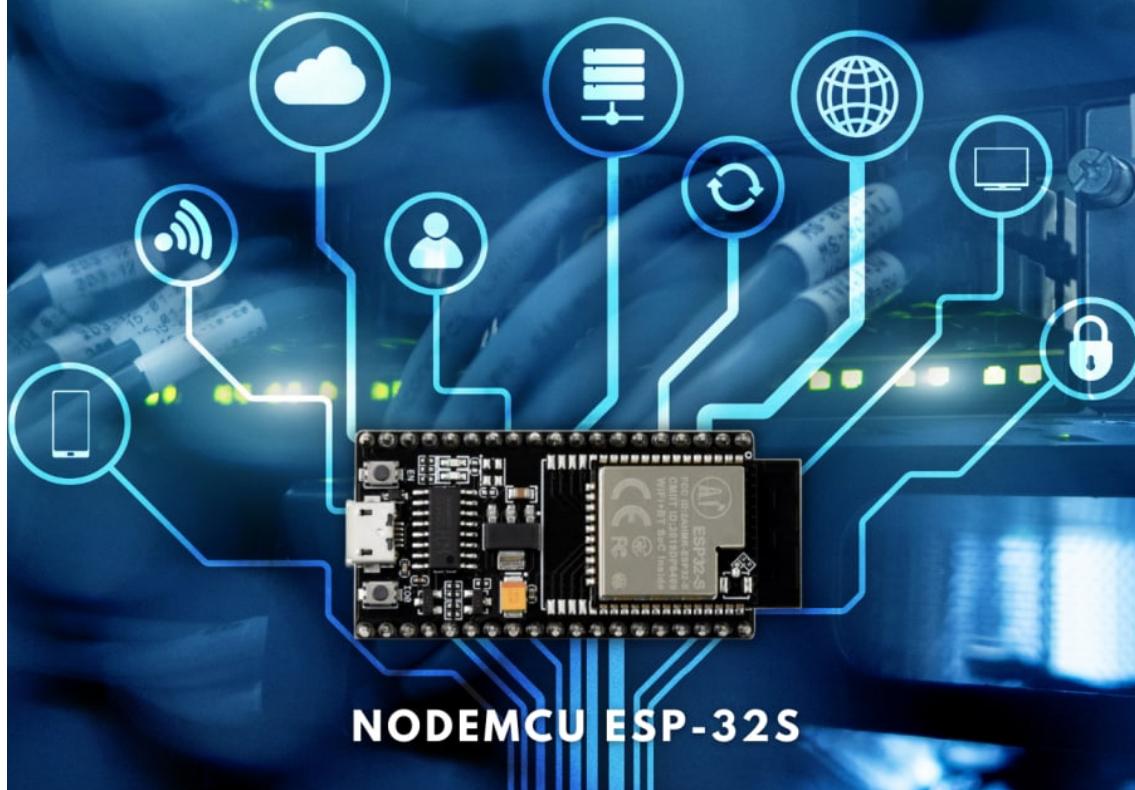


MANUAL GUIDE

IOT KIT



ViTrox®

Cytron
Technologies

V-ONE®

Part 1

V-One Platform

Account Registration

Hello Maker! Congrats on your first step in exploring the Internet of Things (IoT) world. If this is your first time doing an IoT project, don't worry! You will successfully create a few cool IoT projects at the end of this manual guide.

There are two main components required to run an IoT project. The first one is of course the hardware components and the other one is an IoT platform. You don't need to worry about the hardware part since everything is provided in the IoT kit box. For this kit, you will be using V-ONE for the IoT platform which has been designed by a famous electronic company in Malaysia, ViTrox. This Manual Guide will help you explore this interesting V-ONE platform with the new features released in 2022, the AloT module.

For those who prefer to watch a video instead of reading this manual guide, you can watch the video below that summarizes Part 1 and Part 2 of this manual guide. For details of each step, you can always come back here and refer to this manual guide.

Tutorial Video (Part 1 & Part 2)

[Get Started With NodeMCU-ESP32S IoT Kit - Simplifying IoT with V-ONE](#)

First and foremost, you will need to create an account for V-ONE to get started. Once you open the IoT kit box, there will be a registration card for the V-ONE platform. Copy the URL link into a browser using your laptop or you can just simply scan the QR code with your phone.

- <https://v-one.my/subscribe/free>



There are a few simple questions that need to be answered. Once you have answered both questions, click “**Next**”.

The screenshot shows a “Subscribe” page for V-ONE. At the top right, there is a navigation bar with links: Why V-ONE, IoT Cloud, Partners, Subscribe, V-Library, Support, and a Login button. Below the navigation bar, the page title is “Subscribe”. A sub-section titled “my V-ONE” contains a message: “Congratulations on your first journey with V-ONE. Let us understand your needs, while filling the form takes only a few minutes to complete.” To the right of this, under the heading “Help us to understand you better”, there are two dropdown menus: “1. Your current role:” with “Student” selected, and “2. How will you be using V-ONE?” with “Self-learning” selected. At the bottom of the page are “Back” and “Next” buttons.

