"CurrentForCarbon"
Real-time Demand Response Gaming

Power Monitoring Installation

Install Aeotec V3 Smartthings Hub

- Setup Aeotec SmartThings Hub
  - https://aeotec.freshdesk.com/support/solutions/articles/6000240326-how-to-setup-smart-home-hub

- Enable the Upperbay Edge Drivers for your hub by accepting the invitation below and installing the "Aeotec Fast Electric Meter Gen5" driver:

  Invitation name: Upperbay Edge Drivers
  https://bestow-regional.api.smartthings.com/invite/OzMgOLAYYDM9

- Add the Aeotec home energy meter device to the Smartthings Hub before installing meter into breaker panel
  - From the app, press Add Device
  - Plug in the home energy meter and push and release the Action button on the back of the meter while the yellow light is slowly blinking. Check that the yellow light turns steady.
  - Note: The Home Energy Meter can be reset to default factory settings with ease.
    - 1. Press and hold the Action Button for 10 seconds.
    - 2. If successful, the LED on the HEM should begin to blink slowly.

- Check that the Aeotec home energy meter driver installed on the meter is "Aeotec Fast Electric Meter Gen5"

- The energy meter is now ready to install in the breaker box.

Install Aeotec Home Energy Meter in Breaker Panel
by Clamping on Current Transformers

https://aeotec.freshdesk.com/support/solutions/articles/6000161943-home-energy-meter-gen5-user-guide-

To perform the electrical installation for your Home Energy Meter (HEM), utilize the previous
images to determine the phase version of the HEM and to also illustrate the following steps 3 through 7.

1 . Turn off the home's main electricity breaker and open the main circuit box panel.
2. Connect each clamp to the HEM using the clamp connector and screw them tight.
3. Clip the clamps of the HEM around the incoming electricity cables that connect to the main circuit breaker.
4. Connect AC Wire to the meter using the AC Wire Connector.
5. Insert the HEM's neutral AC Wire into the main circuit breaker's neutral bus terminal.
6. Insert the HEM's live AC Wire into the main circuit breakers' live terminal.
7. Replace the main circuit box panel.
8. Turn the main breaker back on.

It is now time to permanently affix the Home Energy Meter to a surface. Within each meter is a low-frequency
radio antenna that's used for wireless communication. This must be taken into consideration when selecting a
final location for the meter. Thick concrete walls, metals, or motor devices will affect the signal strength of the
controller and the meter.

If the home's circuit box is made of a metal, it is recommended that the Main Body of the meter be installed
outside of the circuit box. Placing the meter inside the circuit box could degrade the quality of the radio signal and
negatively impact its wireless range. To assist with such an installation, each meter is weatherized to the IP44
international standard. This makes it resistant to rain and snow when installed vertically.

To mount or place the Home Energy Meter (HEM).
1 . Remove the backing plate from the back of the HEM.
2. Affix the plate to the selected wall space using the provided screws. The plate should be
installed vertically and aligned so that the wires of the HEM are at the bottom.
3. Attach the HEM to the backing plate.

Diagram of USA Version(2 Phases):
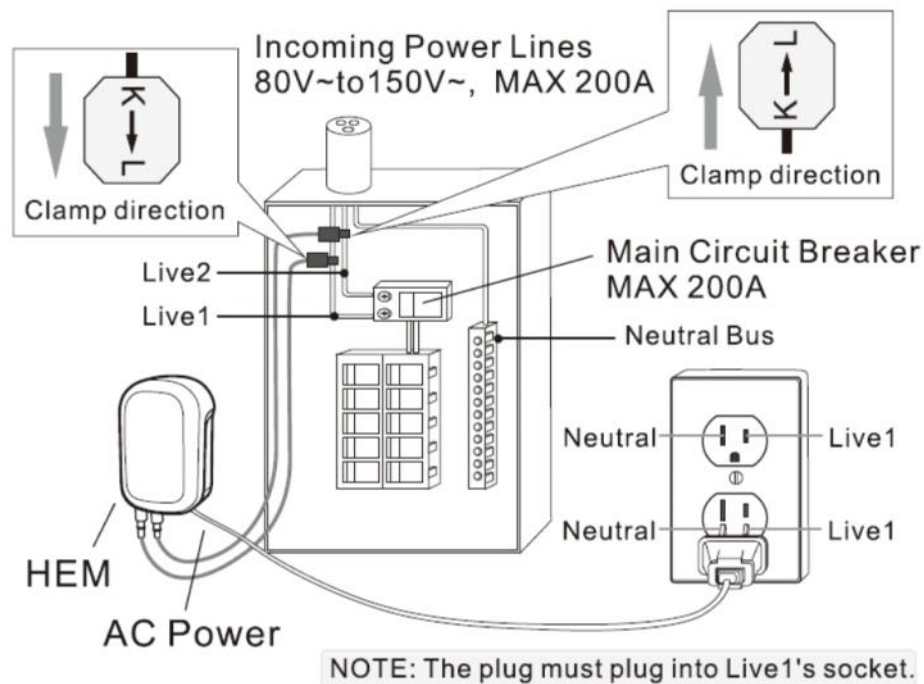
- Check that the power meter data is being displayed in the Smartthings app.
- If so, SUCCESS!

