

# 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'

MQTT Connections

Add

Close

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'.

Add MQTT Connection

Name

Home Assistant

IP

192.168.0.18

Port

1883

Username

Password

Enabled

Enabled

Type

Home Assistant integration

Add Conn

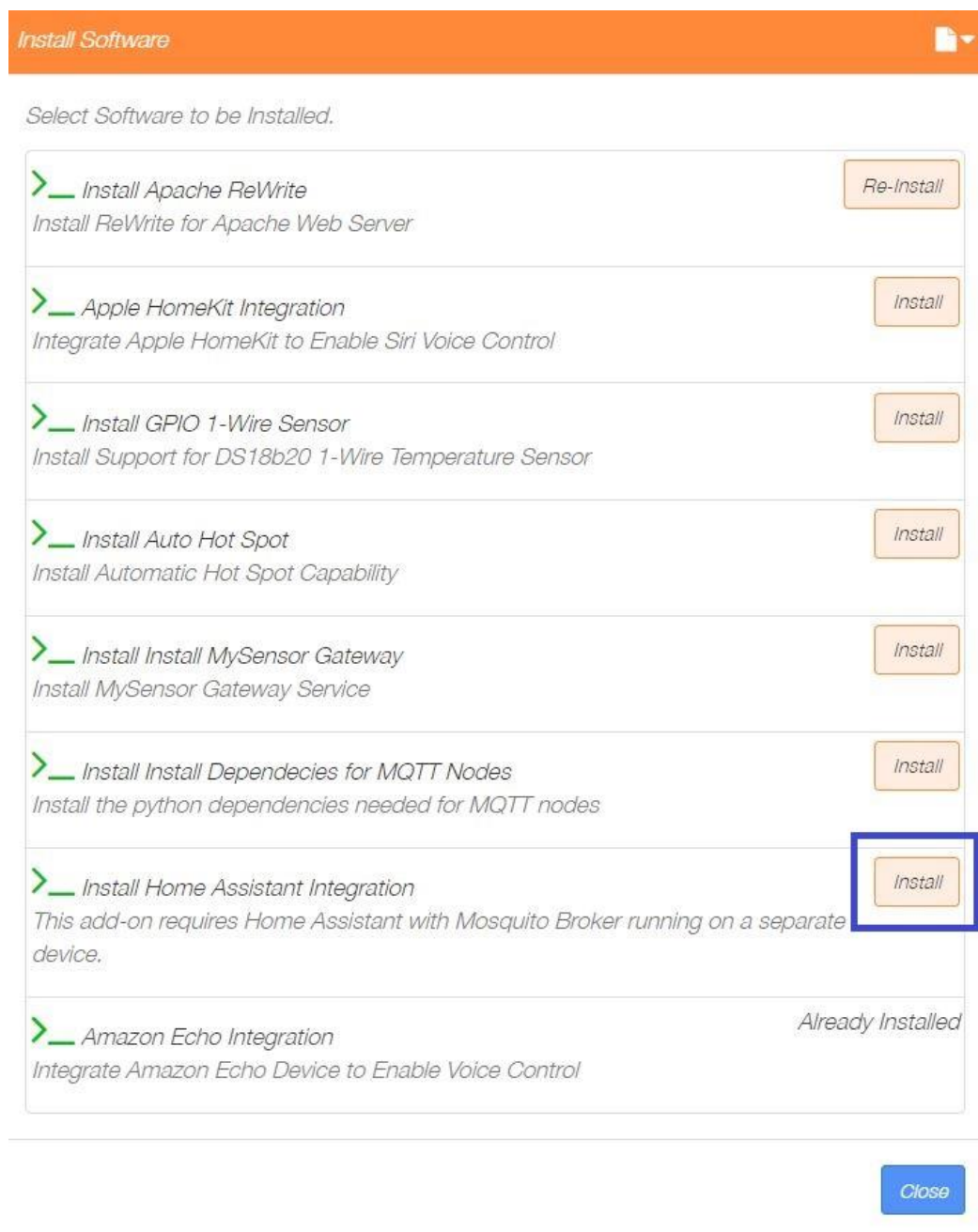
Close

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

## HTTP/Homebridge

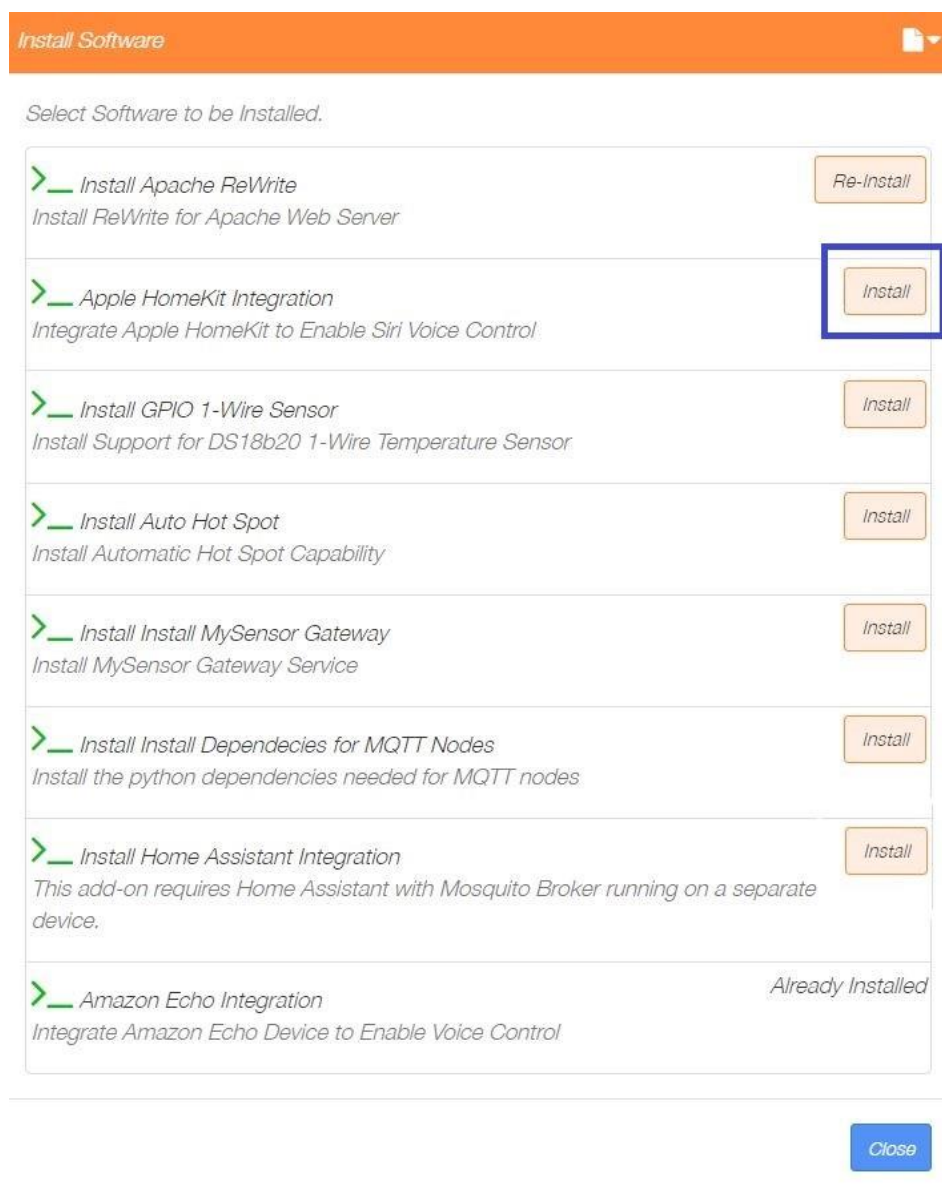
The 'homekit' add-on was initially created to allow voice control using Apple's Siri, the add-on uses 'Homebridge' together with its associated 'Webhooks' plugin to create a HomeKit Bridge device, this can then be accessed using Apple's HomeKit app.