Fill in the required information and click “**Next**” to proceed.

Note: Please remember the Email and Password here since it will be used to login into your account later.

The screenshot shows the continuation of the “Subscribe” process. The top navigation bar and “Subscribe” title remain the same. The “my V-ONE” section is identical to the previous step. To the right, under the heading “Tell us about yourself”, there are four input fields arranged in a grid: “Student Email” and “Contact Number” in the top row, and “First Name” and “Last Name” in the bottom row. Below this, under “Your School”, there are three input fields: “School Name”, “Country”, and “Promo Code (Optional)”. At the bottom are “Back” and “Next” buttons.

For the last step, you must agree to the V-ONE Software License Agreement. Read all the agreements and scroll down to the bottom of the page.

V-ONE®
Why V-ONE ▾
AIoT Cloud
Partners
Subscribe
V-Library ▾
Support ▾
[Login](#)

Subscribe

Step 3 - Agree to V-ONE Software Licence Agreement

my V-ONE

Read and agree to our V-ONE Software Licence Agreement

V-ONE SOFTWARE LICENCE AGREEMENT

This V-ONE Software Licence Agreement ("Agreement") is hereby entered into between you, as an individual or an entity ("Customer") and ViTrox Technologies Sdn Bhd (Company No. 507043-P), a subsidiary of ViTrox Corporation Berhad (Company No. 649966-K). ViTrox and the Customer shall collectively be referred to as ("Parties") and individually as ("Party"). This Agreement governs access to and use of the services provided by ViTrox Technologies Sdn Bhd ("ViTrox"). By clicking "I Agree", signing the contract for the Services or for use of the Services, downloading the Software or otherwise using the Software or Services, the Customer agrees to be bound by the terms and conditions of this Agreement.

Terms and Conditions

1. Definitions

Account Data	means the account and contact information submitted to ViTrox by the Customer for use of the Services
Admin Account	means the administrative account provided to the Customer by ViTrox for the purpose of administering the Services
Confidential Information	means all information or data disclosed (whether in writing, orally or by any other means) to the Customer by ViTrox or by a third party on behalf of ViTrox and shall include, but shall not be limited to, ViTrox's products, customers, prospective customers (including lists of customers and prospective customers), methods of operation, engineering methods and processes (including any information which may be obtained by the Customer by reverse engineering, decompiling or examining any Confidential Information provided by ViTrox), programs and databases, patents and designs, billing rates, billing

If you have no problem with the agreement, tick the box "I agree to the V-ONE Software License Agreement" and click "**Submit**".

V-ONE®
Why V-ONE ▾
AIoT Cloud
Partners
Subscribe
V-Library ▾
Support ▾
[Login](#)

15.7 Assignment. The Customer may not assign or transfer this Agreement or any rights or obligations under this Agreement without the prior written consent of ViTrox. ViTrox may assign, transfer, subcontract or novate this Agreement or any rights or obligations under this Agreement to an affiliate or in connection with any merger, acquisition, corporate reorganization or sale of all or substantially all of its assets without providing notice.

15.8 Successors bound. This Agreement shall bind the personal representatives, heirs, successors-in-title and assigns of the Customer and ViTrox respectively.

15.9 Use of data. The Customer agrees that ViTrox may collect and use technical data and related information—including but not limited to technical information about the Customer's device, system and application software, and peripherals—that is gathered periodically to facilitate the provision of software updates, product support, and other services to the Customer (if any) related to the Software and the Services. The Customer agrees that ViTrox may use this information, as long as it is in a form that does not personally identify the Customer, to improve its products or to provide services or technologies to the Customer.

15.10 Dispute resolution.

- (a) Each Party agrees to firstly resolve any dispute through amicable negotiation by contacting the other party by sending notice in accordance with Clause 15.4. If such dispute remains unresolved within thirty (30) days from the date of receipt of notice, the Customer or ViTrox may bring a formal proceeding in accordance with Clause 15.10(b).
- (b) Subject to Clause 15.10(a), any dispute, controversy or claim arising out of or relating to this Agreement, or the breach, termination or invalidity thereof, shall be settled by arbitration, Asian International Arbitration Centre (Malaysia) ("AIAC") held in Kuala Lumpur in accordance with the AIAC Arbitration Rules 2018 or such other prevailing rules practised or adopted by the AIAC. The language of arbitration shall be in English and the arbitral award shall be final and binding on both parties.
- (c) Either Party may bring a civil action against the other for injunctive relief to stop the unauthorized use or abuse of the Services or infringement of Intellectual Property Rights or Confidentiality obligations without first engaging in the informal dispute notice process under Clause 15.10(a).

15.11 Survival of terms. Clauses 5 (Fees), 6 (Intellectual Property Rights), 7 (Confidentiality), 10 (Indemnity), 13 (Limitation of liability) and 15 (Other Provisions) shall survive expiry or termination of this Agreement.

I agree to the V-ONE Software License Agreement.

