

Home Assistant Weather Alerts, Humidifier

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Previously ...



- Khalid: IoT and Microcontrollers (Oct 2018)
 - MicroPython, MQTT, Home Assistant
- Tim Laurence (Apr 2024)
 - Sensors: Presence, Humidity
- Khalid: Indoor Climate (Nov 2024)
 - Humidity, CO2, VOC, Radon
 - InfluxDB for data storage
 - Grafana for visualization





Previously ...



- Khalid: Weather (Feb 2025)
 - Weather Stations
 - RTL-SDR and rtl_433
 - Lightning strikes
 - WeeWX





Agenda



- Home Assistant Automations
 - Weather Statements, Watches, Alerts
- AppDaemon
 - Weather Forecast
- Tasmota
 - Humidifier Control





Automations



- Tell HA to perform certain actions, when certain conditions occur
- Usually contain the following
 - Trigger
 - e.g. sensor is ON, or above X
 - It is 8:20 am
 - Conditions (optional)
 - e.g. weekdays
 - Actions
 - e.g. turn on cooling





Automations (cont'd)



- Examples:
- Turn on light when door is opened
- When a weather warning/watch is issued
 - Email, with relevant info
- When a smoke sensor detects smoke
 - Text to speech
 - Play siren
- Sensor has a Battery Low condition
 - Send email





Automations (cont'd)



- Can be written in YAML format
 - **config/automations.yaml**
- Or can be TTW: “Through The Web”
- Templating (optional)
 - Uses Jinja2 (used in Ansible)
 - With added HA extensions





Automations (cont'd)



When ?

A trigger is a specific event happening in or around your home, for example: 'When the sun sets'. Any trigger added here will start your automation.

+ Add trigger

And if (optional) ?

All conditions added here need to be satisfied for the automation to run. A condition can be satisfied or not at any given time, for example: 'If khalid is home'. You can use building blocks to create more complex conditions.

+ Add condition

+ Add building block

Then do ?

All actions added here will be performed in sequence when the automation runs. An action usually controls one of your areas, devices, or entities, for example: 'Turn on the lights'. You can use building blocks to create more complex sequences of actions.

+ Add action

+ Add building block





Weather Warnings



- An example automation
- Goals
 - Monitor Env Canada weather alerts (i.e. warnings, watches, alerts and statements)
 - Get brief description
 - Format email
 - Send it
- Another automation when warning ends





Alert Issued



```
- alias: 'Weather Alert Issued'
```

```
triggers:
```

```
- trigger: numeric_state
```

```
entity_id:
```

- sensor.warnings
- sensor.watches
- sensor.statements
- sensor.advisories

```
# Try to deal with cases of 'unavailable' and 'unknown'
```

```
value_template: >-
```

```
{{ state.state | int() }}
```

```
above: 0
```

```
for:
```

```
minutes: 5
```





Alert Issued (cont'd)



actions:

- action: notify.email

data:

title: |

Weather Alert





Alert Issued (cont'd)



```
message: |
    {%- set w = ' ' -%}

    {%- if states.sensor.warnings.state > (0 | string) -%}
    {%- set w = w + 'Warnings: ' +
        states.sensor.warnings.attributes.alert_1 -%}
    {%- elif states.sensor.watches.state > (0 | string) -%}
    {%- set w = w + 'Watches: ' +
        states.sensor.watches.attributes.alert_1 -%}
    {%- elif
        ...
    {%- endif %}
```





Alert Issued (cont'd)



```
{%- if w != ' ' -%}
```

Weather Alerts in Effect!

```
{{ w }}
```

Check the following links:

https://weather.gc.ca/warnings/report_e.html?onrm71=

```
{%- endif -%}
```





Example Email



- Example of Gust Warning (October 19th)

Weather Alerts in Effect!

Statements: Special Weather Statement

Check the following links:

https://weather.gc.ca/warnings/report_e.html?onrm71=





Alert Ended



```
- alias: 'Weather Alert Ended'
```

```
triggers:
```

```
- trigger: numeric_state
```

```
entity_id:
```

```
- sensor.warnings
```

```
- sensor.watches
```

```
- sensor.statements
```

```
- sensor.advisories
```

```
# Try to deal with cases of 'unavailable' and 'unknown'
```

```
value_template: >=
```

```
  {{ state.state | int() }}
```

```
below: 1
```

```
for:
```

```
minutes: 5
```





Alert Ended (cont'd)



actions:

- action: notify.email

data:

title: |

Weather Alert Ended

message: |

Weather Alert Ended.