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 going to one of the following in your browser:
```

Close

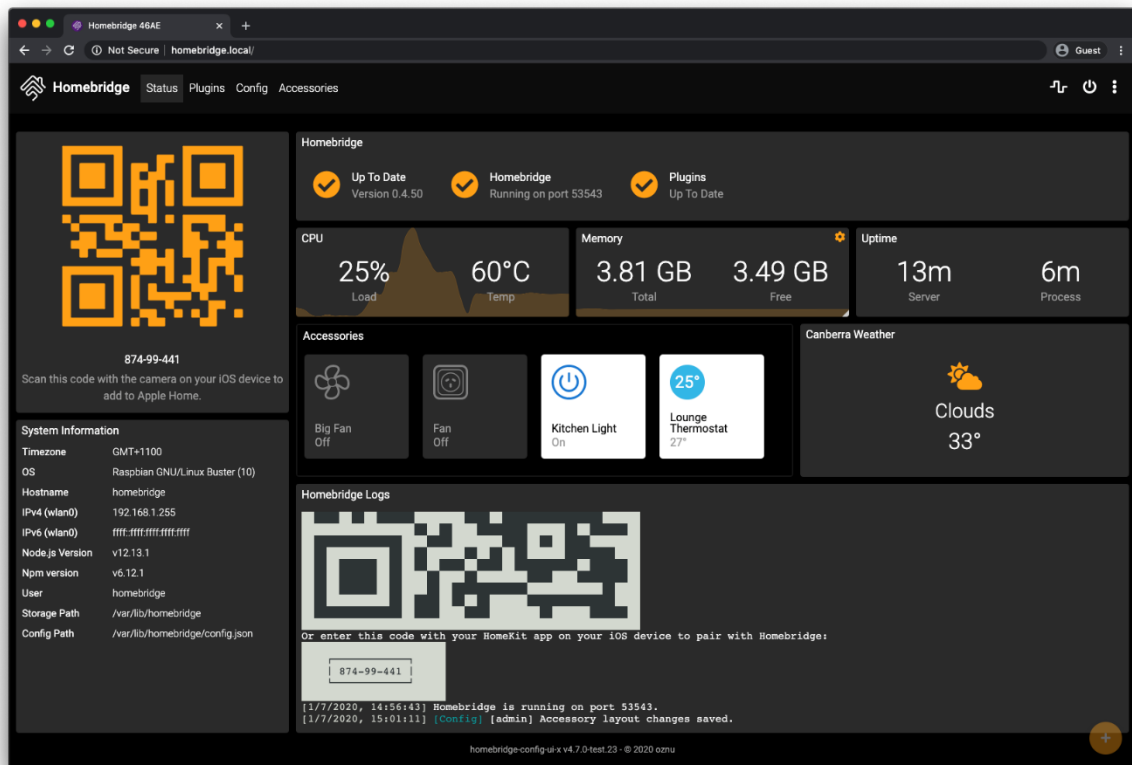
Please note that this integration will search for new zones and sensors only as part of the initial installation. If new sensors or zones are added to then the configuration file `/var/lib/homebridge/config.json` will need to be re-created, this can be achieved by at a console prompt issuing the command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

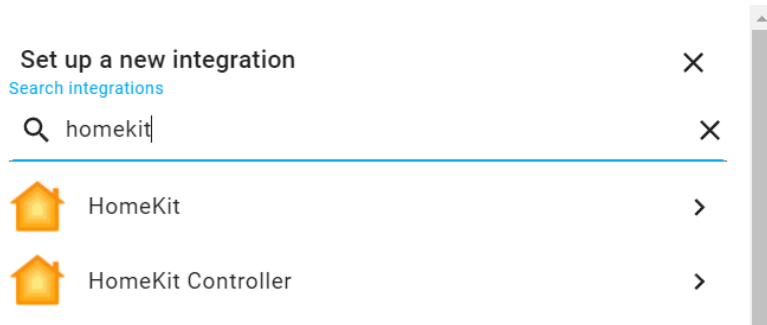
This configuration shows 2 switch zones to control Hot Water and Central Heating Boost, together with 2 temperature sensors.

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