[Back](#)
[Submit](#)

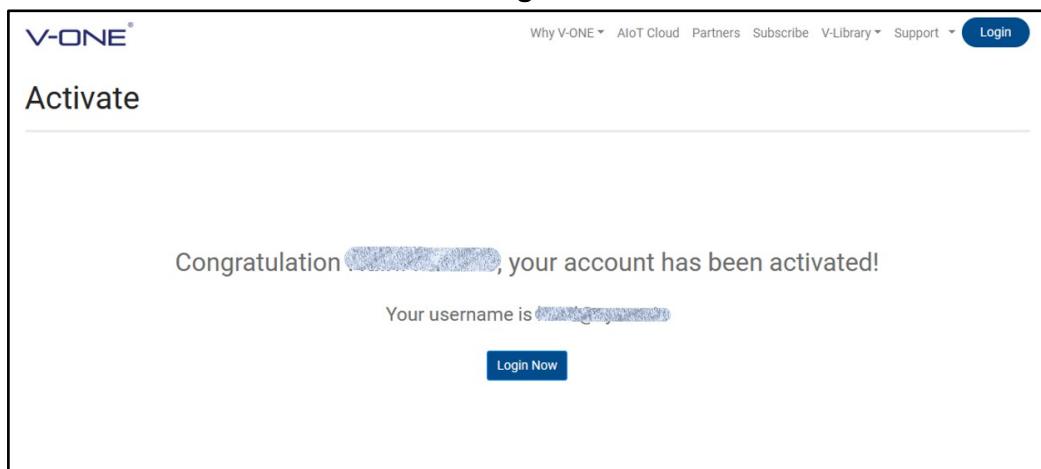
There you go, FREE V-ONE account for you! Please check your email to verify and activate your account.

The screenshot shows a "Subscribe" step 4 - Thank you page. At the top, there's a navigation bar with links: Why V-ONE, IoT Cloud, Partners, Subscribe, V-Library, Support, and a Login button. Below the navigation, the word "Subscribe" is displayed. To the right, it says "Step 4 - Thank you". The main content area contains the message "Thank you for subscription!" followed by "Please check your email to verify and activate your account." At the bottom, there is a link "Go back to home page".

Open an email from V-ONE Admin, and click the “Activate Now” button to proceed.

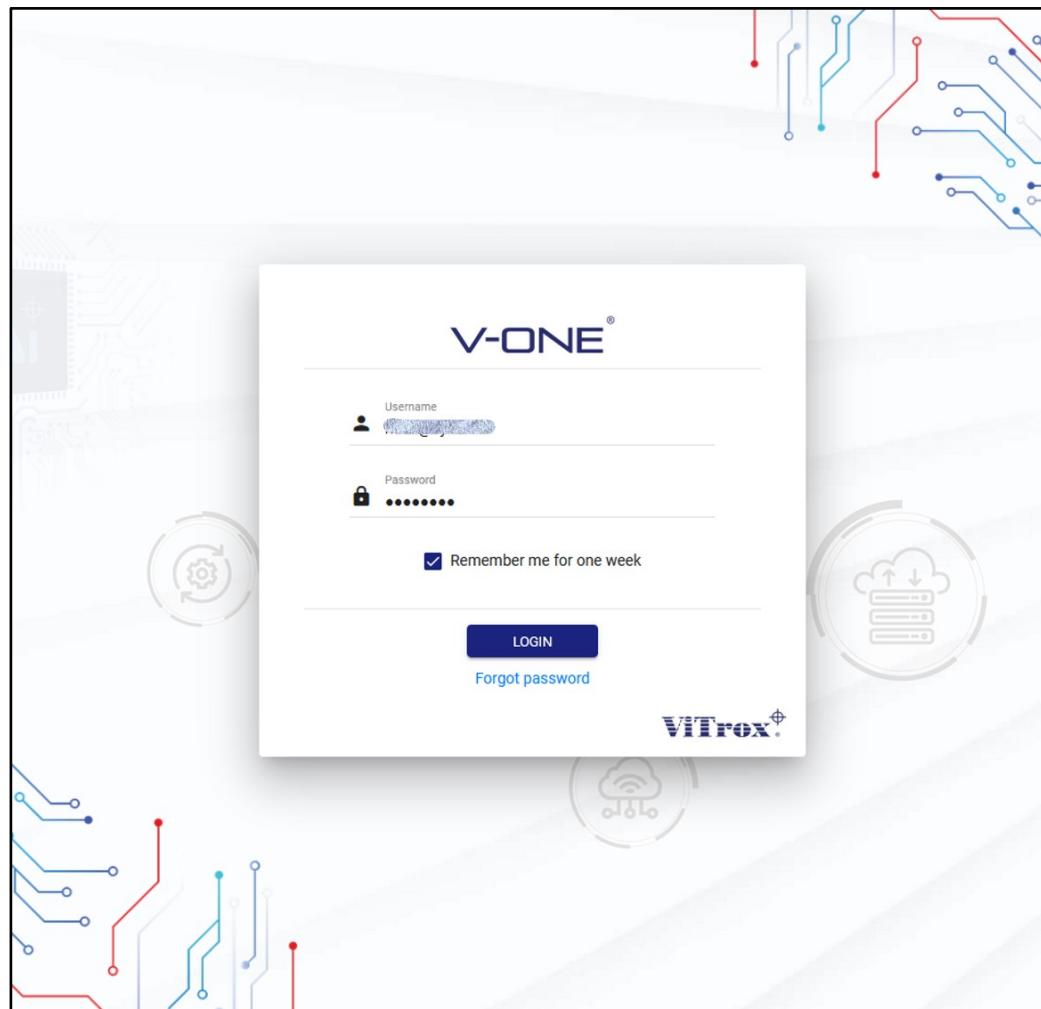
The screenshot shows an email from "V-ONE Admin <admin@v-one.my>" to the user. The subject is "[V-ONE] New Subscription". The email body starts with "THANK YOU FOR SUBSCRIBING TO V-ONE". It addresses the recipient with "Dear [REDACTED],". Below that, it says "Kindly click the below button to activate your account." A large blue button labeled "Activate Now" is centered. At the bottom, there is contact information for the Customer Care Center, including phone numbers, email, and chat options. The V-ONE logo is at the very bottom.

