

# 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 Broke and the second is to use HTTP together with the Homebridge add-on.

## MQTT/Mosquitto Broke

This integration requires Home Assistant together with a Mosquitto Broker add-on 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 Brocker 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

### Home Assistant

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

1. Navigate in your Home Assistant frontend to Supervisor -> Add-on Store.
2. Find the "Mosquitto broker" add-on and click it.
3. Click on the "INSTALL" button.
4. Navigate in your Home Assistant frontend to Supervisor -> Mosquitto broker.
5. Click on Configuration and edit the configuration file as needed. Below is an example of a basic configuration that supports both MQTT Nodes for MaxAir and the MaxAir Home Assistant integration.

```
logins:  
  - username: airmax_HA  
    password: password_1  
  - username: airmax  
    password: password_2  
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 shows is using the Mosquitto Broker IP address of 192.168.0.18, with a default Port number of 1883, the Username and Password were as setup when configuring the broker, the connection is Enabled and the Type is selected as 'Home Assistant integration'.

This screenshot shows the "Add MQTT Connection" configuration dialog. It contains the following fields:

- Name:** Home Assistant
- IP:** 192.168.0.18
- Port:** 1883
- Username:** (empty field)
- Password:** (empty field)
- Enabled:** Enabled (dropdown menu)
- Type:** Home Assistant integration (dropdown menu)

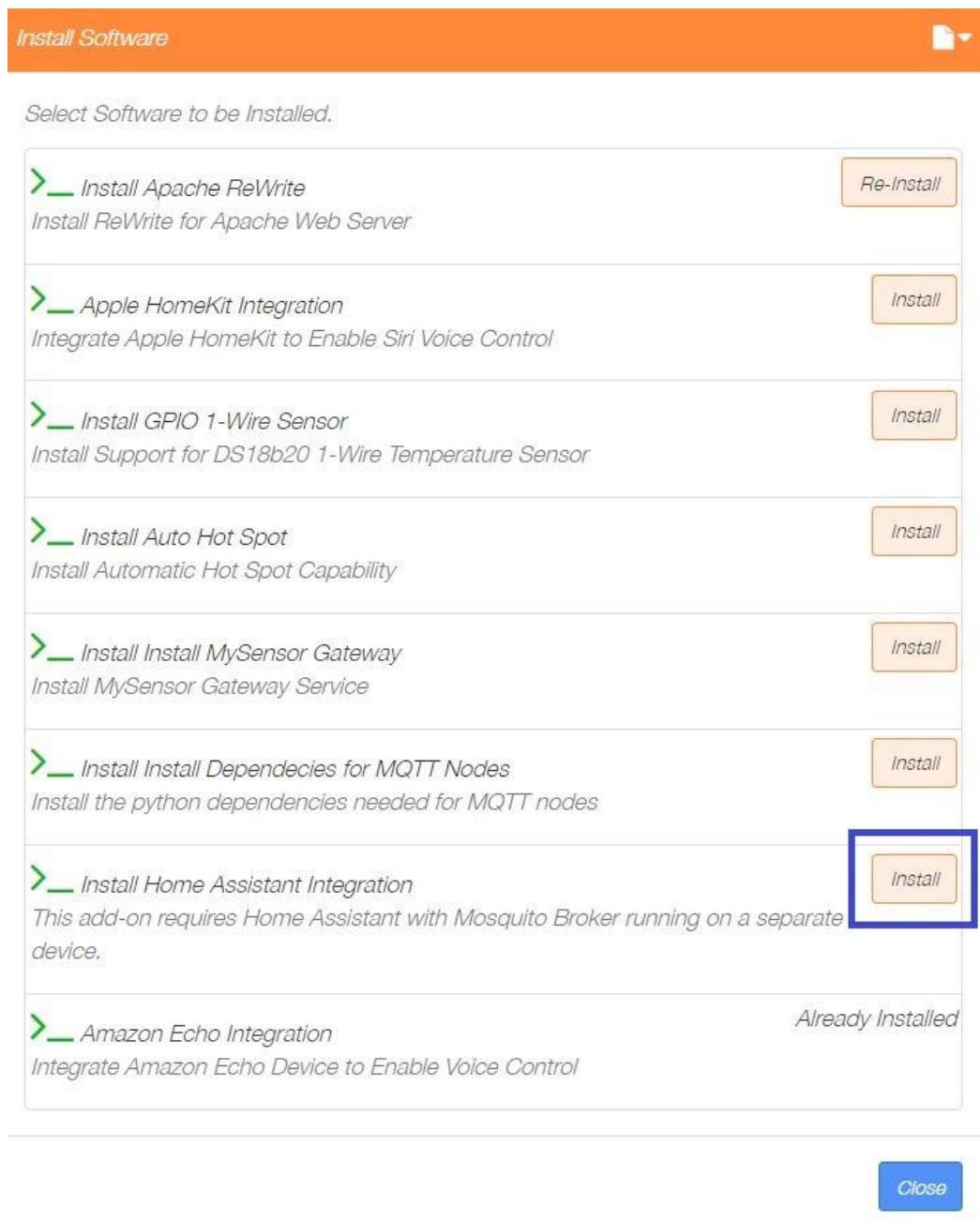
At the bottom right of the dialog are two buttons: "Add Conn" (orange) and "Close" (blue).

## 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.

## Installing Software

Please Be Patient Installing Software in the background, this could take some time.