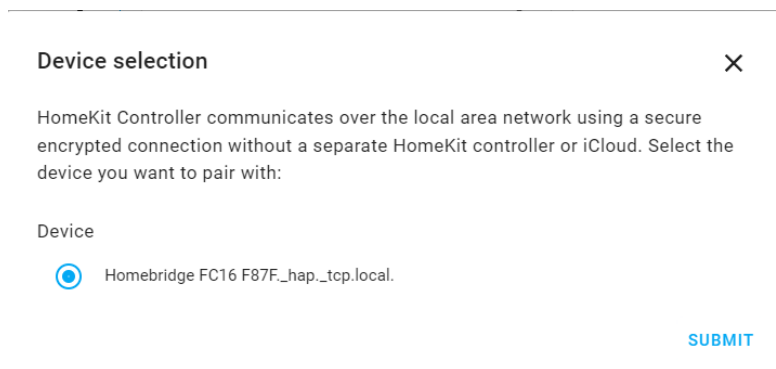
## Home Assistant

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

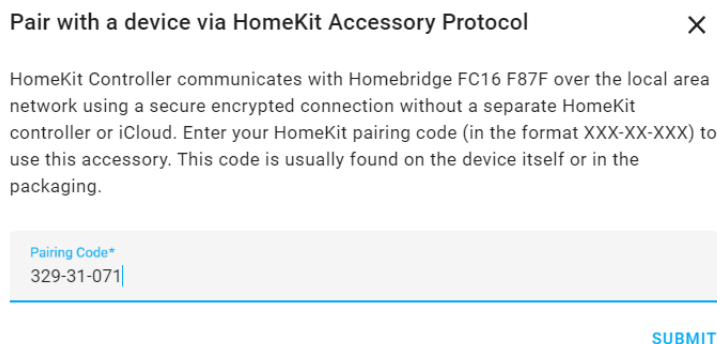
1. Navigate in your Home Assistant frontend to Configuration
2. Select the Devices and Services option
3. Click on + ADD INTEGRATION
4. Search for HomeKit Controller and select



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

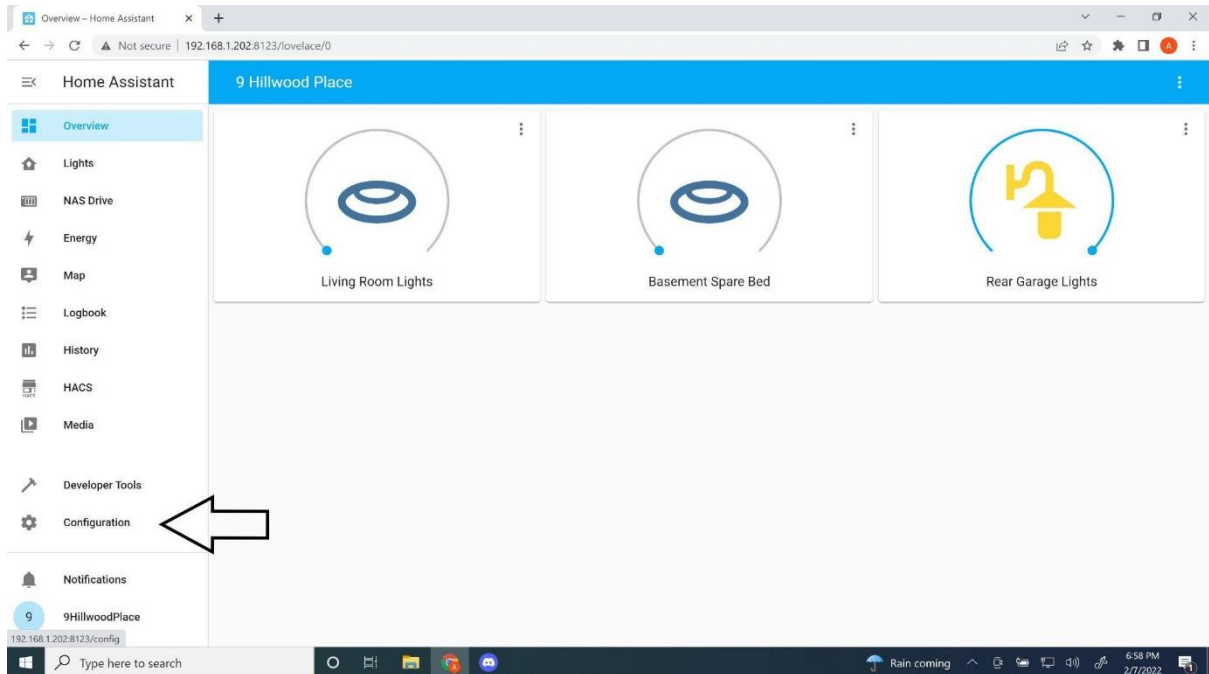


7. The setup should then complete, automatically creating the entices.

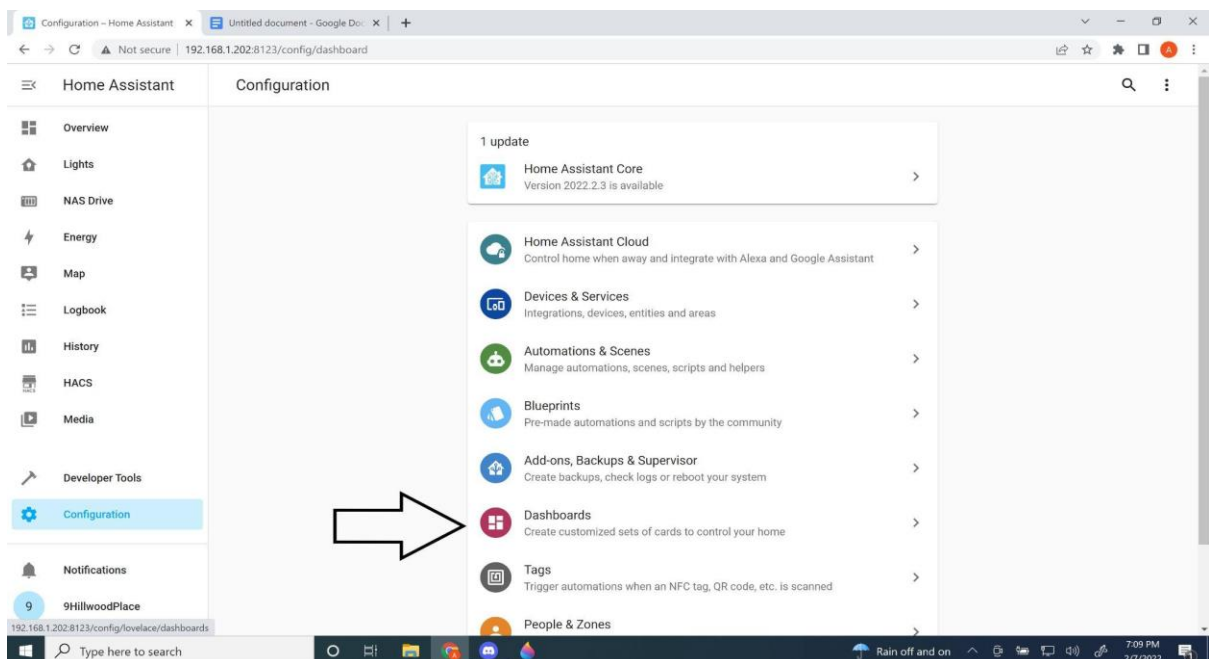
## Creating a Home Assistant Dashboard

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

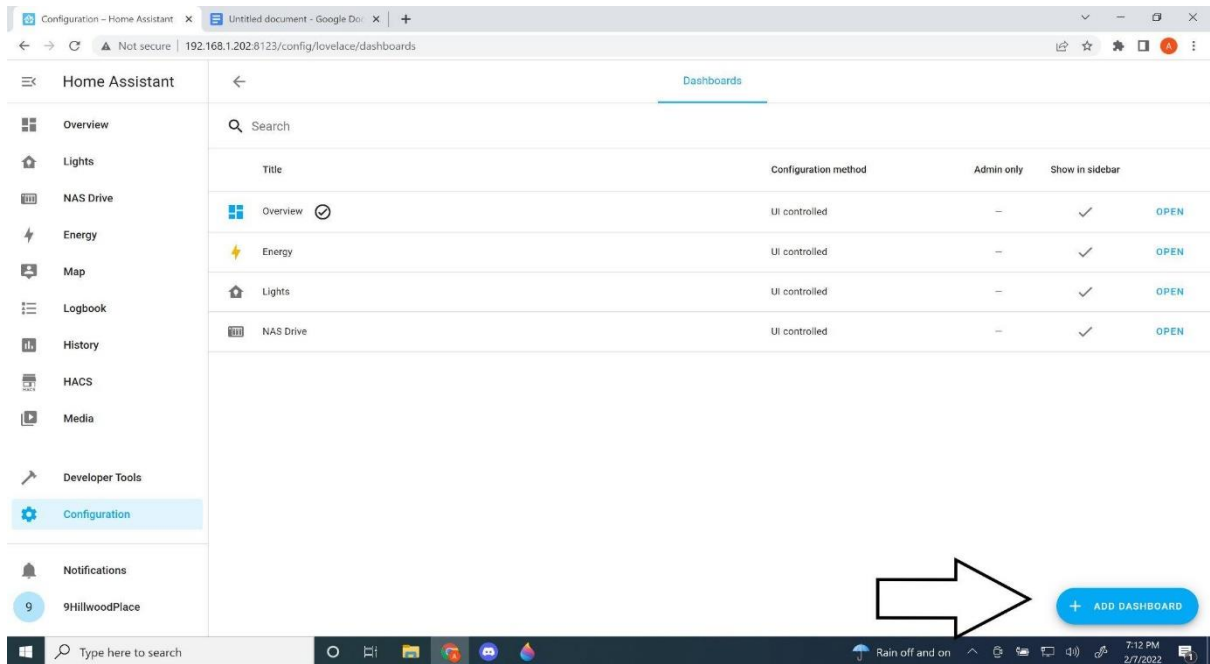
- From home assistant, Select configuration from the left side pane



