Microsoft Azure IoT Plant Kit

Quick Start handbook

Thank you for buying the product from Smarthon!

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Introduction

Microsoft Azure IoT Plant Kit

Build it yourself, managed, monitored and controlled on Microsoft Azure IoT Central with cloud computing.

"Microsoft Azure IoT for Smarthon Plant Kit" is the first advanced kit to let your micro:bit connecting to Microsoft Azure cloud! The KIT is developed by Smarthon working with Microsoft and K-Solves. It is an advanced kit set go beyond with Wi-Fi ability! Let's get started to the Real IoT world with cloud computing right now!

Everything you need is provided in the kit, including the bbc micro:bit.

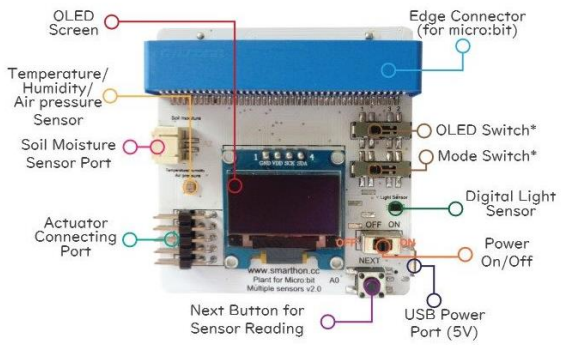
KIT SET INCLUDE

1. BBC micro:bit main board
2. Core cloud main board - Multiple sensors
3. Multiple actuators
4. Connecting wire - 21cm long
5. Soil moisture sensor
6. LED grow light (purple)
7. USB Stand
8. USB Base (For LED grow light)
9. Water pump and pipe
10. Motor fan
11. Motor fan base
12. Humidifier
13. USB (for humidifier)
14. Cardboard
15. USB cable (for micro:bit main board)

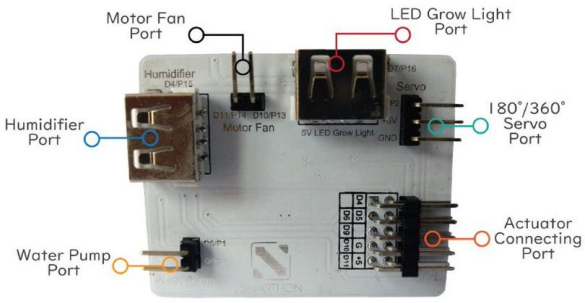
Core Structure diagram

There is a screen, 3v/5v switch and a WIFI module on the shield. The screen is indeed very useful - it shows the information like IP address and the battery status.

Multiple Sensors for plant (WiFi)



Multiple Actuators for plant (WiFi)



Main Features

- Wi-Fi cloud module
- 128x64 OLED screen
- Micro USB Direct energy supply
- 3 data logging mode (SD card, Wi-Fi, USB)
- Direct reading mode with NEXT Button
- ALL-IN-ONE Sensors board
- ALL-IN-ONE Actuators board
- Sensors and actuators focusing on plant growth
- Well cardboard wrapped
- Microsoft Makecode platform

Key functions and benefits

- Experience REAL IoT Platform to monitor and manage all your Internet of Things (IoT) assets

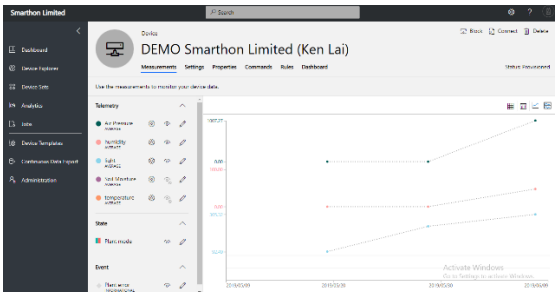
- Get Access to Wi-Fi and connect to the popular Microsoft azure cloud (Microsoft IoT Central)

- Get the online fancy data dashboard for data analysis and nice presentation

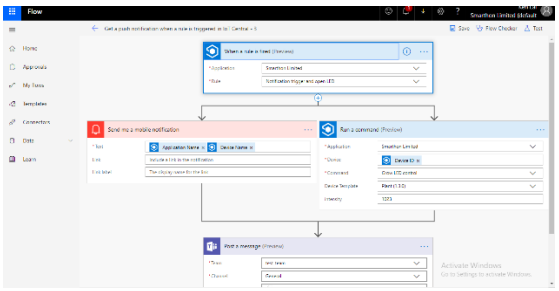
- Get controlled on the plant from the cloud directly (Bi-directional)