Configure MathWorks ThingSpeak Realtime Cloud Database

- Create free MathWorks ThingSpeak Account
  - https://thingspeak.com/
- Create a New Channel
  - Name = Power Monitor@MyHubName
  - Field1 = PowerMeter.power
- Save Channel ID
- Save Read API Key from "API Keys" tab
- Save Write API Key from "API Keys" tab

Configure SharpTools Rules Engine

Overview

Sharptools (www.sharptools.io) is a subscription ($3/month) service in the SmartThings application ecosystem that provides an enhanced Rules Engine and can communicate with MathWork's ThingSpeak for data trending and optional data analysis using MathWork's MATLAB toolset.

Configuration

- Create a Sharptools account
- Connect Sharptools to the Samsung SmartThings account
- Select Rules Engine and Manage Variables
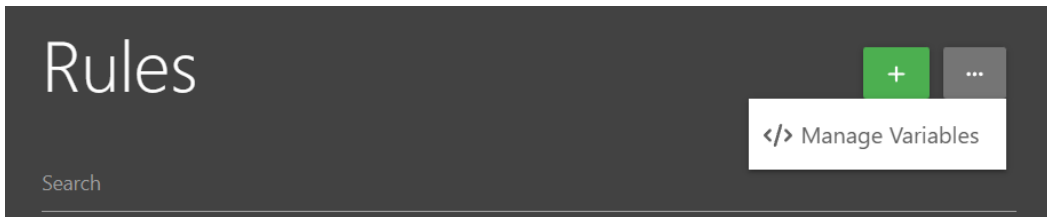
- Create Variables
  - $ChannelId is the ThingSpeak Channel ID
  - $ChannelKey is the ThingsSpeak **Write** API Key
  - $Power holds the current power value from SmartThings

- Create and enable a new rule "Power logger"
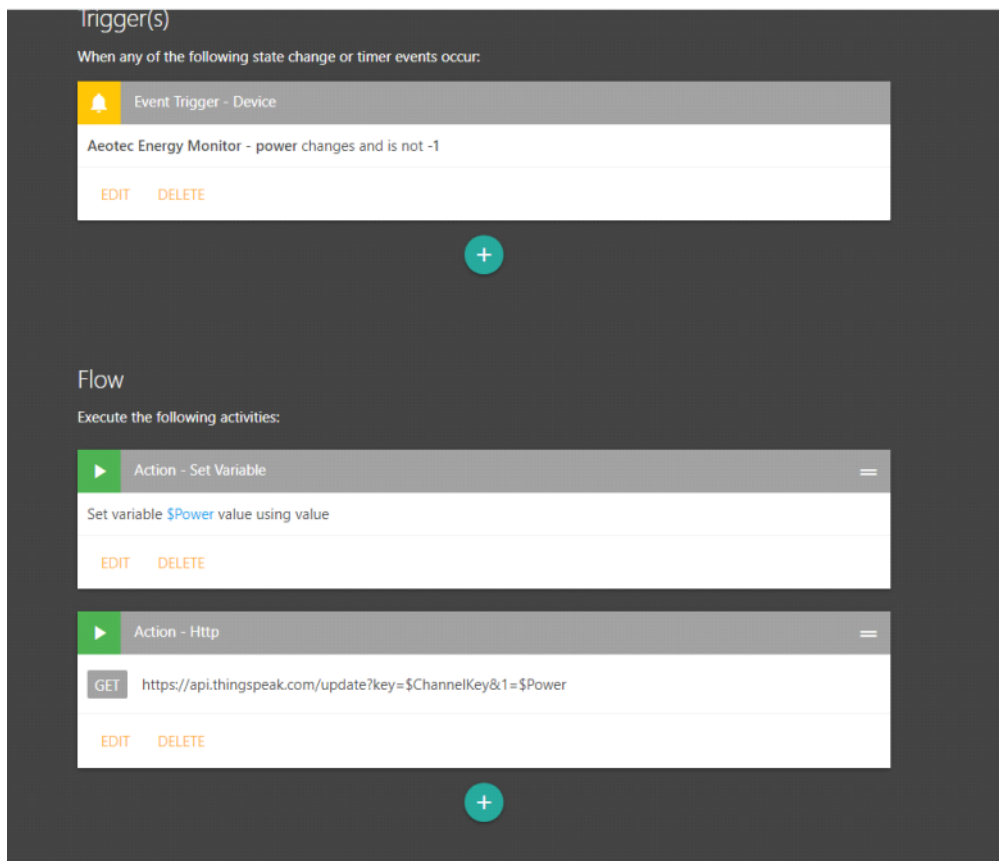
- Log into ThingSpeak and check that power data is updating on the graph.
  - https://thingspeak.com/
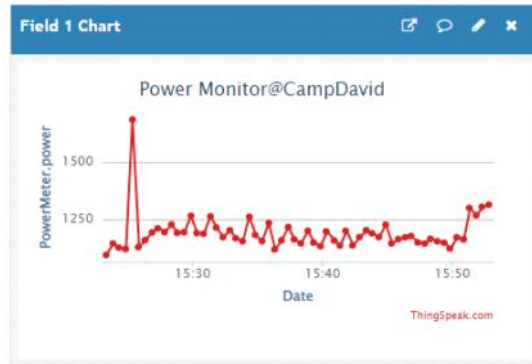
Install the "ThingView Full" by cinetica app on phone

- Add channel using ChannelID, Field=1 and **Read** API Key
- Check that data is being updated on ThingView trend chart

- **Save the Data Connect String**

Installation of the Power Monitoring System is now complete