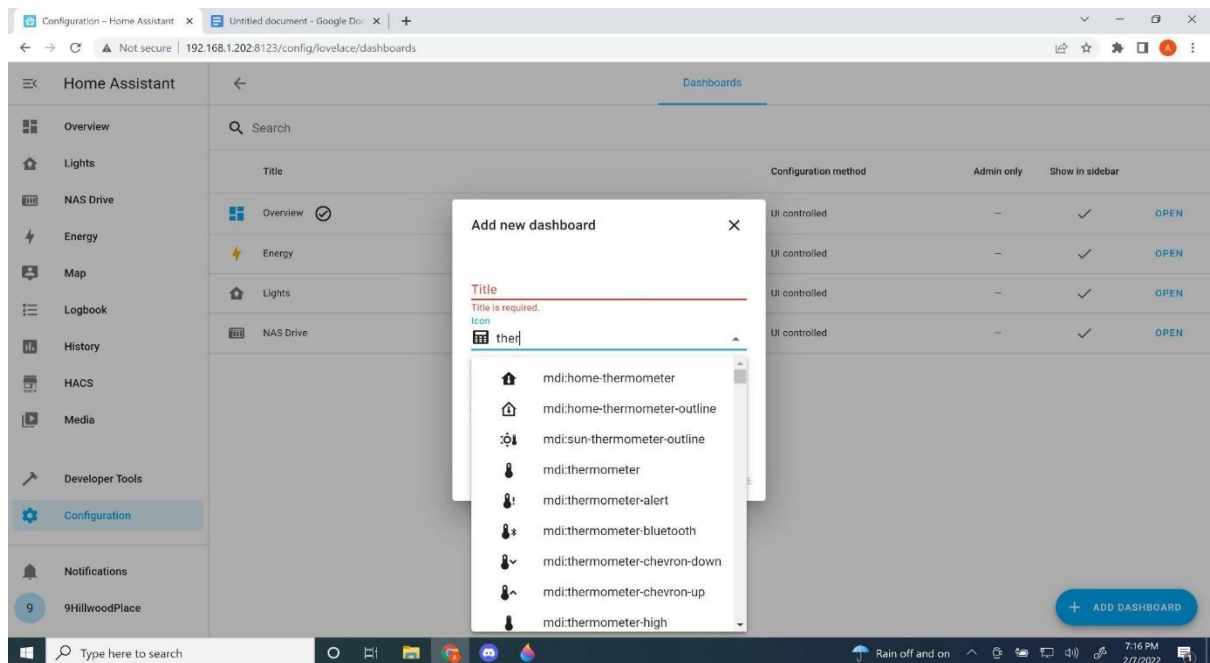
- Select Dashboards



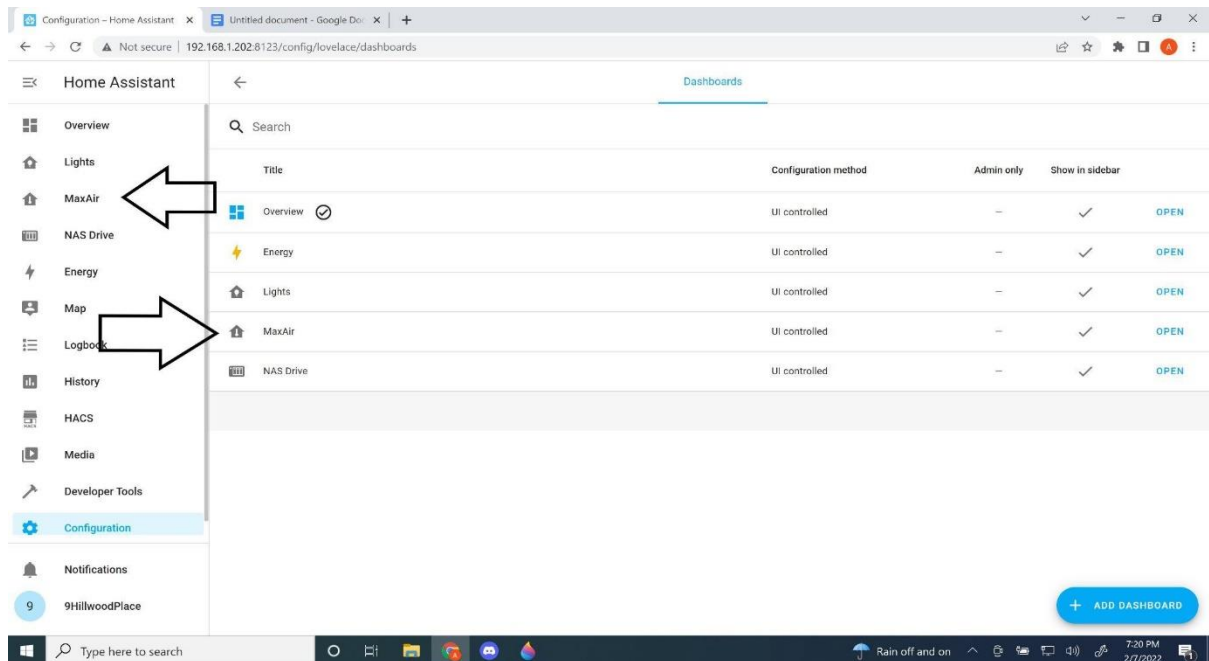
- Select Add Dashboard



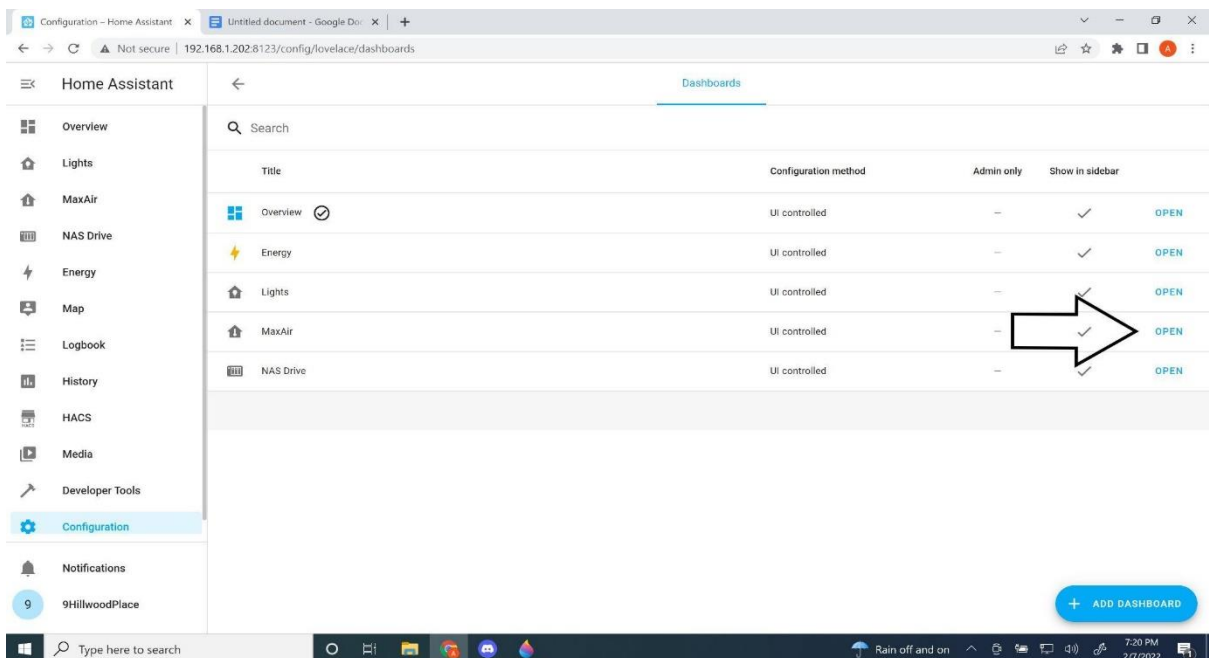
- Give your dashboard a title and icon. Start typing THERM in icon to bring up temperature related icons or choose anyone you want. Then Click create.



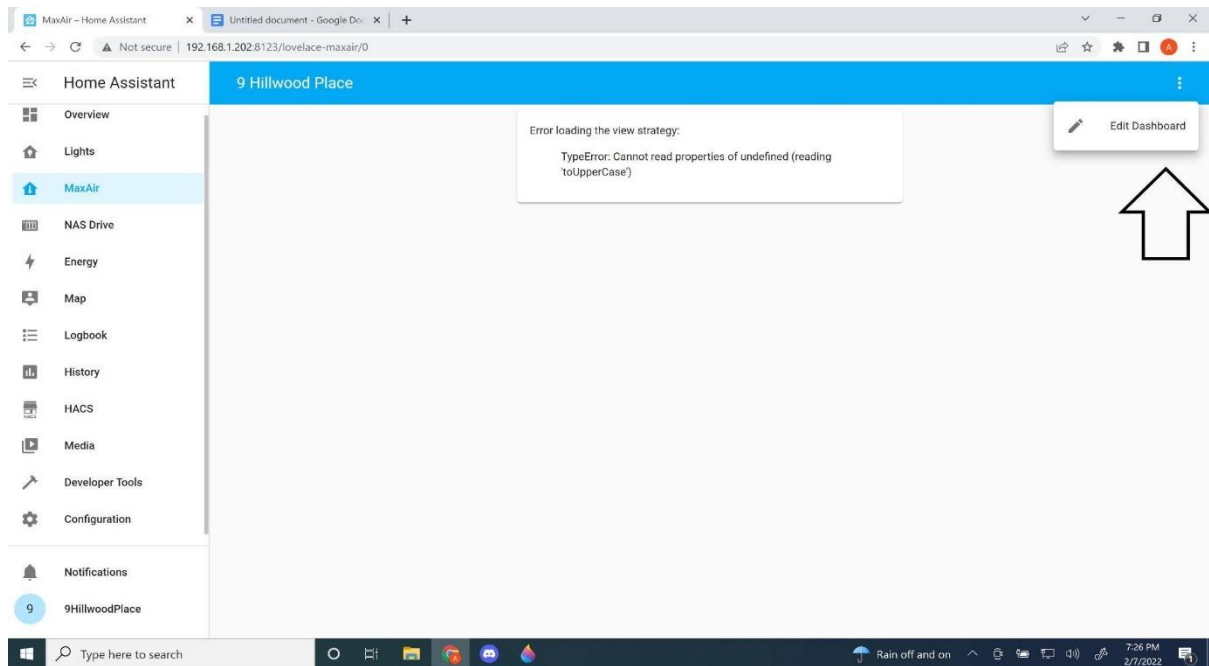
- You will see your newly created dashboard which will appear in the left pane and in the dashboard setting page



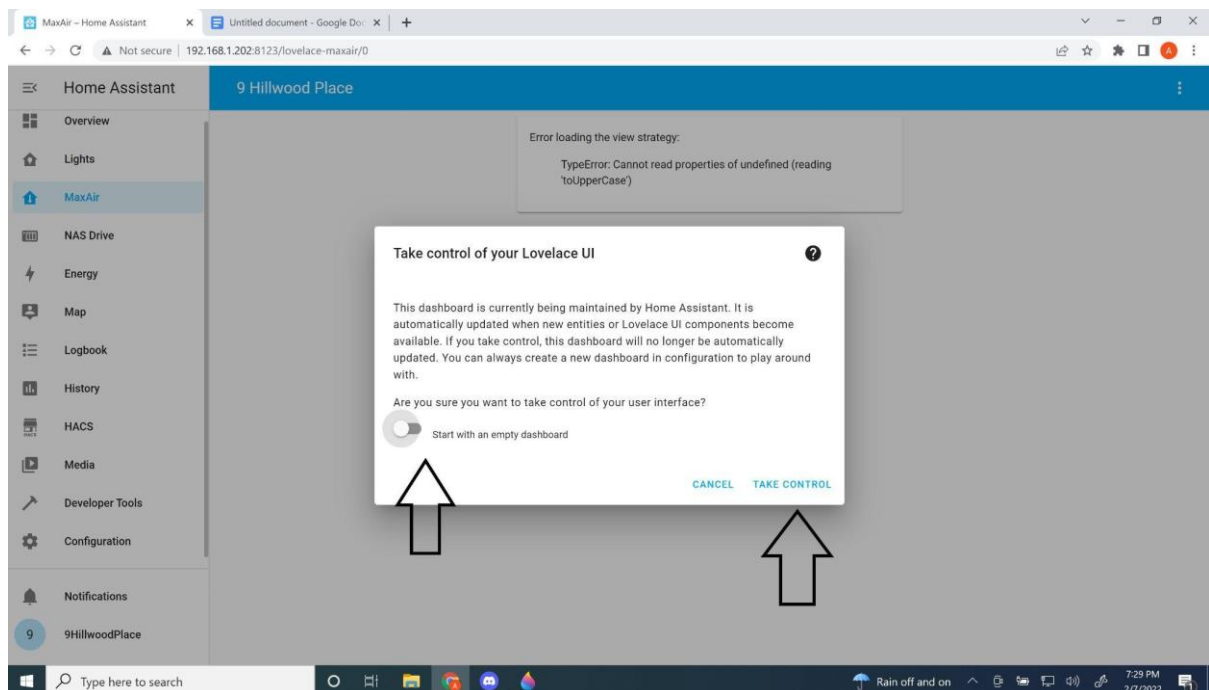
Click open



- Click the 3 dots, then click edit dashboard



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

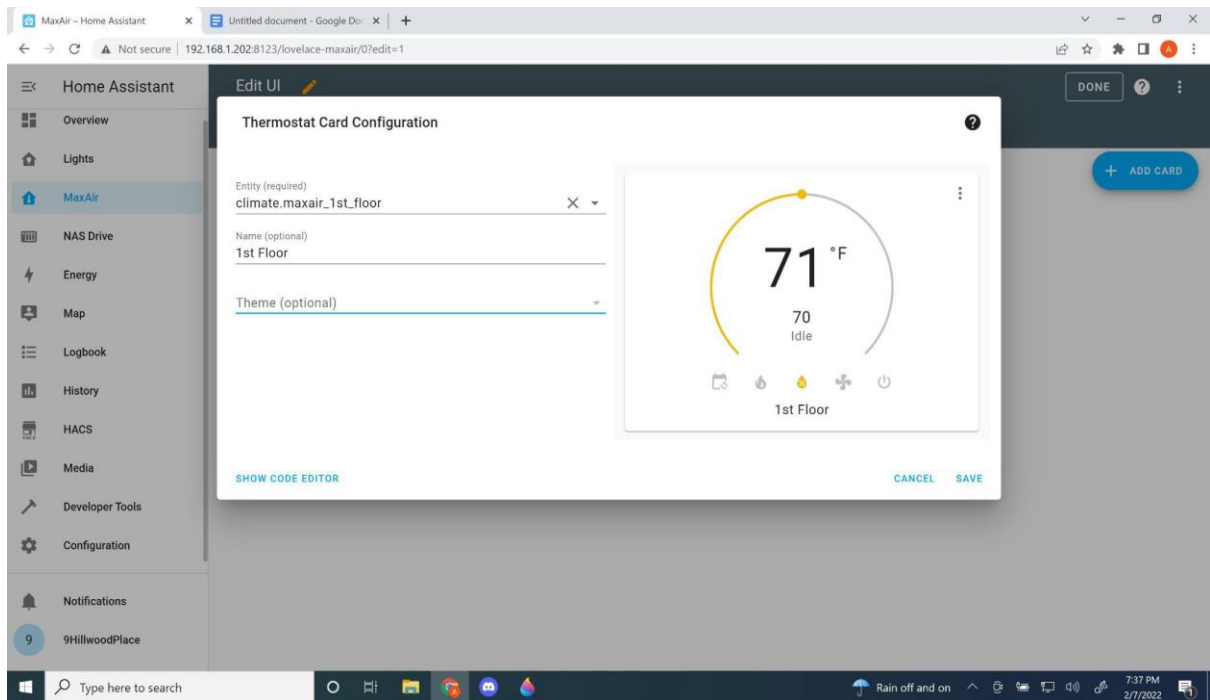


- 