- Get Access on powerful cloud computing tool Microsoft Flow

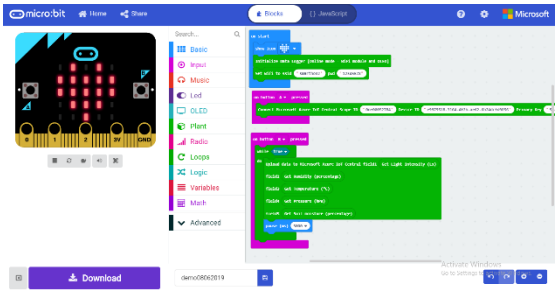
- Get Access on all Microsoft IoT services such as Microsoft Team, office and all others including AI features like vision API



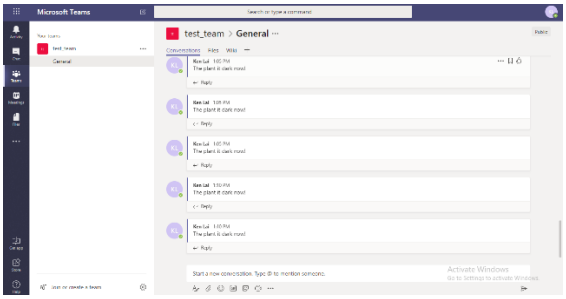
Data Dashboard



Microsoft Flow (Cloud computing)



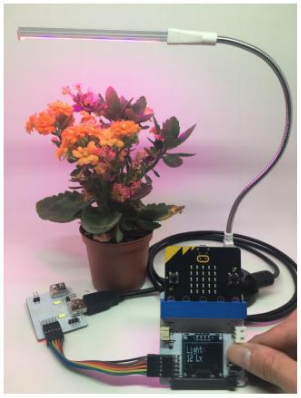
Microbit PXT platform



Microsoft TEAM

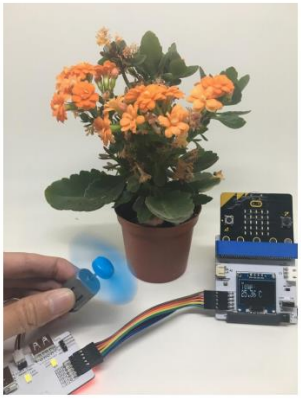
Involved projects focusing on plant

- There are 4 main projects student can do on!
  1. Smart LED grow light
  2. Automatic irrigation (watering)
  3. Smart Environment (temperature control)
  4. Automatic humidity control

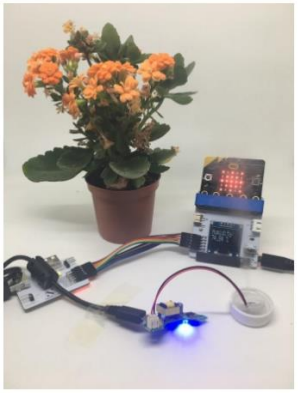


Smart LED grow light

Automatic irrigation



Smart Environment



Automatic humidity

- There are 4 different LED grow light color for you! However, the default color one is purple only. If you need other color, you need to buy and contact us.

Purple

Blue

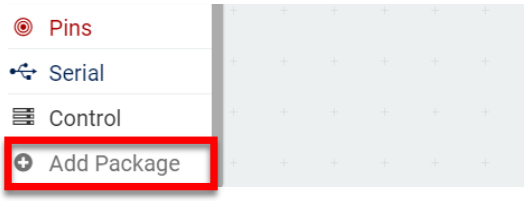
Green

Red

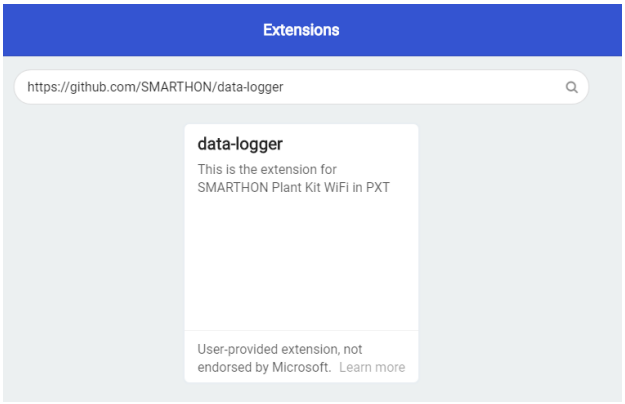
How to program Kit on micro:bit

- To program Smarthon modules with micro:bit, you will need to add the Smarthon PXT packages to your makecode environment.