Generated {{ now().strftime('%Y-%m-%d %H:%M:%S') }}





AppDaemon



- Home Assistant's Automations work, but writing templates is annoying
- Some brilliant folk wrote a daemon that plugs into HA
 - Monitored execution environment
 - Has its own API
 - Interfaces to Home Assistant's API
 - Loads modules when they change
 - Has configuration file





Demo



- AppDaemon
 - Test application
 - Battery level monitor
 - Weather Forecast





Forecast Email



Outdoor: 3.7C, 93%

} From Weather station

Indoor: 19.9C, 52%

}

Today. Sunny.

}

Fog patches dissipating this morning.

} From Environment Canada

High 14.

}

UV index 4 or moderate.

}

[Weather alerts go here]

} From Environment Canada





Forecast Email (cont'd)

```
09:00: 5C 85% - sunny }  
10:00: 8C 68% - sunny }  
...  
16:00: 14C 43% - sunny } Hourly forecast  
17:00: 13C 46% - partlycloudy } From Met.no  
18:00: 12C 51% - partlycloudy }  
  
25-10-17: 12C 2C - cloudy (1 mm) }  
25-10-18: 20C 9C - partlycloudy } Daily forecast  
25-10-19: 16C 11C - rainy (12 mm) } From Met.no  
25-10-20: 13C 7C - sunny }
```

Generated: 2025-10-16 08:40:00





Whole House Humidifier **2bits**

- Honeywell
- Evaporative Pad
- Installed with furnace





Whole House Humidifier **abits**

- Challenges:
 - No outside temperature input
 - Fogging on windows
 - Humidistat need daily adjustment
- Honeywell Pro Humidistat, with outdoor sensor
 - Requires HVAC pro to install
 - Run a cable to below eaves
 - I already have outdoor sensor!