- The screenshot shows the Home Assistant web interface. On the left, the sidebar lists various integrations: Overview, Lights, MaxAir (highlighted), NAS Drive, Energy, Map, Logbook, History, HACS, Media, Developer Tools, and Configuration. At the bottom of the sidebar, there are notifications and a link to '9HillwoodPlace'. The main content area is titled 'Edit UI' and features a 'HOME' button and an 'ADD CARD' button. A large white arrow points to the 'ADD CARD' button.

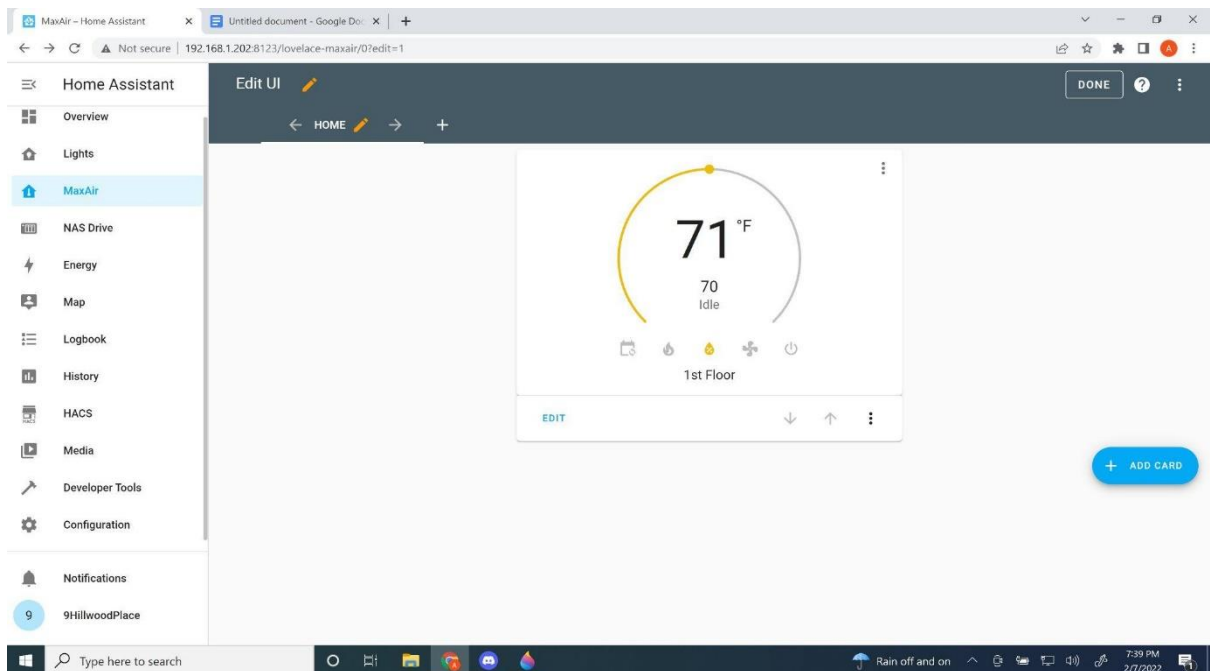
- 
- The screenshot shows the Home Assistant web interface. On the left is a dark sidebar with a navigation menu. The main area is a light gray dialog box titled "Which card would you like to add to your 'Home' view?". The