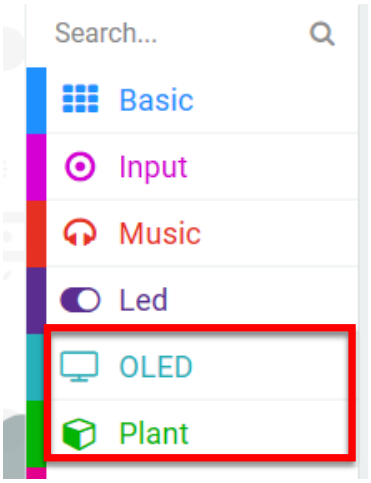
STEP 1: Find the “Add Package” option at the bottom.



STEP 2. Enter the name “https://github.com/SMARTHON/data-logger”.



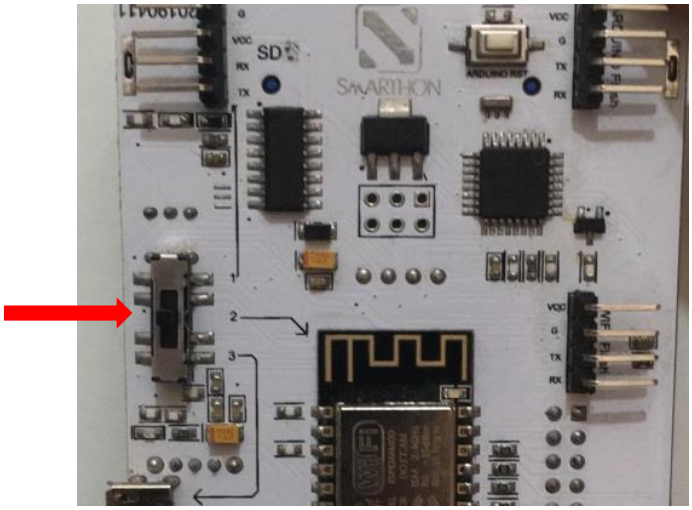
STEP 3. You can find 2 more tabs that are “OLED” and “Plant”.



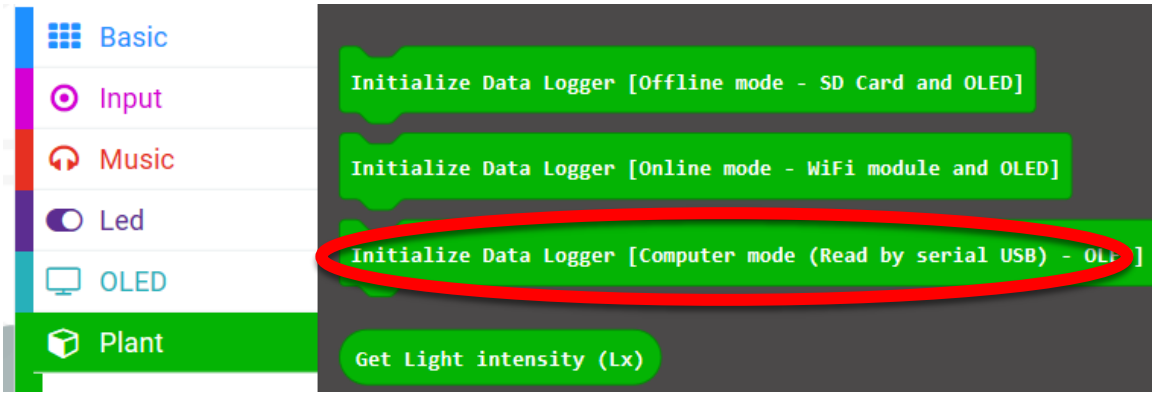
FIRST STEP: Connect Wi-Fi

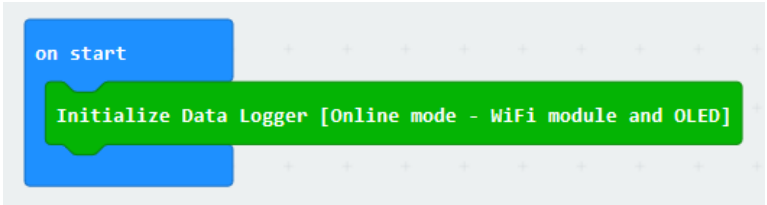
Before we go, we have to initialize the Kit.