Your account has been activated! Click the “**Login Now**” button.



This is the login page for V-ONE. Insert your username (email address) and password to login.

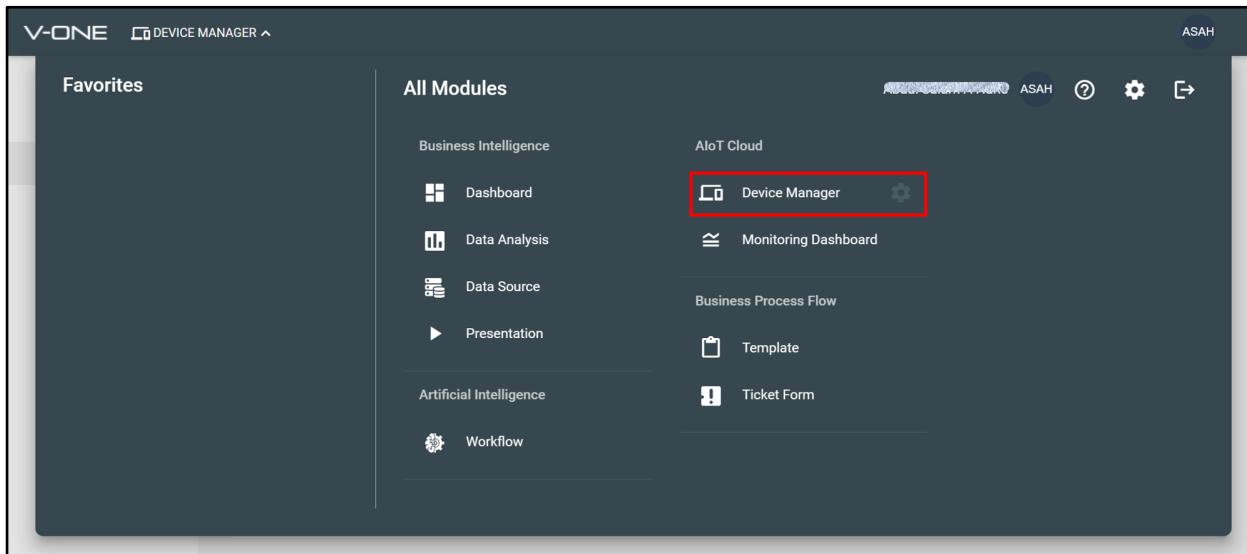
Tips: You can tick the "Remember me for one week" box so that you don't need to insert the username and password every time you want to login.