dialog has two tabs: "BY CARD" (selected) and "BY ENTITY". Below the tabs is a grid of six card options. A large white arrow points to the "Thermostat" card. The "Thermostat" card shows a temperature of 71°F. The "Plant Status" card has a description: "The Plant Status card is for all the lovely botanists out there." The "Weather Forecast" card shows a forecast for "Cloudy" with a temperature of 36.4°F. The "Conditional" card has a description: "The Conditional card displays another card based on entity states." At the bottom right of the dialog is a "CANCEL" button. The top of the browser window shows the address bar with the URL "192.168.1.202:8123/lovelace-maxair/0/edit=1". The bottom of the image shows a Windows taskbar with the time 7:34 PM and date 2/7/2022.
- MaxAir - Home Assistant
- Untitled document - Google Do...
- Home Assistant
- Overview
- Lights
- MaxAir
- NAS Drive
- Energy
- Map
- Logbook
- History
- HACS
- Media
- Developer Tools
- Configuration
- Notifications
- 9 HillwoodPlace
- Which card would you like to add to your "Home" view?
- BY CARD
- BY ENTITY
- Plant Status
- Sensor
- Thermostat
- Weather Forecast
- Area
- Conditional
- Plant Status
- The Plant Status card is for all the lovely botanists out there.
- Sensor
- SM-T380 Battery Level
- 36 %
- Thermostat
- 71 °F
- 70 °F
- MaxAir 1st Floor
- Weather Forecast
- Cloudy
- 36.4 °F
- 7:00 PM 8:00 PM 9:00 PM 10:00 PM 11:00 PM
- Area
- Conditional
