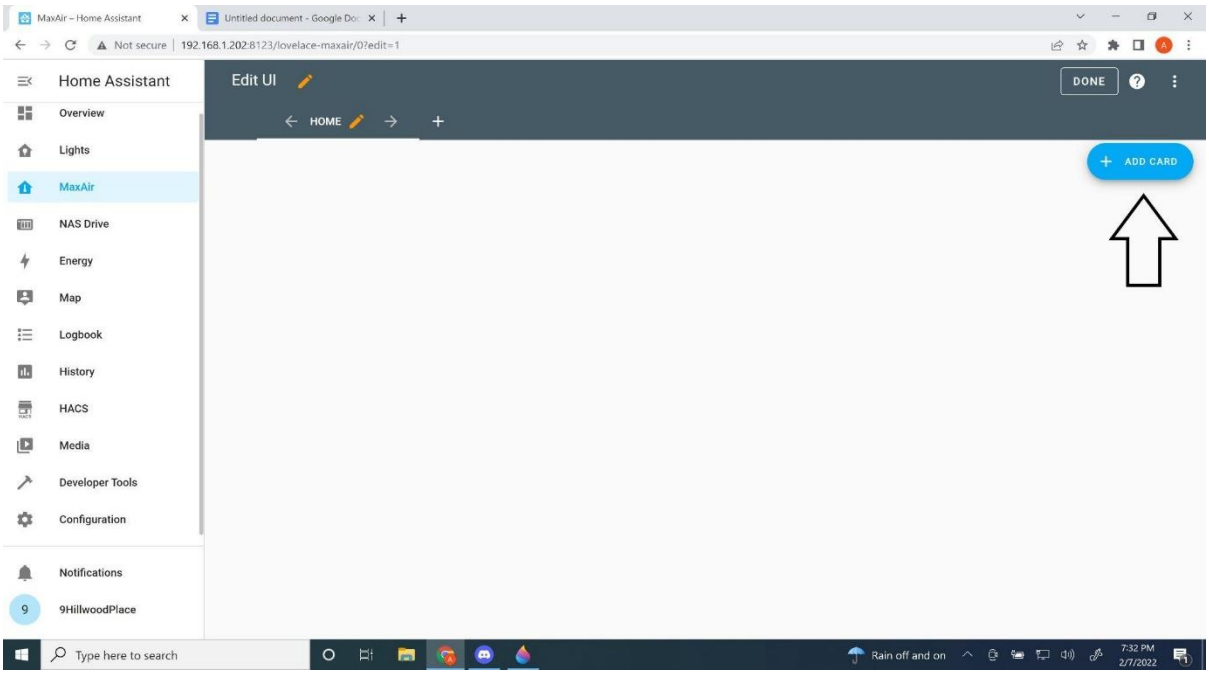
- Click the 3 dots, then click edit dashboard



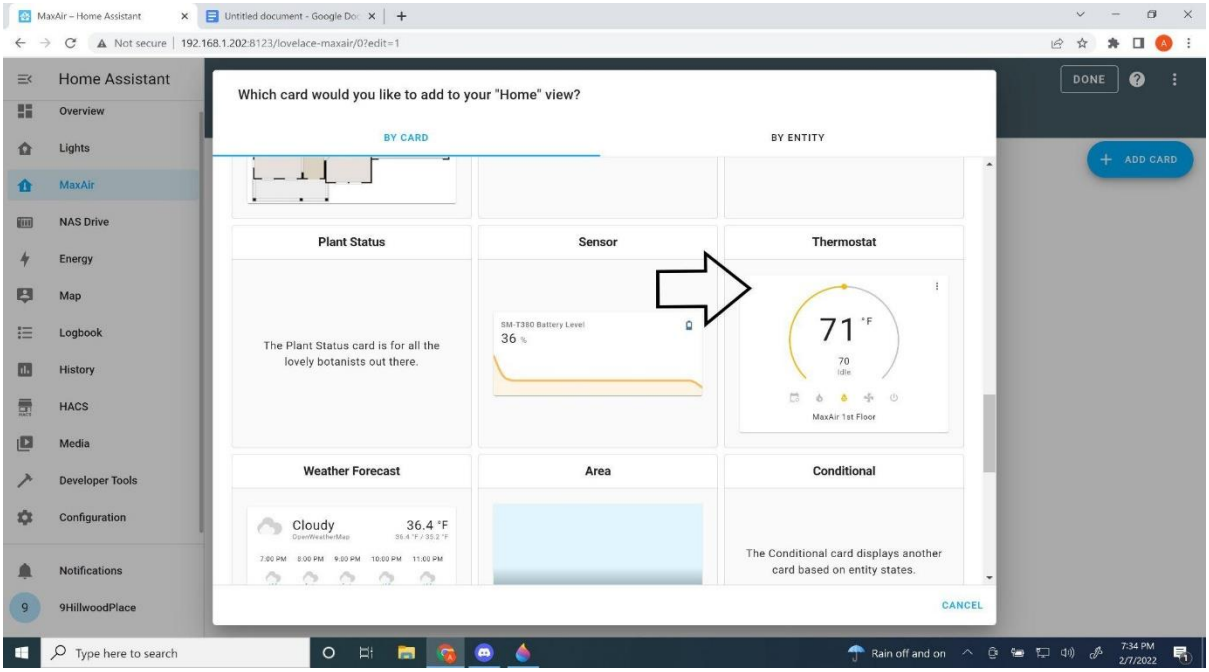
- Click “start with an empty dashboard”, then click “take control”