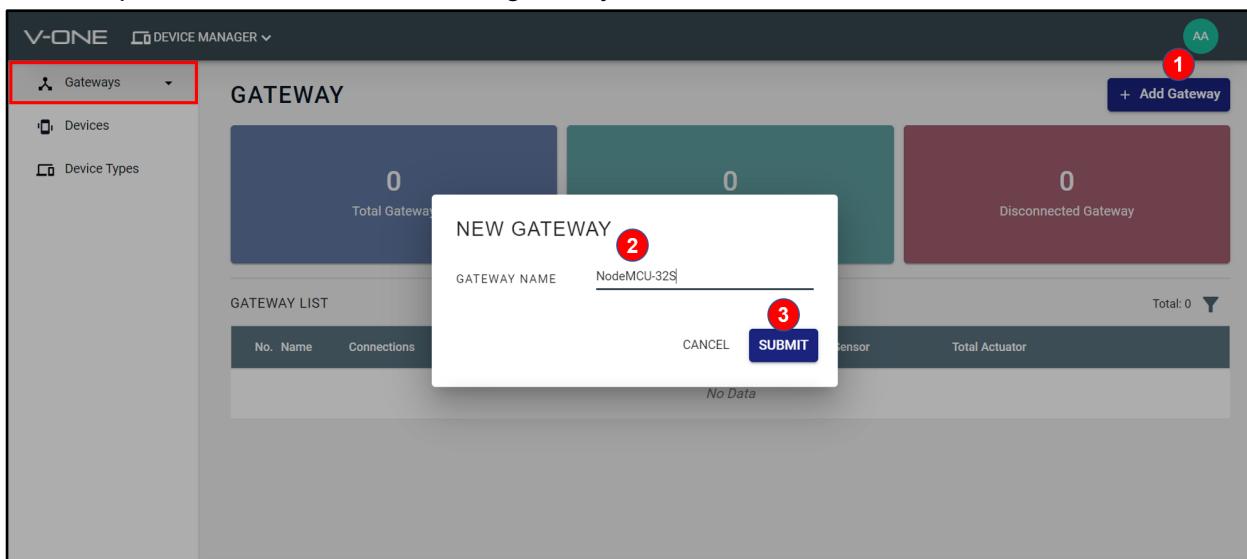
Register Gateway

Gateway here refers to the NodeMCU-32S board that acts as a microcontroller to build your IoT projects. Each microcontroller will have a unique GatewayID and Access Token to function as a gateway.

To create a gateway, go to “**Device Manager**”.

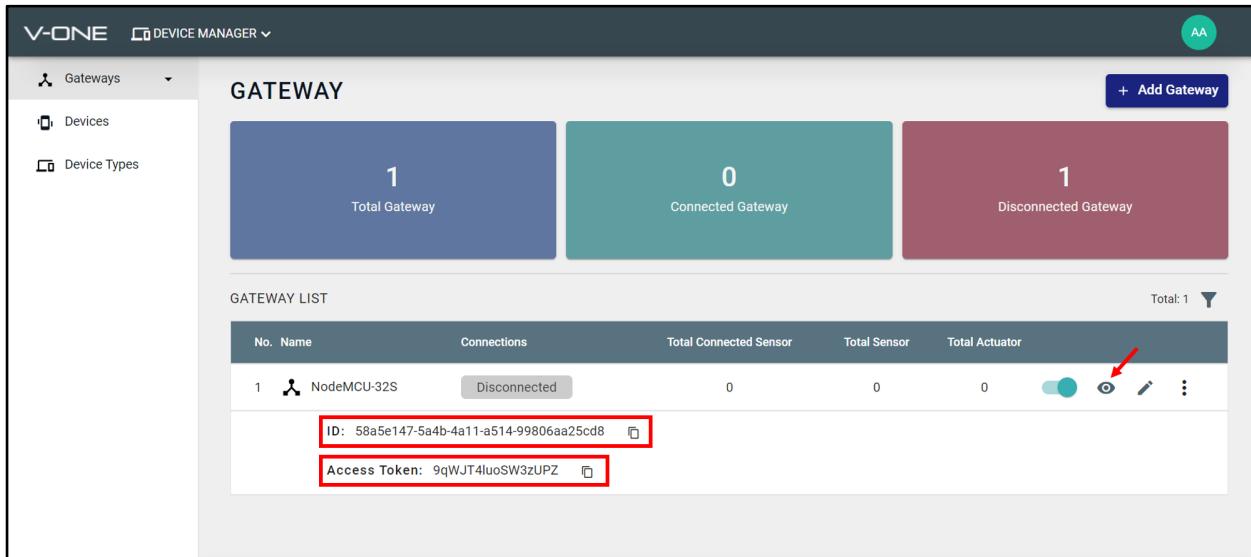


In the **Gateways** tab, click “**Add Gateway**”. Then, insert the gateway name and click “**Submit**”. You can put the microcontroller as the gateway name.



With just a few clicks, you have successfully created a gateway!

Now, you can click on the eye icon to see the gateway information. Both **gatewayID** and the **Access Token** will be used in the library later (in **Part 2**).