STEP 0: Switch to Online Mode – WIFI (Mode 2)



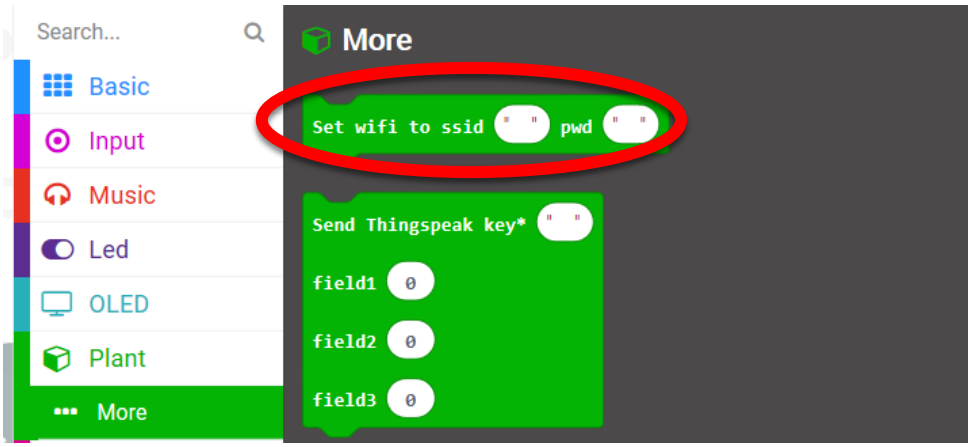
STEP 1: Go to Plant -> Initialize Muselab Wi-Fi Booster and OLED

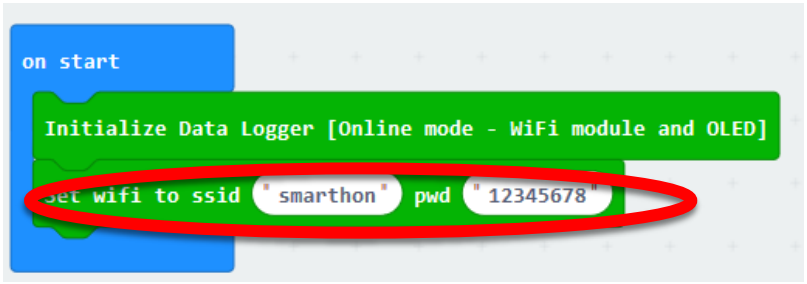




If you open the shield, the screen will show “SMARTOHN WIFI v1.0” and “Online mode” afterward.

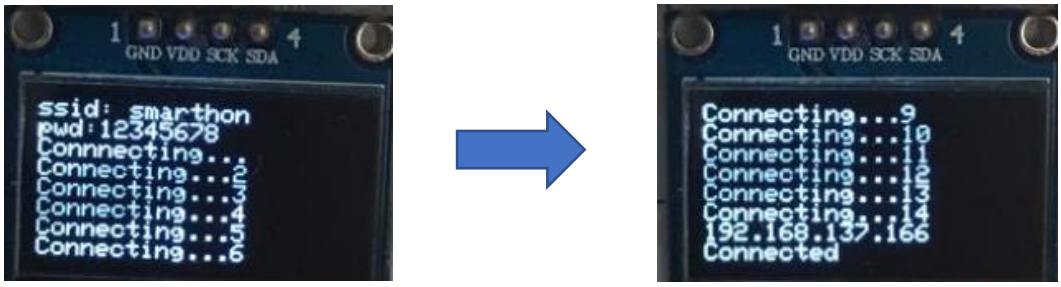
STEP 2: Find the Set wifi to ssid pwd from “More” tab.





Result:

- **When it is connected, the IP address will be shown.**

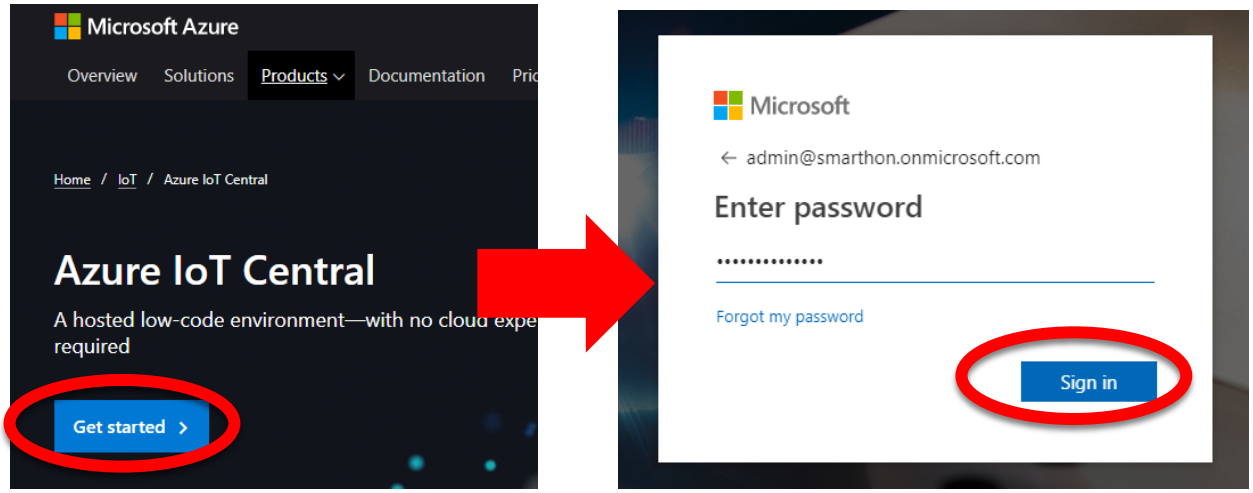


1. Get started on Microsoft Azure IoT Central

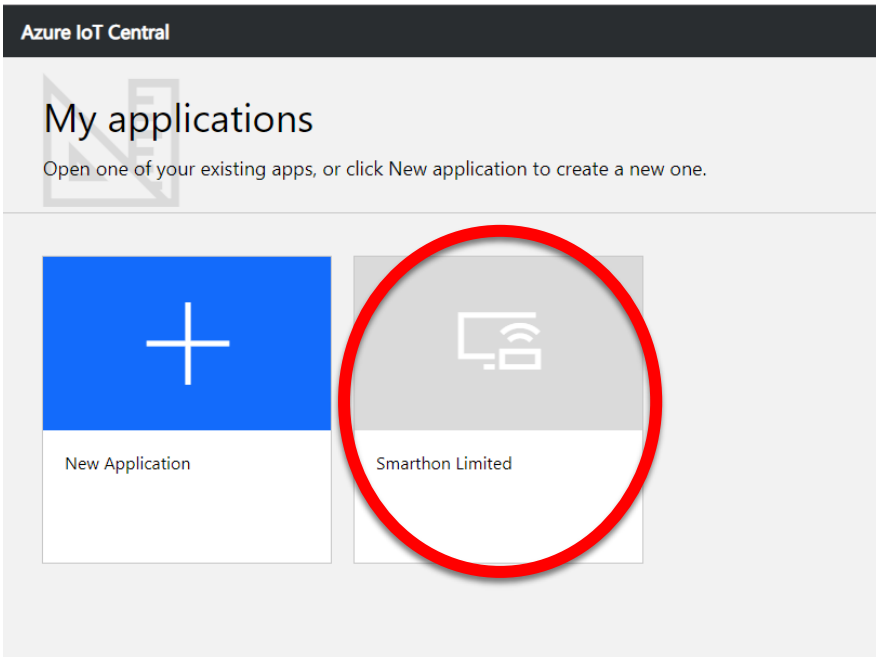
1.1 Login your account

STEP 1: Go to the website and login with your account.

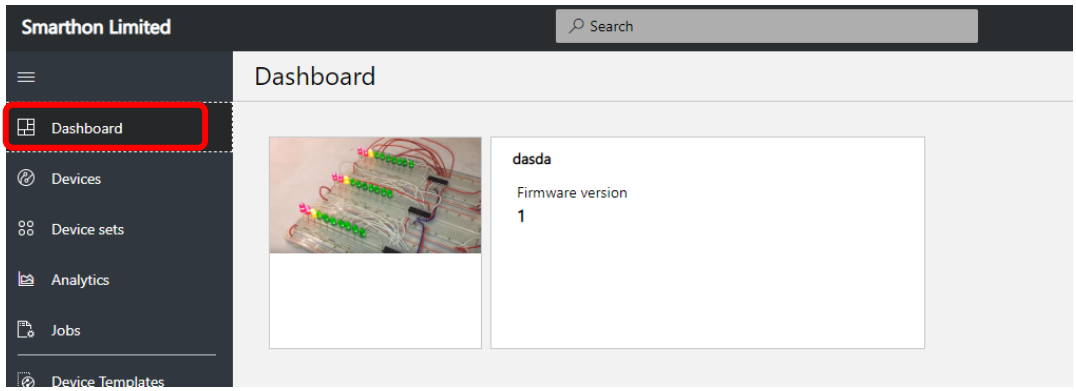
https://azure.microsoft.com/en-in/services/iot-central/