- The Conditional card displays another card based on entity states.
- DONE
- + ADD CARD
- CANCEL
- Type here to search
- Rain off and on
- 7:34 PM 2/7/2022



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

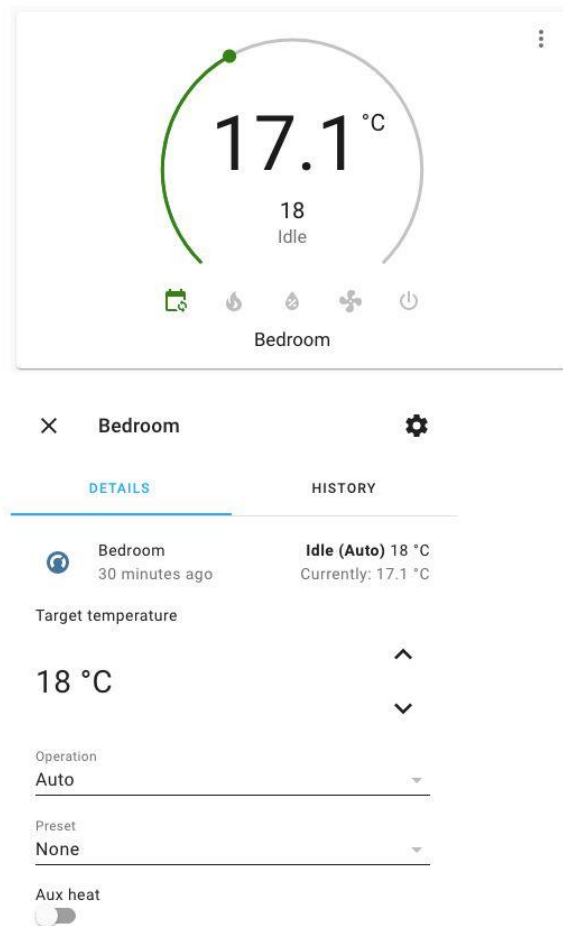


- Continue to click add card until you have added all of your zones.



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

### MQTT/Mosquitto Thermostat



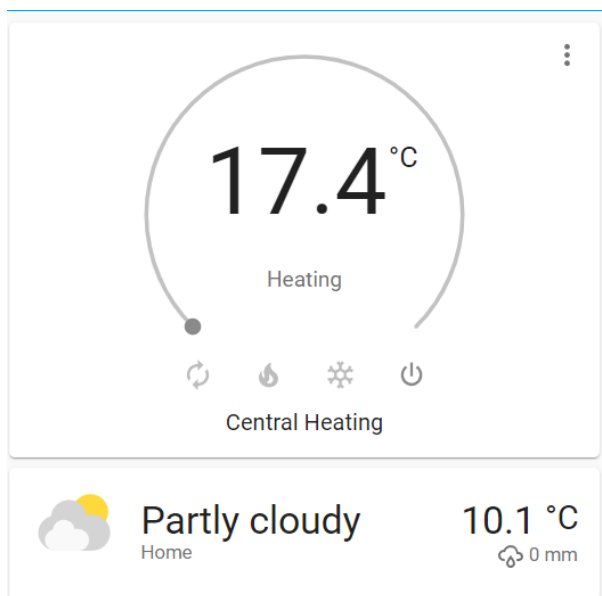
Unfortunately, the climate entity in Home Assistant supports only the following operations: off, auto, heat, cool, fan only and dry. When MaxAir is operating in boiler mode the Home Assistant operations are mapped as follow:

- 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