GATEWAY

Total Gateway	Connected Gateway	Disconnected Gateway
1	0	1

GATEWAY LIST

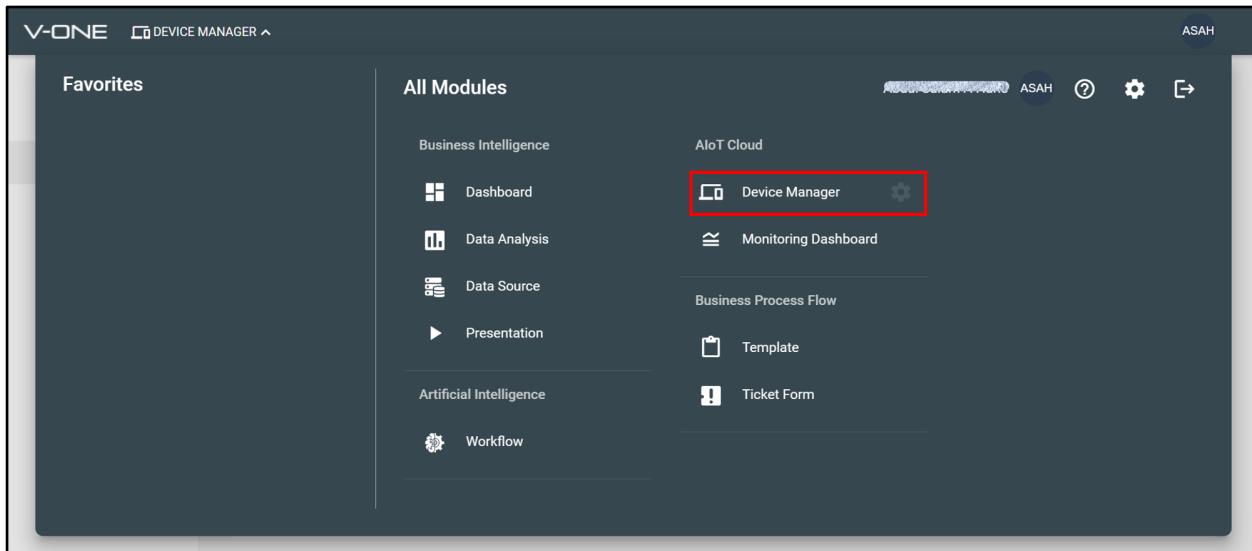
No.	Name	Connections	Total Connected Sensor	Total Sensor	Total Actuator	Actions
1	NodeMCU-32S	Disconnected	0	0	0	
ID: 58a5e147-5a4b-4a11-a514-99806aa25cd8						
Access Token: 9qWJT4luoSW3zUPZ						

Add Device Types

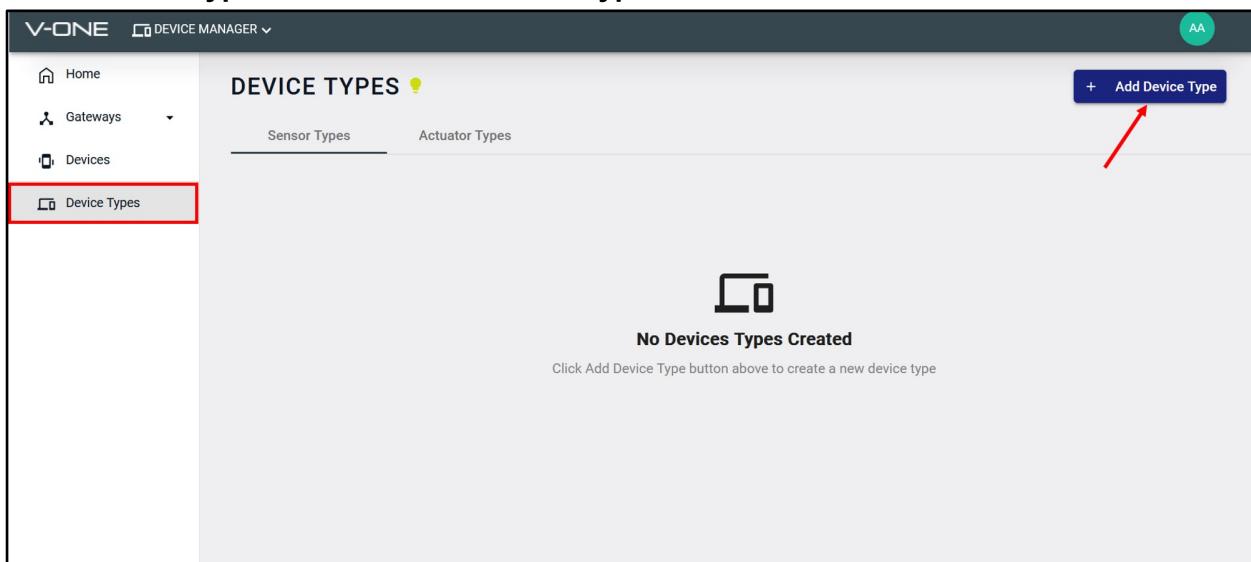
A sensor is a device that detects changes in the environment. The sensor converts a physical phenomenon into measurable digital/analog values which become a human-readable display or transmitted for reading. In this IoT Kit, there are 7 sensors for you to experiment with. The best part of this IoT kit is that it also provides actuators to make your IoT projects become more interesting! An actuator is a device that produces an output by converting energy and signals going into the system such as servo, LED, and relay.

Now you need to register all the sensors and actuators in the V-One platform. There are templates for each device, so you can just directly add them using the provided templates.