STEP 2: Select the application



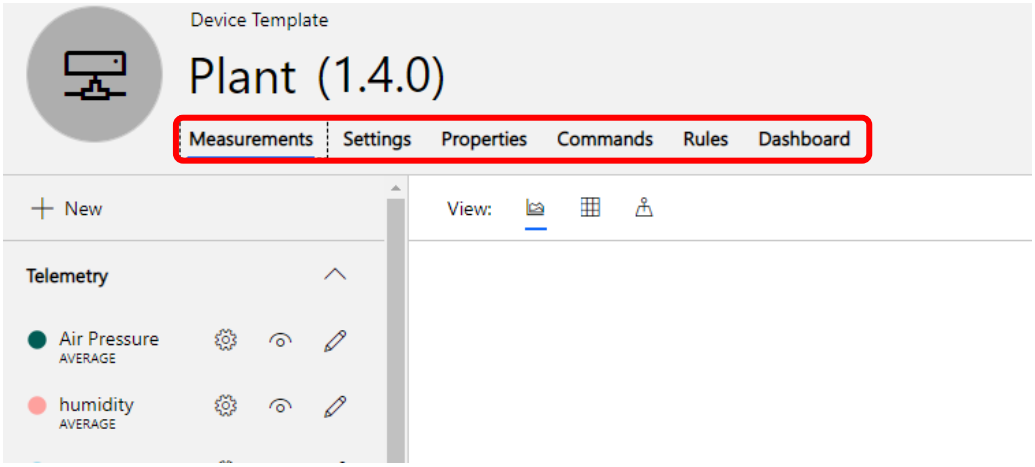
STEP 3: You will go to the Dashboard home page. There are some useful information on the dashboard.



1.2 Device Template

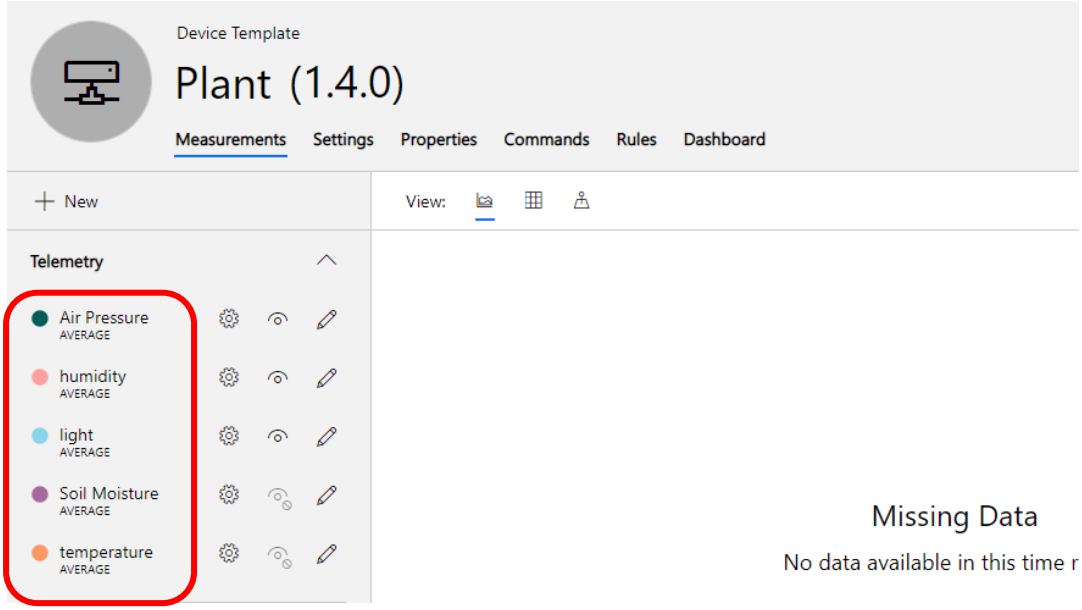
STEP 1: Go to the “Device templates” on left menu, you will see there is a device template for the Smarthon Plant Kit.

STEP 2: After clicked it, you will see there are 6 tabs on the upper part. They are “Measurements”, “Settings”, “Properties”, “Commands”, “Rules” and “Dashboard”.