Model: Raspberry

Python3-dev is already installed

Installing Phyton modules

Looking in indexes: https://pypi.org/simple, https://www.piwheels.org/simple

Requirement already satisfied: paho-mqtt==1.5.0 in /usr/local/lib/python3.9/dist-packages  
(from -r /var/www/add\_on/HomeAssistant/requirements\_RPi.txt (line 1)) (1.5.0)

Requirement already satisfied: psutil==5.6.6 in /usr/local/lib/python3.9/dist-packages (from -r /var/www/add\_on/HomeAssistant/requirements\_RPi.txt (line 2)) (5.6.6)

Requirement already satisfied: pytz==2019.2 in /usr/local/lib/python3.9/dist-packages (from -r /var/www/add\_on/HomeAssistant/requirements\_RPi.txt (line 3)) (2019.2)

Requirement already satisfied: PyYAML==5.4 in /usr/local/lib/python3.9/dist-packages (from -r /var/www/add\_on/HomeAssistant/requirements\_RPi.txt (line 4)) (5.4)

Requirement already satisfied: rpi\_bad\_power==0.1.0 in /usr/local/lib/python3.9/dist-packages (from -r /var/www/add\_on/HomeAssistant/requirements\_RPi.txt (line 5)) (0.1.0)

Creating service for auto start

Starting the service

[Close](#)

## *Creation of Home Assistant Entities*

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

 <a href="#">climate.maxair_bedroom</a>	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
 <a href="#">binary_sensor.maxair_boiler</a>	off	friendly_name: MaxAir Boiler device_class: heat
 <a href="#">binary_sensor.maxair_under_voltage</a>	off	friendly_name: MaxAir Under Voltage icon: mdi:raspberry-pi device_class: problem
 <a href="#">sensor.maxair_cpu_usage</a>	37.9	unit_of_measurement: % friendly_name: MaxAir Cpu Usage icon: mdi:memory
 <a href="#">sensor.maxair_disk_use</a>	79.1	unit_of_measurement: % friendly_name: MaxAir Disk Use icon: mdi:micro-sd
 <a href="#">sensor.maxair_host_architecture</a>	armv6l	friendly_name: MaxAir Host Architecture icon: mdi:chip
 <a href="#">sensor.maxair_host_ip</a>	192.168.1.2	friendly_name: MaxAir Host Ip icon: mdi:lan
 <a href="#">sensor.maxair_host_ip</a>		

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).

## HTTP/Homebridge

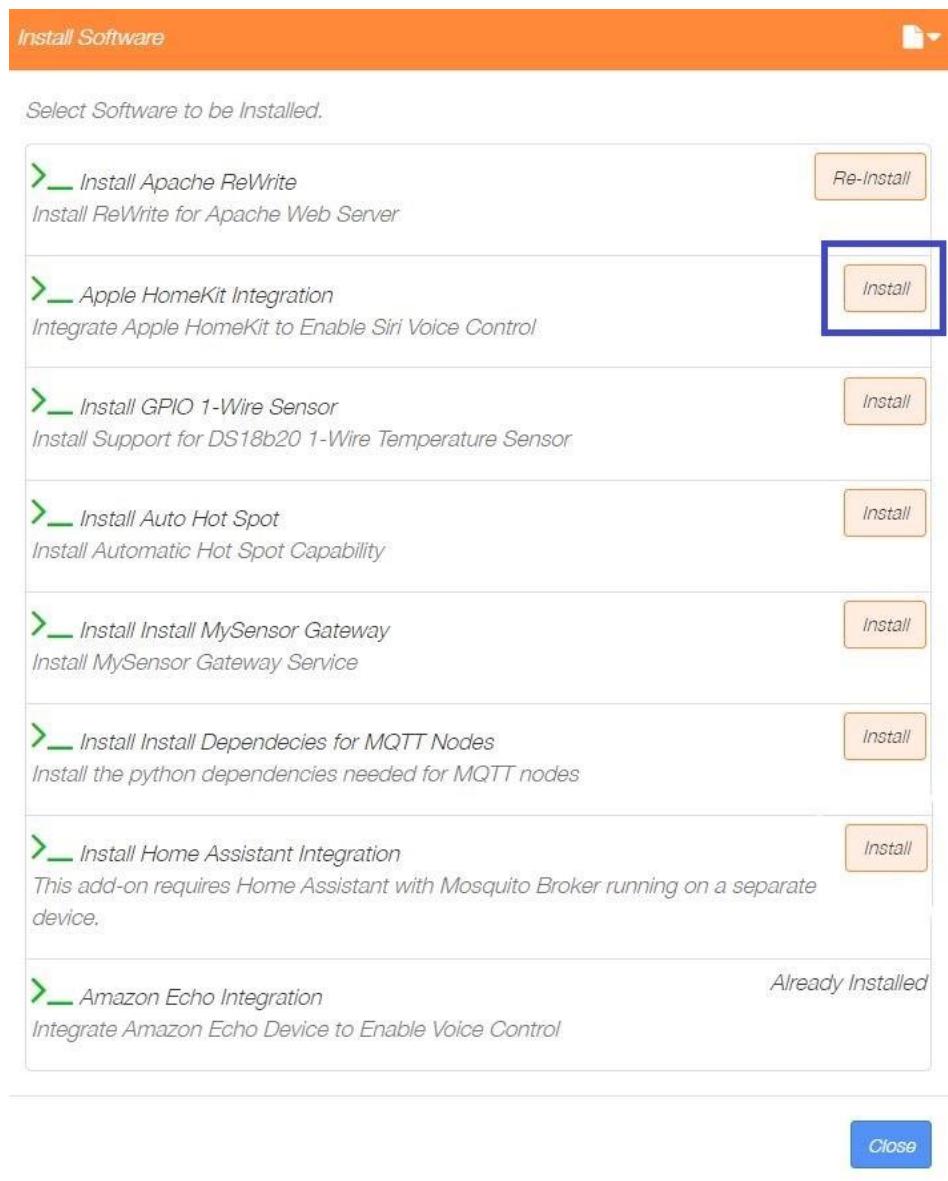
The ‘homekit’ add-on was initially created to allow voice control using Apple’s Siri, the add-on uses ‘Homebridge’ together with its associated ‘Webhooks’ plugin to create a HomeKit Bridge device, this can then be accessed using Apple’s HomeKit app.

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.

## Installing Software

Please Be Patient Installing Software in the background, this could take some time.