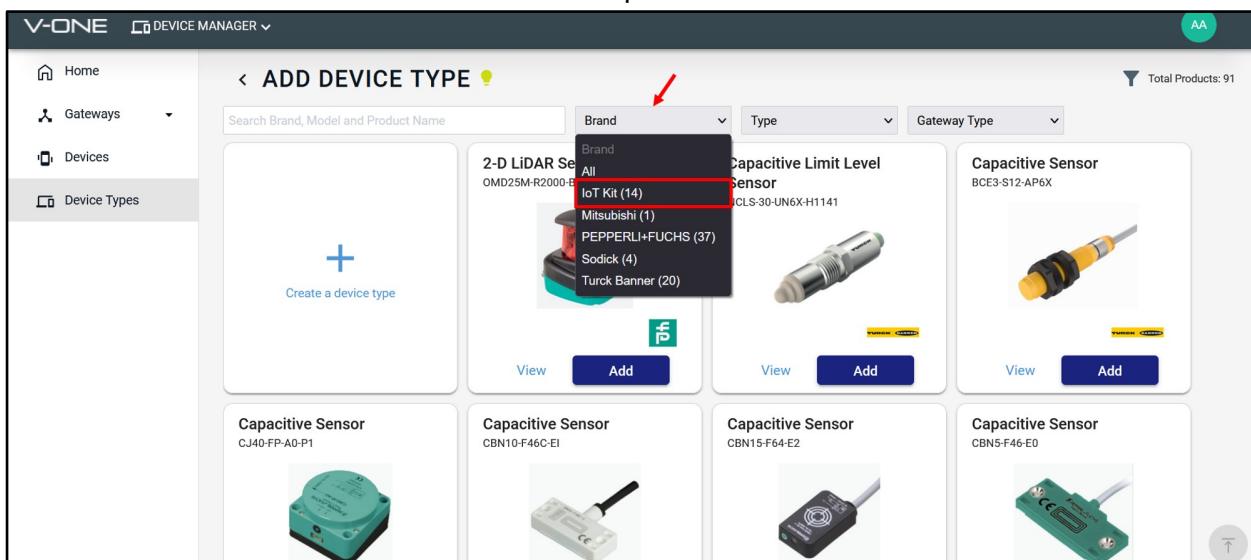
Go to “Device Manager”.



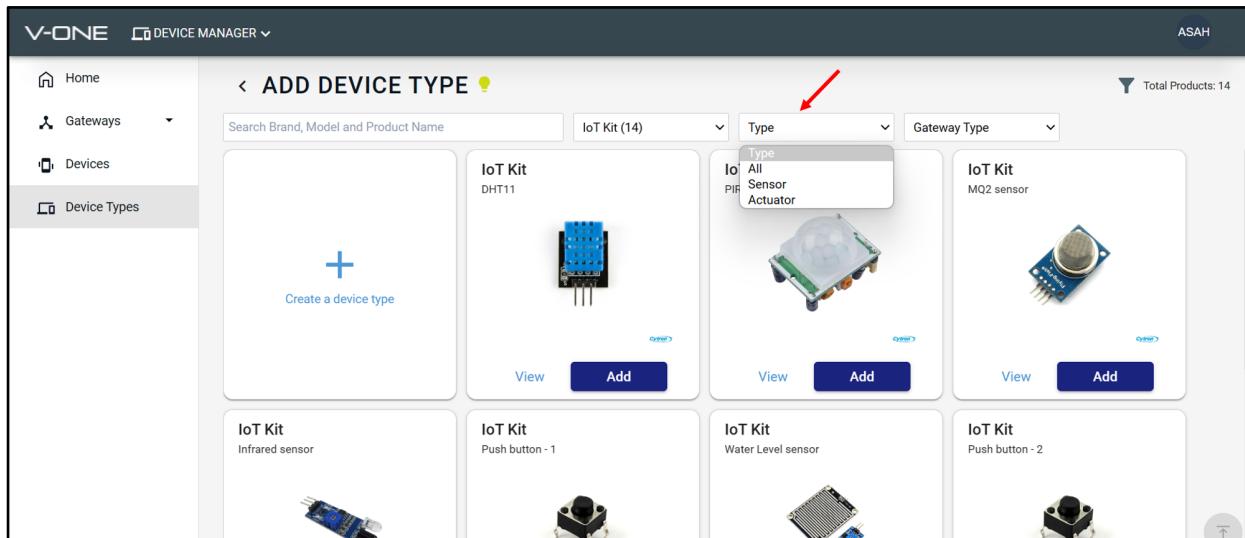
In the **Device Types** tab, click “**Add Device Type**”.