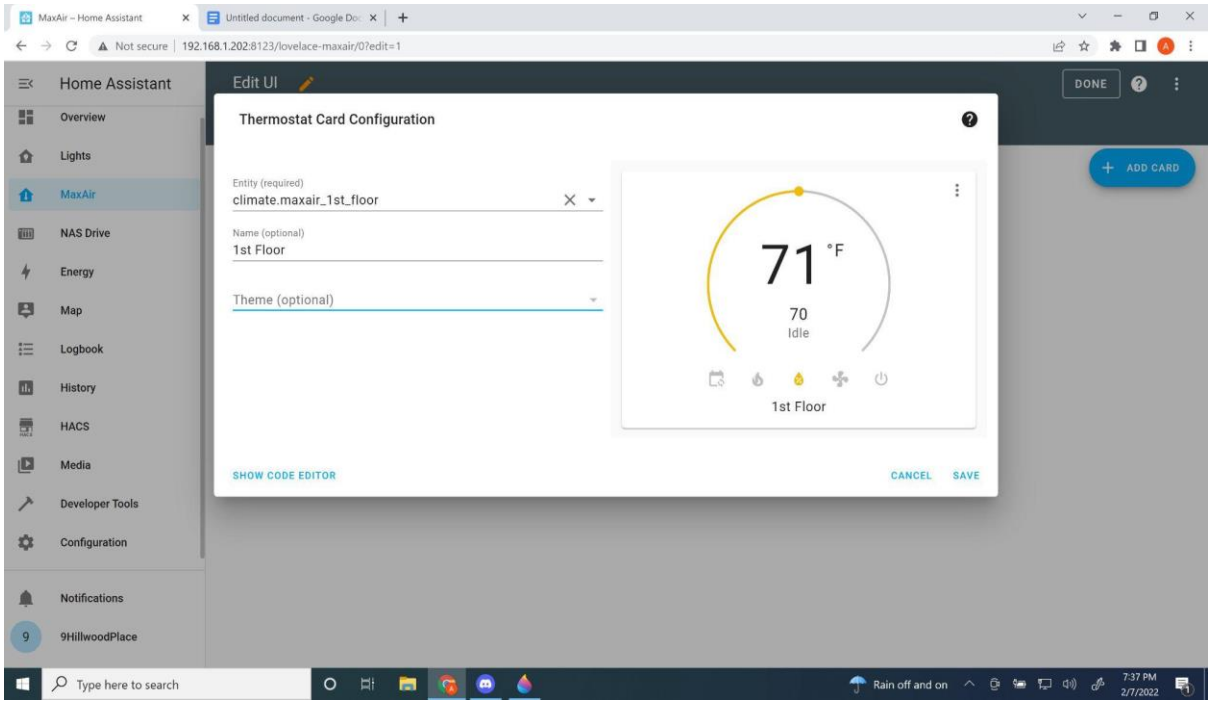
- Click add card



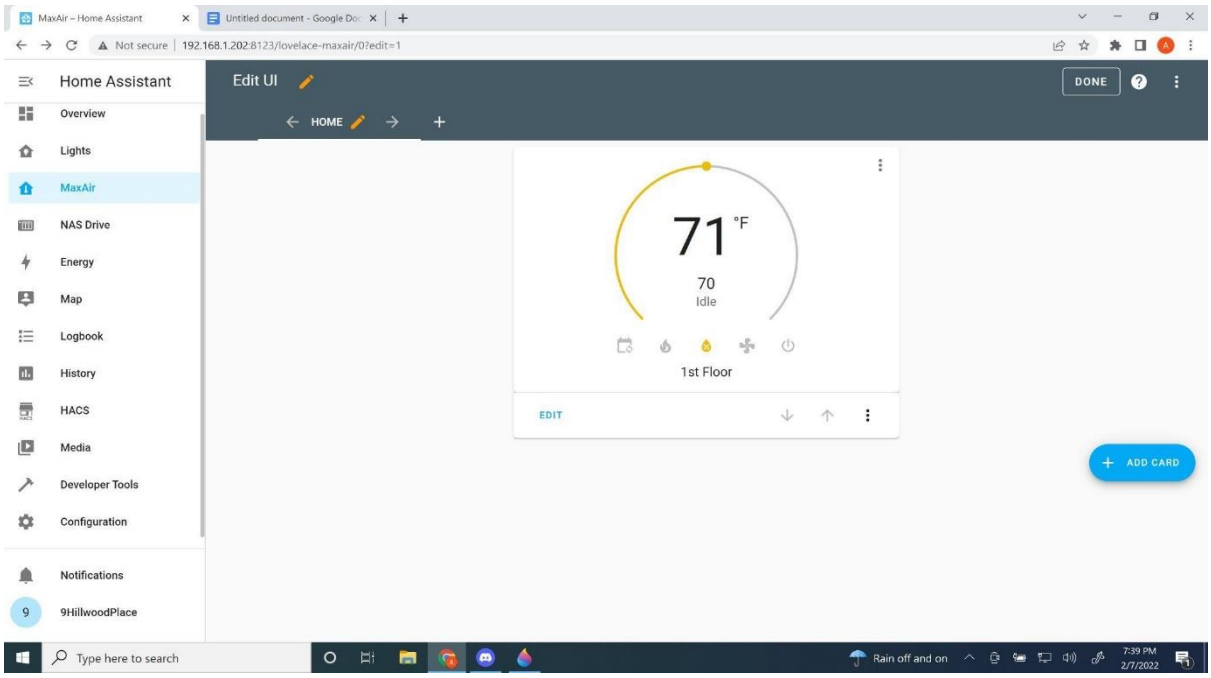
- Scroll down until you find “thermostat” card



- Give a name and optional Theme. Giving a name is recommended or else it will be named by the entity title. Then click “save”

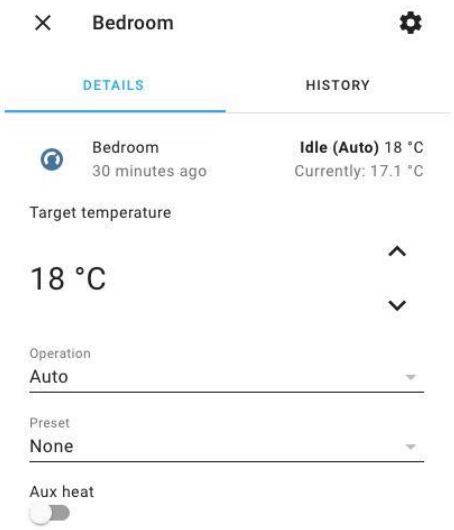


- Continue to click add card until you have added all of your zones.



The format of the thermostat will be different depending if using MQTT/Mosquitto or HTTP/Homebridge.

MQTT/Mosquitto Thermostat



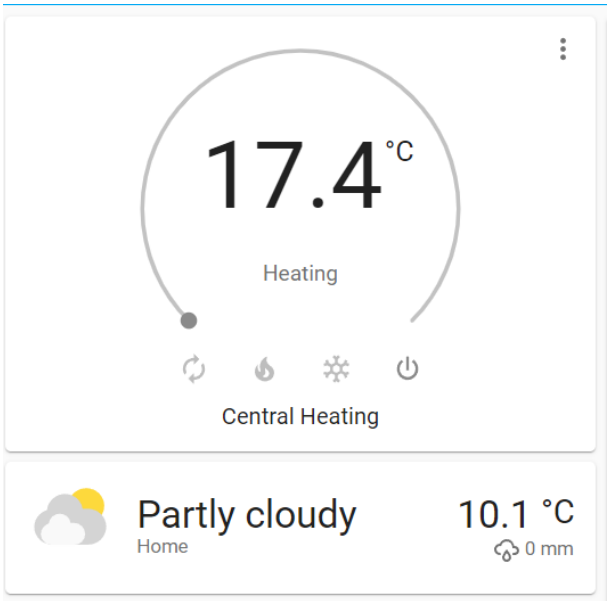
Unfortunately, the climate entity in Home Assistant supports only the following operations: off, auto, heat, cool, fan only and dry. When MaxAir is operating in boiler mode the Home Assistant operations are mapped as follow:

0 OFF -> off
1 Timer -> auto
2 CH -> heat
3 HW -> fan_only
4 Both -> dry

When MaxAir is operating in HVAC mode the Home Assistant operations are mapped as follow:

0 OFF -> off
1 Timer -> dry
2 Auto -> auto
3 Fan -> fan only
4 Heat -> heat
5 Cool -> cool

HTTP/Homebridge Thermostat



Unfortunately, the climate entity in Home Assistant supports only the following operations: off, auto, heat, cool, fan only and dry. When MaxAir is operating in boiler mode the Home Assistant operations are mapped as follow:

0 OFF -> Off
1 Timer -> Heat/Cool
2 CH -> Heat
3 HW -> Cool