*|Enabling Rewrite*

*Backing Up and Modifying /etc/apache2/sites-available/000-default.conf*

*000-default.conf Already Modified*

*Backing Up and Modifying /etc/apache2/sites-enabled/000-default.conf*

*000-default.conf Already Modified*

*|Enabling Rewrite*

*mod\_rewrite Already Enabled*

*Installing/Updating nodejs*

*Version aarch64*

*Installing Homebridge*

*added 457 packages, and audited 458 packages in 2m*

*69 packages are looking for funding*

*run `npm fund` for details*

*10 vulnerabilities (4 low, 2 moderate, 4 high)*

*To address all issues, run:*

*npm audit fix*

*Run `npm audit` for details.*

*Setup Homebridge Service*

*Manage Homebridge by doing one of the following in your browser:*

**Close**

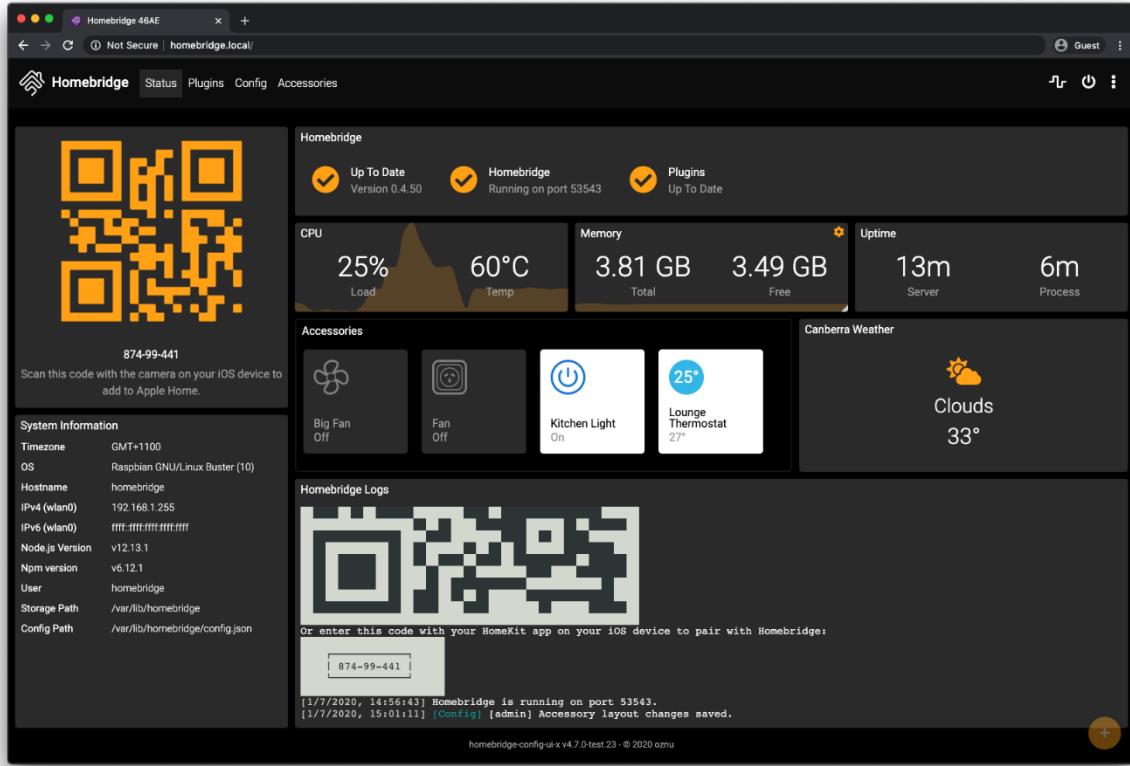
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Please note that this integration will search for new zones and sensors only as part of the initial installation. If new sensors or zones are added to then the configuration file /var/lib/homebridge/config.json will need to be re-created, this can 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.

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

## *Example Configuration File*

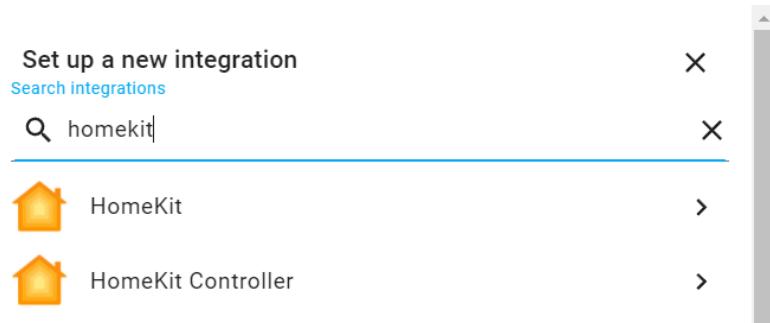
This configuration shows 2 switch zones to control Hot Water and Central Heating Boost, together with 2 temperature sensors.