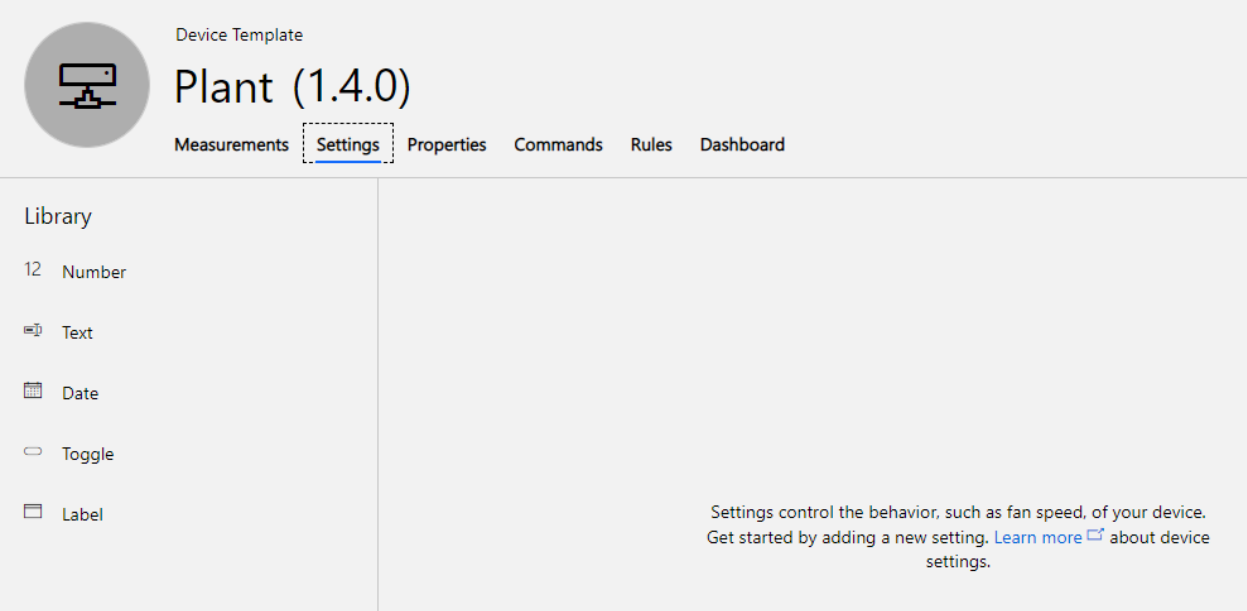
(i) Measurement

For one plant, there are 5 telemetry for the kit to upload data here. It is used for showing the data on chart. The telemetries are **(1) air pressure, (2) humidity, (3) light intensity, (4) soil moisture and (5) temperature**.



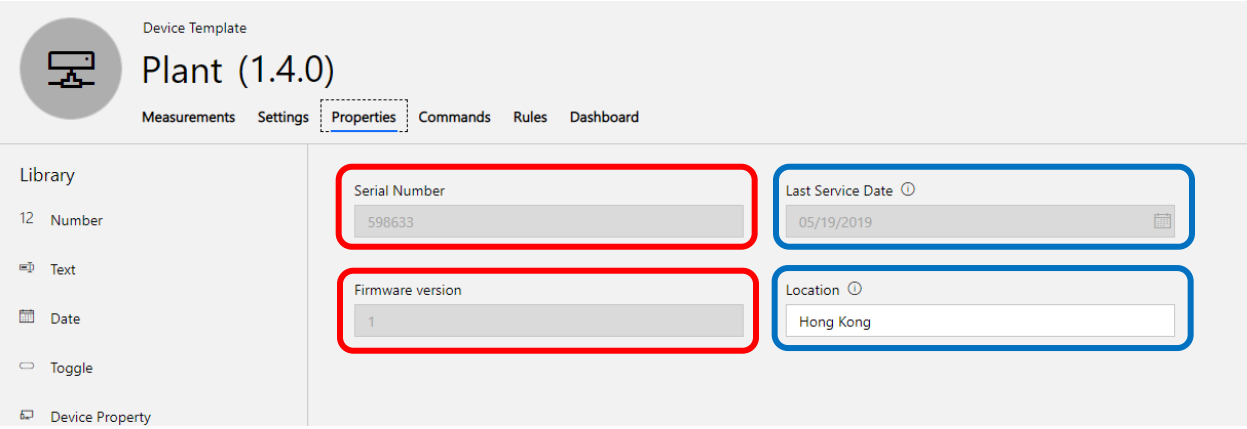
(ii) Settings

There are no settings here.