Tasmota

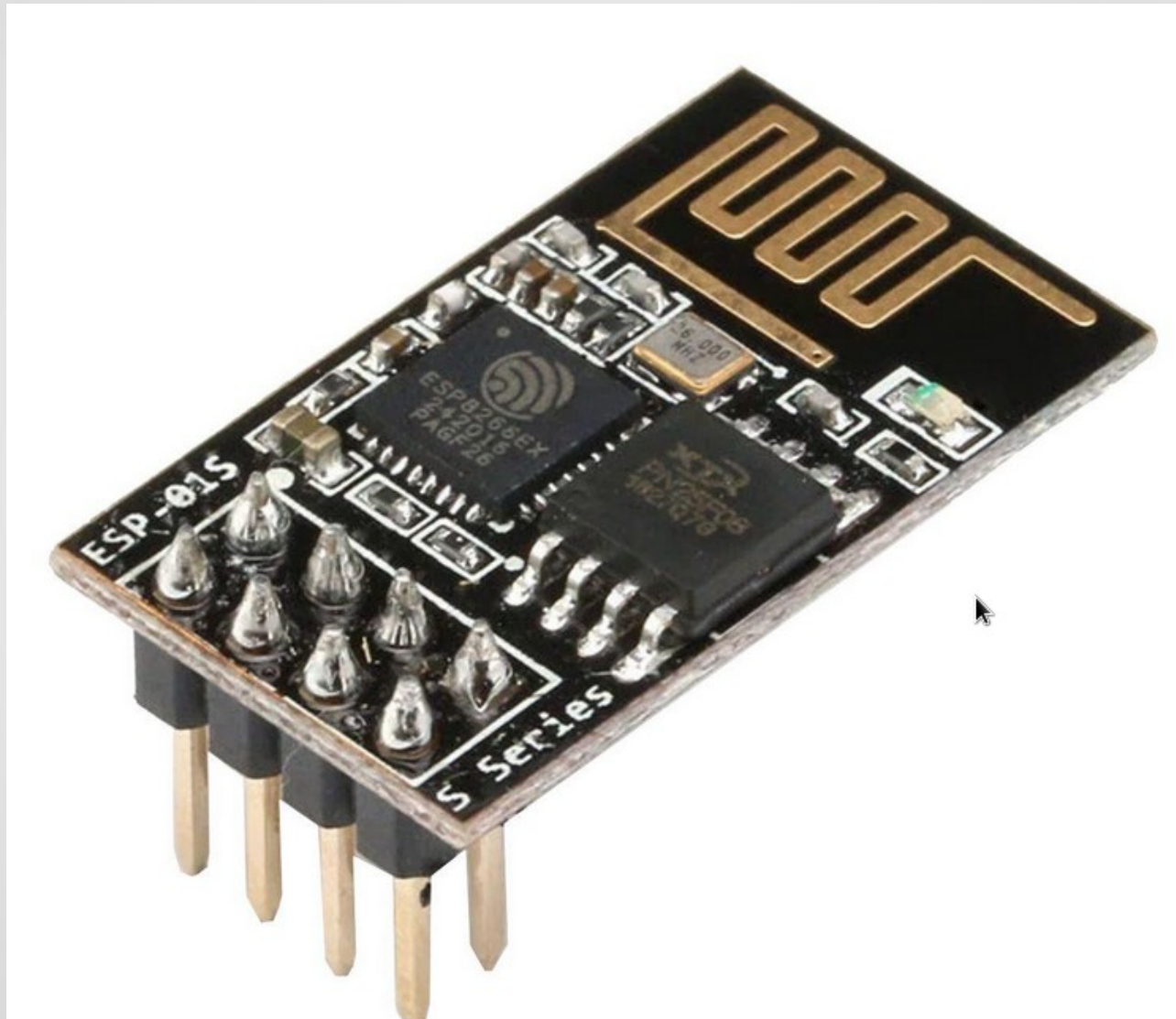


- Prebuilt firmware for WiFi devices
- ESP8266 and ESP32 devices
 - Relays, Sensors
 - Lights, Fans, Heaters
 - Development boards
 - Much more
- Some require soldering
- Others are out of the box
- End goal: sends MQTT telemetry





Tasmota ESP01S





Tasmota Relay V4



ESP-01 Relay V4.0 Relay Board

GLOBAL

ESP8266



Available from:

Amazon.de
Amazon.ca
Aliexpress.com

Manufacturer:

Github.com

Install method:

USB to Serial

GPIO #	Component
GPIO00	Relay_i 1
GPIO01	Led_i 1
GPIO02	None
GPIO03	Button 1
GPIO04	None
GPIO05	None
GPIO09	None
GPIO10	None
GPIO12	None
GPIO13	None
GPIO14	None
GPIO15	None

Configuration

[EDIT ON GITHUB](#)

```
{ "NAME": "ESP01v4", "GPIO": [ 256, 320, 0, 32, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0 ], "FLAG": 0, "BASE": 18 }
```



Flashing Tasmota



- USB to TTL module (\$3 or \$4 ?)





Tasmota vs. ESPHome

- ESPHome talk by Tim Laurence
- They mostly do the same thing
 - Enable custom embedded devices to interface to Home Assistant
- Current momentum is behind ESPHome
- Tasmota: same binary for all devices
- Runtime configuration template customizes it





Humidifier



- Code is somewhat complex
- Relay controls the water valve
- Pulses the water valve (save water)
 - 8 secs on, 8 secs off (by trial & error)
- Matrix of indoor humidity vs outdoor temperature ranges
- Works only November to April
- Exclude water softener hrs (2:00 – 3:30)
- Reversible wiring





Humidifier



```
# Outdoor temperature ranges vs. desired humidity levels for each range
temperature_vs_humidity:

# Temperatures must be contiguous (no range gaps)
- 42, 4.00, -0.99      # Warm spells during winter
- 40, -1.00, -7.99     # Regular wintertime temperature
- 38, -8.00, -14.99    # Colder spell
- 36, -15.00, -40.00   # Extreme cold snap

# These are to reduce water consumption, but still have a wet
# evaporative pad, to ensure moisture.

# They turn the valve on for some seconds, then turn off for some seconds
valve_seconds_on: 8
valve_seconds_off: 8
```





Humidifier



```
# Hours to prevent humidifier from working (because softener may  
# be regenerating)
```

```
softener_exclude_hours: 2,3
```

```
# Which months the humidifier normally runs
```

```
humidifier_include_months: 11,12,1,2,3,4
```





Humidifier



- Considerably less fogging issues
- Less hassle (daily adjusting)
- Better comfort (less dry skin, nostrils)
- Less water consumption than default humidifier





More To Come ...



More Home Assistant presentations?





Conclusion



Questions?

Comments?