```
{  
    "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": []  
    ]  
}
```

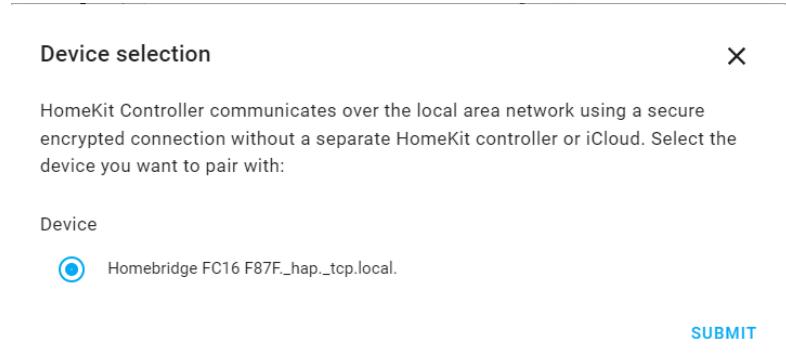
## **Home Assistant**

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

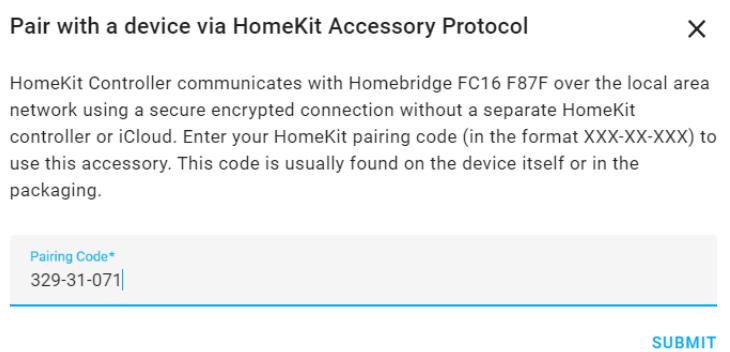
1. Navigate in your Home Assistant frontend to Configuration
2. Select the Devices and Services option
3. Click on + ADD INTEGRATION
4. Search for HomeKit Controller and select



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

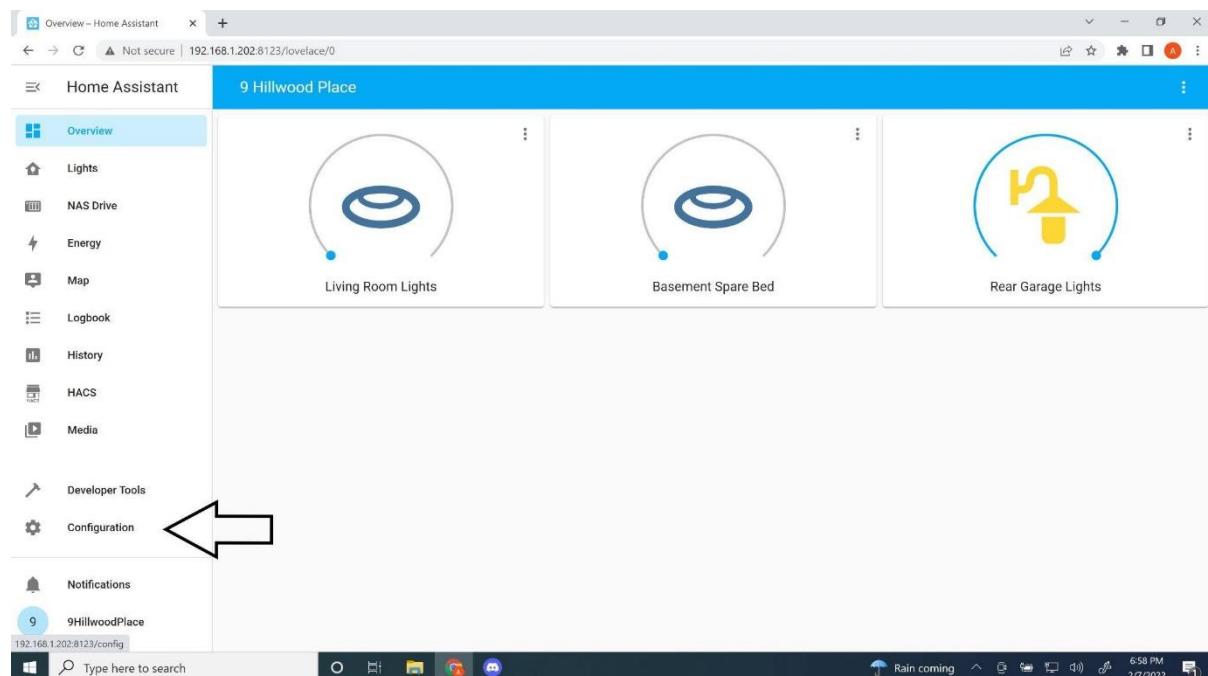


7. The setup should then complete, automatically creating the entities.

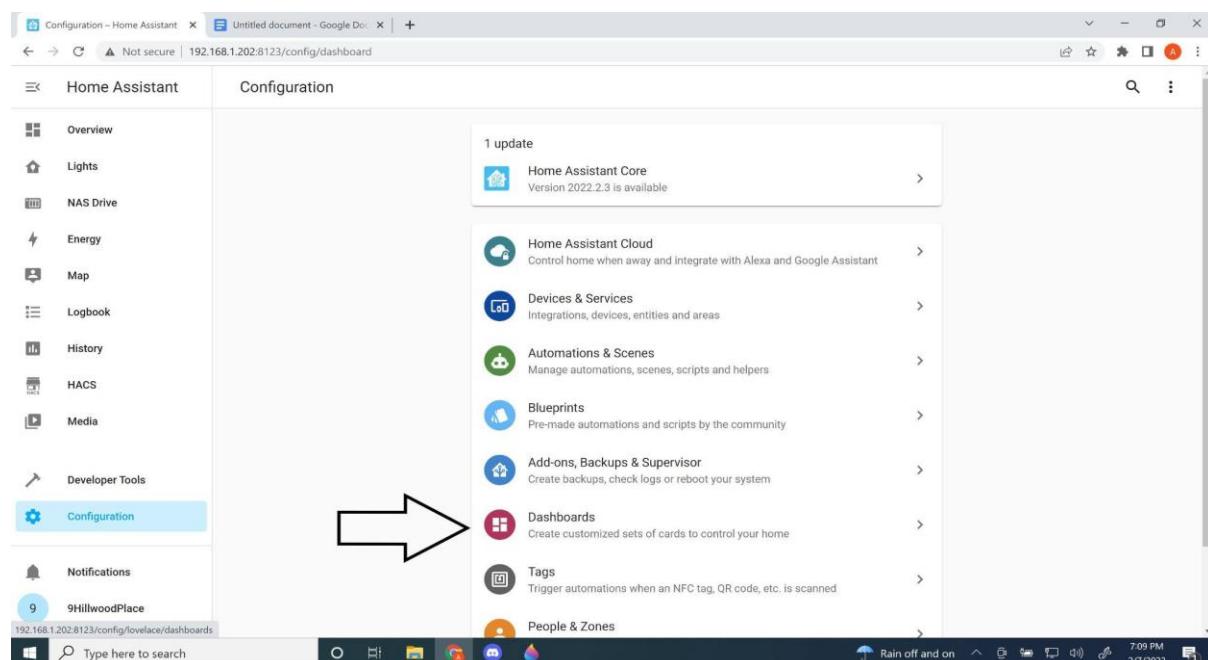
## Creating a Home Assistant Dashboard

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

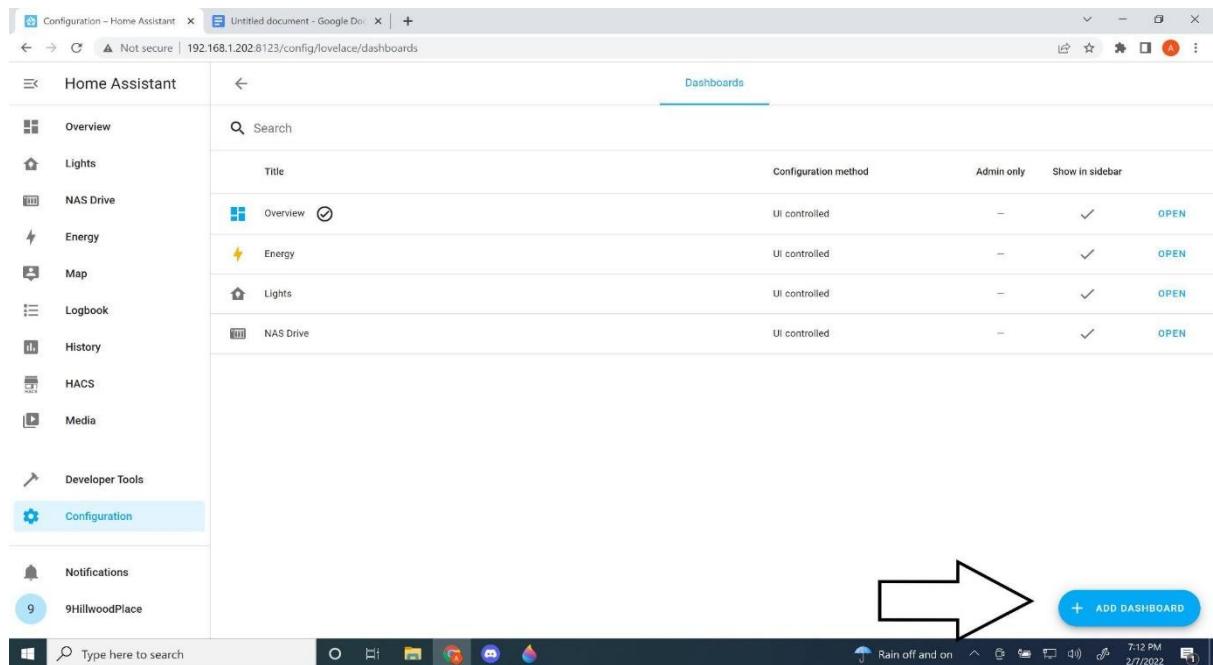
- From home assistant, Select configuration from the left side pane



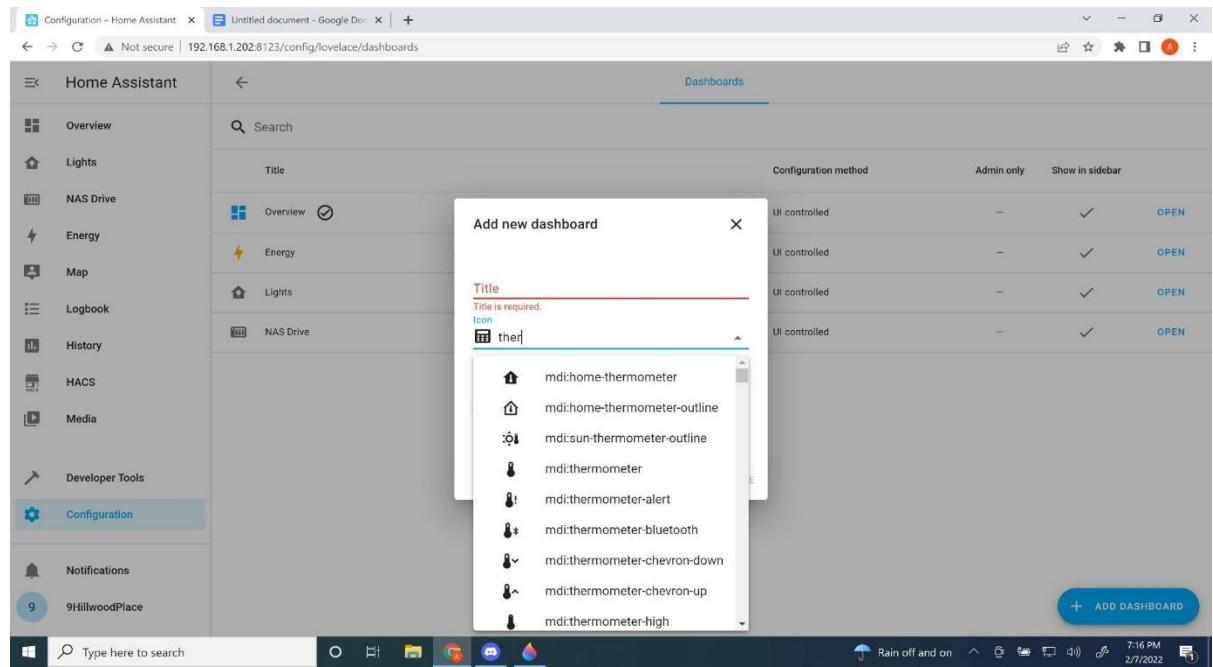
- Select Dashboards



- 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.



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

The screenshot shows the Home Assistant configuration interface. On the left, there's a sidebar with various icons and labels: Overview, Lights, MaxAir, NAS Drive, Energy, Map, Logbook, History, HACS, Media, Developer Tools, Configuration (which is selected and highlighted in blue), Notifications, and 9HillwoodPlace. The main area is titled 'Dashboards' and lists several dashboards with columns for Title, Configuration method, Admin only, and Show in sidebar. The 'MaxAir' dashboard is listed twice: once under 'Title' and once under 'Show in sidebar'. Both entries have a small circular icon with a question mark next to them. The 'Show in sidebar' entry has a checkmark in the 'Admin only' column and the word 'OPEN' in the last column.