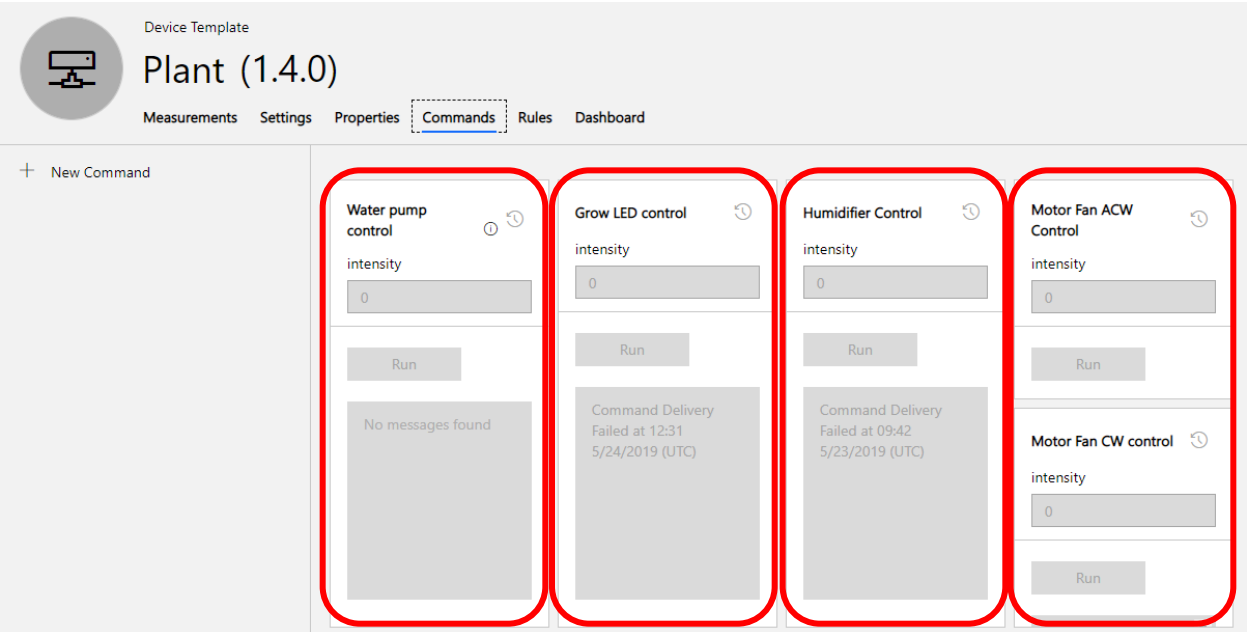
(ii) Properties

The properties of each kit are different. The **serial number** and **firmware version** of the kit will be shown here once the kit is connected to the cloud. For the **Last Service Date** and **Location**, those can be edited by the user.



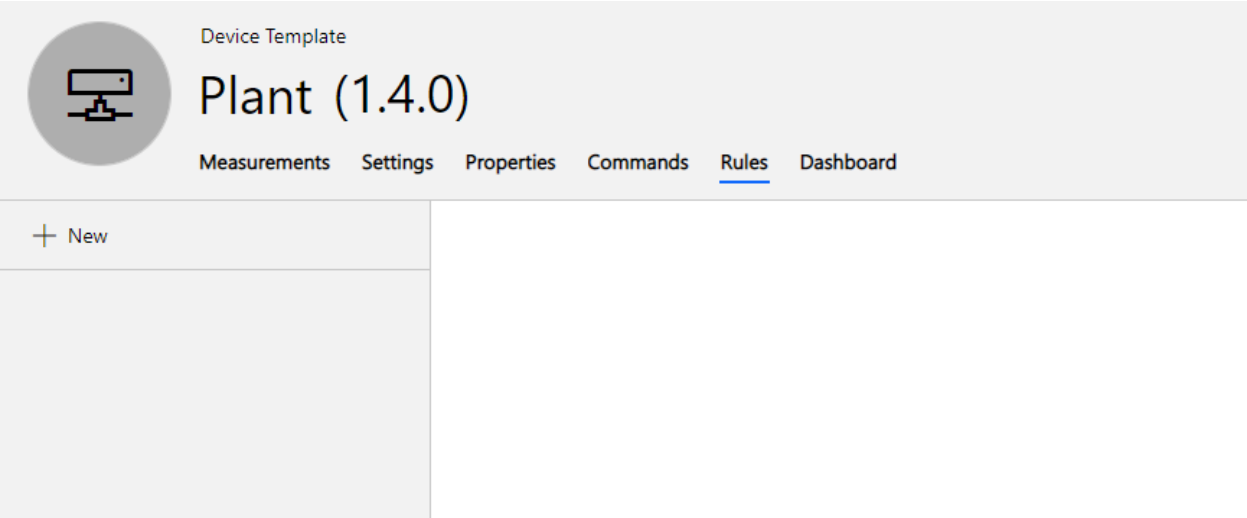
(iv) Commands

For the commands, it is used to control the output of the Kit. The **(1) water pump, (2) Grow LED Light, (3) Humidifier and (4) Motor** can be controlled. All can be controlled in different intensity.



(v) Rules

This is the rules page. It is used to set the general rule for all device you will create later. We will cover this function later.



(iv) Dashboard

This is the dashboard for user to show data in different manner. For example, the upper 5 value is "**Last Known Value**" of the telemetry. And the downside "light chart", it is the "**Line Chart**".