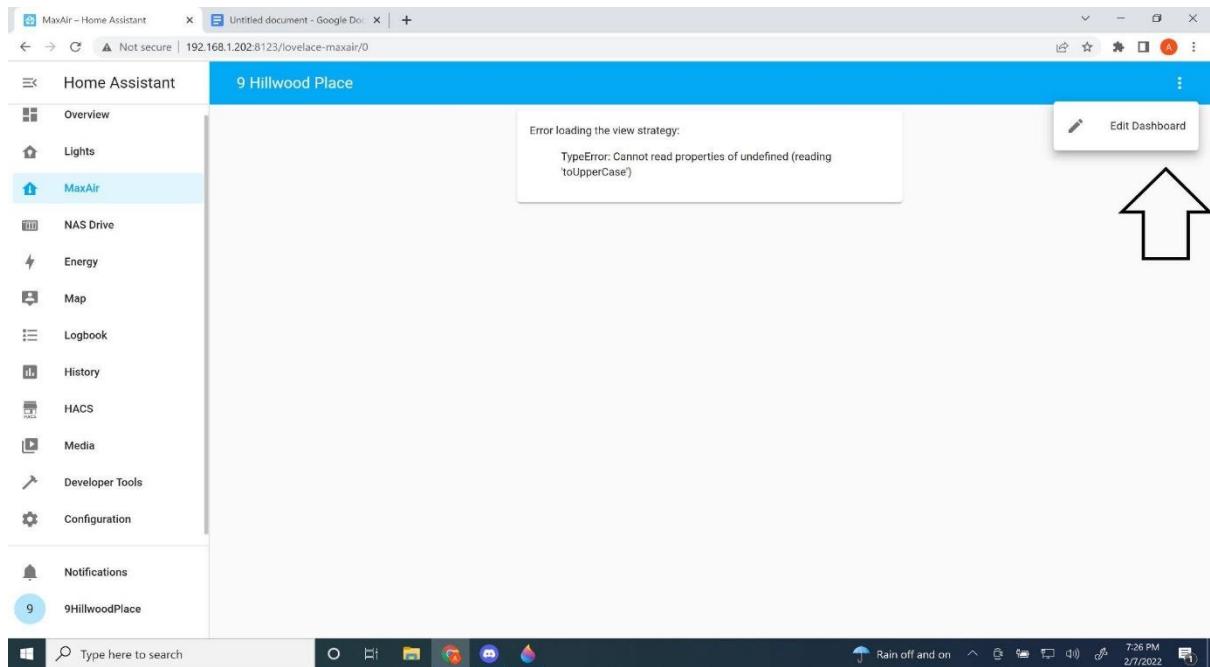
Title	Configuration method	Admin only	Show in sidebar
Overview	UI controlled	—	✓ OPEN
Energy	UI controlled	—	✓ OPEN
Lights	UI controlled	—	✓ OPEN
MaxAir	UI controlled	—	✓ OPEN
NAS Drive	UI controlled	—	✓ OPEN

Click open

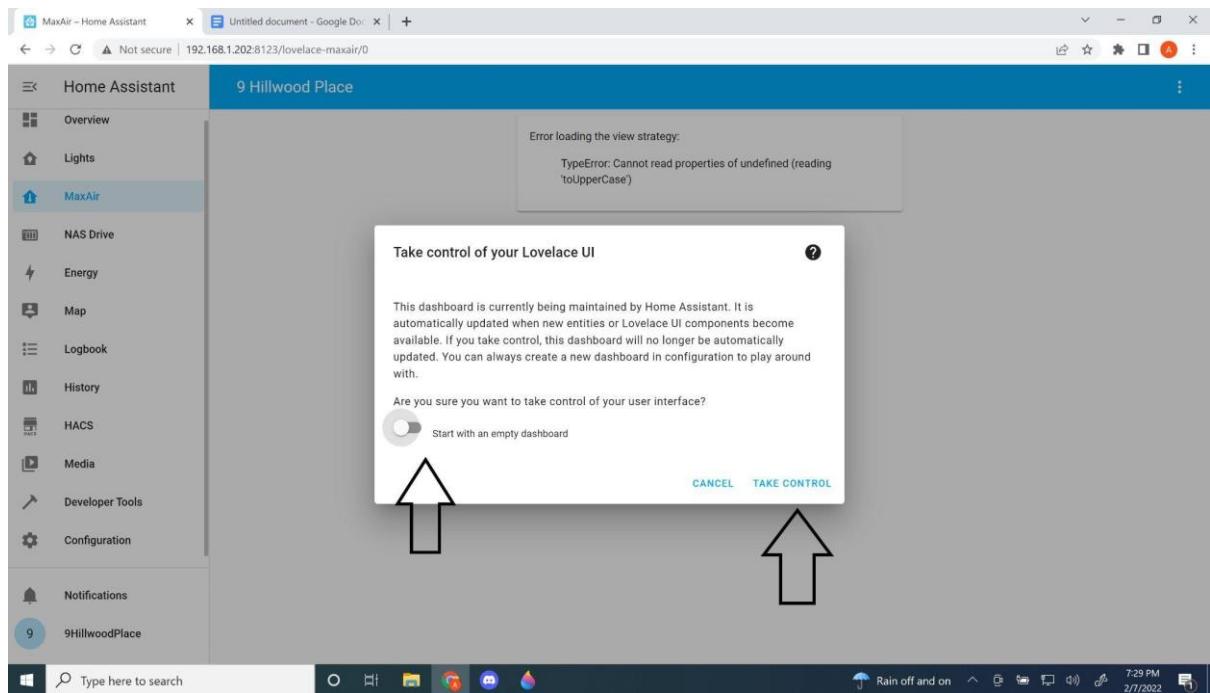
This screenshot is identical to the one above it, showing the Home Assistant configuration interface with the 'Configuration' tab selected. The sidebar shows the same list of components, and the main 'Dashboards' section shows the 'MaxAir' dashboard listed twice. The 'Show in sidebar' entry for 'MaxAir' now has a checkmark in the 'Admin only' column and the word 'OPEN' in the last column, indicating it is now active.

Title	Configuration method	Admin only	Show in sidebar
Overview	UI controlled	—	✓ OPEN
Energy	UI controlled	—	✓ OPEN
Lights	UI controlled	—	✓ OPEN
MaxAir	UI controlled	✓	✓ OPEN
NAS Drive	UI controlled	—	✓ OPEN

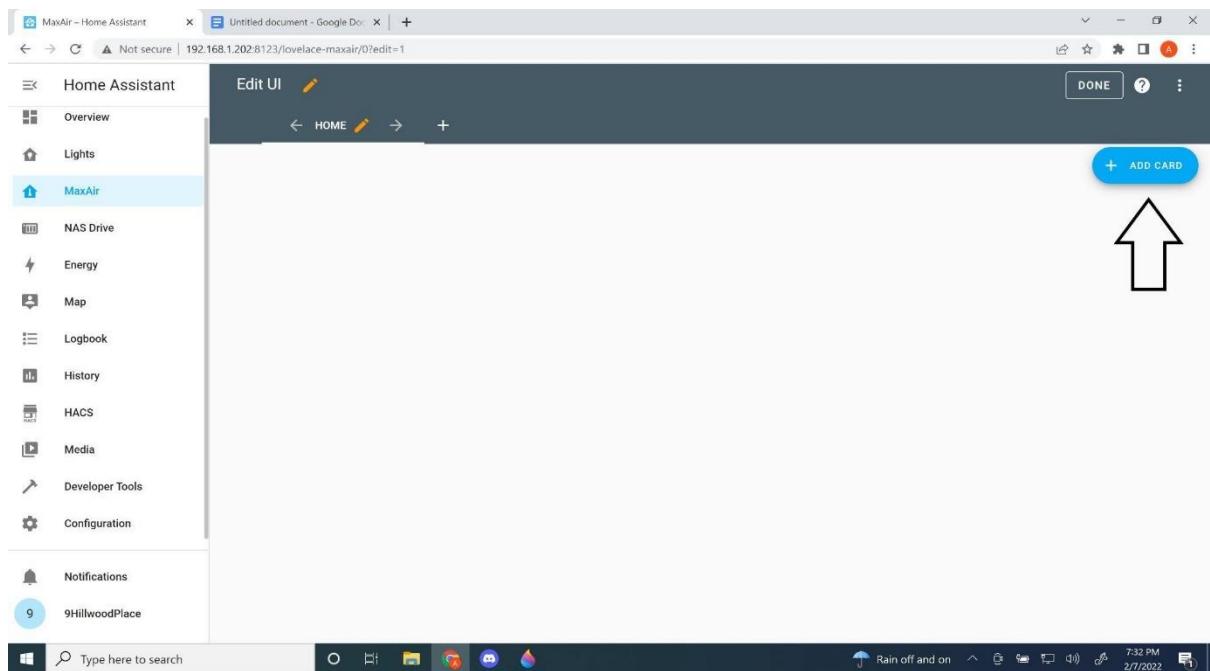
- Click the 3 dots, then click edit dashboard



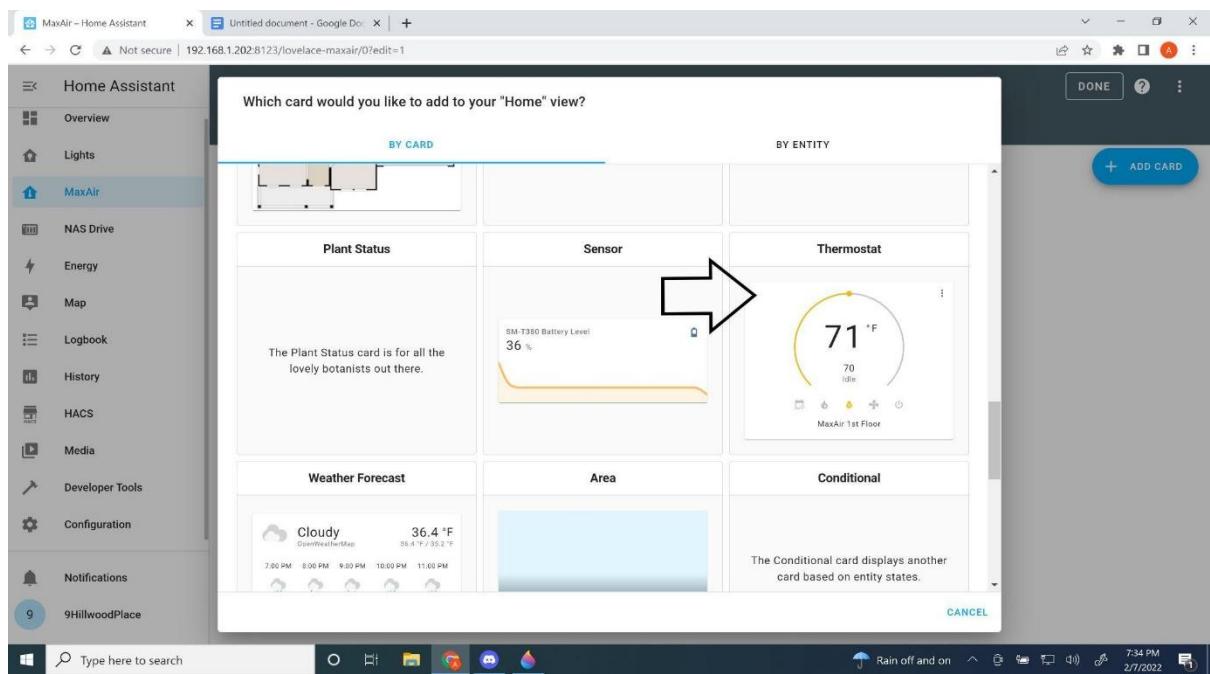
- Click “start with an empty dashboard”, then click “take control”



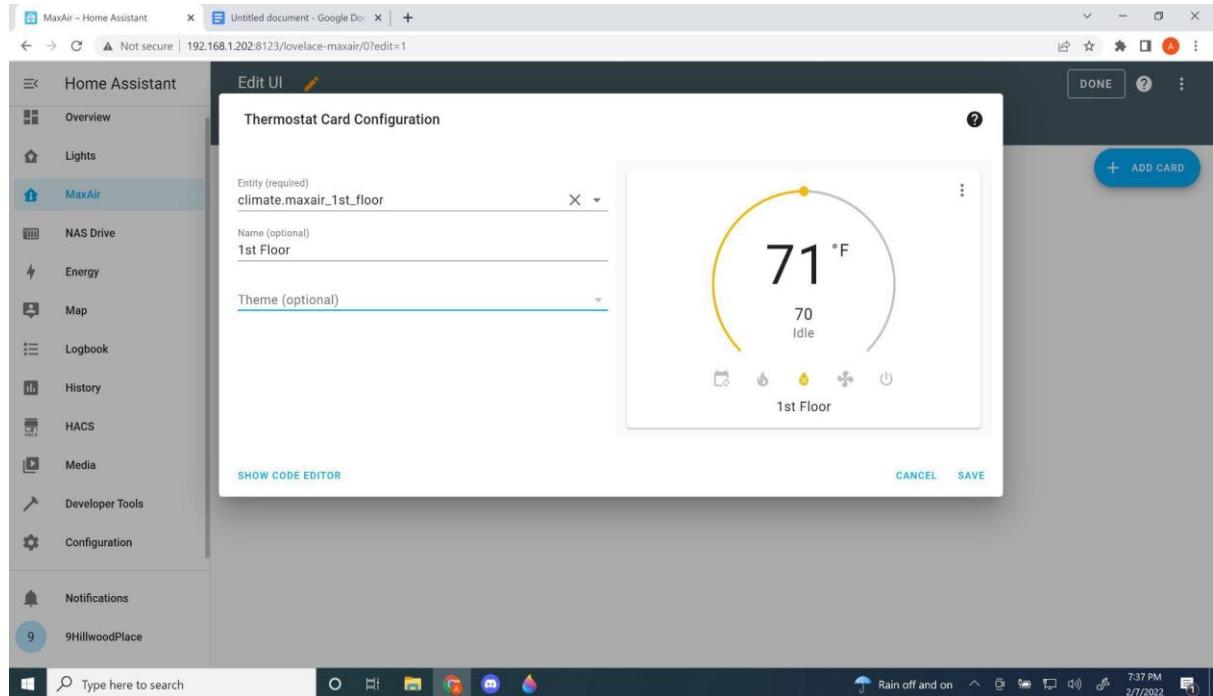
- Click add card



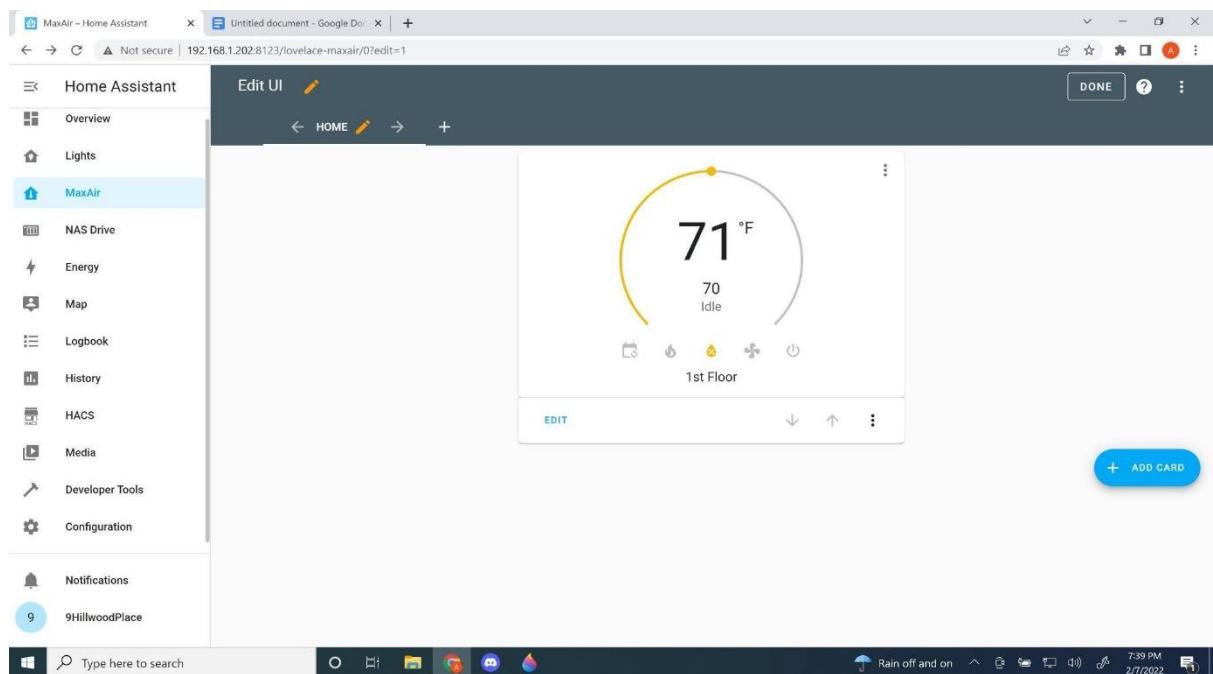
- Scroll down until you find “thermostat” card



- 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.





X Bedroom 

[DETAILS](#) [HISTORY](#)

 Bedroom 30 minutes ago	Idle (Auto) 18 °C Currently: 17.1 °C
Target temperature:	
<b>18 °C</b>	
Operation: Auto	
Preset: None	
Aux heat 	

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

Partly cloudy  Home 10.1 °C  0 mm

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