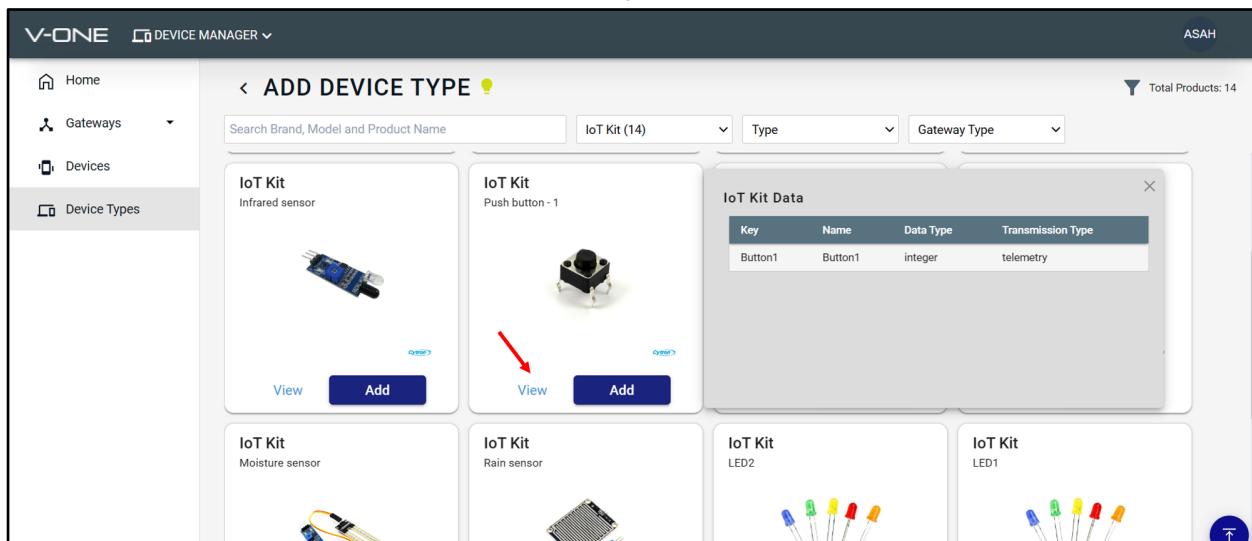
Click “**Brand**” and choose “**IoT Kit**” from the drop-down list.



Here you can see all templates are ready for every sensor and actuator provided in the IoT kit. Click “**Type**” to filter **sensor** or **actuator** devices so that you can differentiate which devices are sensors and actuators.



Click “View” and a new section appears showing the selected device's information.



Lastly, you can just proceed by clicking the “**Add**” button.

The screenshot shows the 'ADD DEVICE TYPE' page in the V-ONE Device Manager. On the left, there's a sidebar with 'Home', 'Gateways', 'Devices', and 'Device Types' selected. The main area displays a grid of IoT Kit components. One specific component, 'Push button - 1 IoT Kit', has a red arrow pointing to a green button labeled 'Added To Device Type' below it. Other components shown include Infrared sensor, Water Level sensor, Push button - 2, Moisture sensor, Rain sensor, LED2, and LED1. The top right corner shows 'Total Products: 14'.

Once you have added the device, it will appear on the “**Device Types**” main page. It can be under **Sensor Types** or **Actuator Types** depending on that device type.

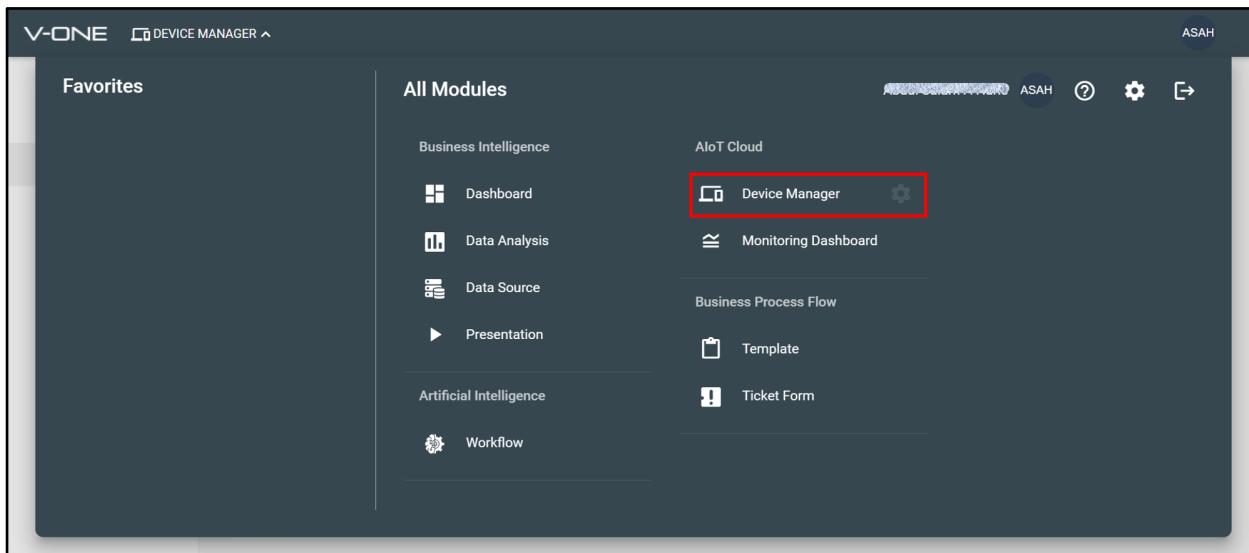
Continue to **register all the sensors and actuators** following the same steps above. There are **9 sensors** and **5 actuators** for you to register.

The screenshot shows the 'DEVICE TYPES' page in the V-ONE Device Manager. The sidebar shows 'Device Types' is selected. The main area has tabs for 'Sensor Types' and 'Actuator Types'. Under 'Sensor Types', there's a search bar and a list with one item: 'Push button - 1 IoT Kit'. Below this item, it says '1 Matrix' and '0 Device'. A blue button labeled '+ Add Device Type' is located at the top right. The top right corner shows 'Total: 1'.

Add Device

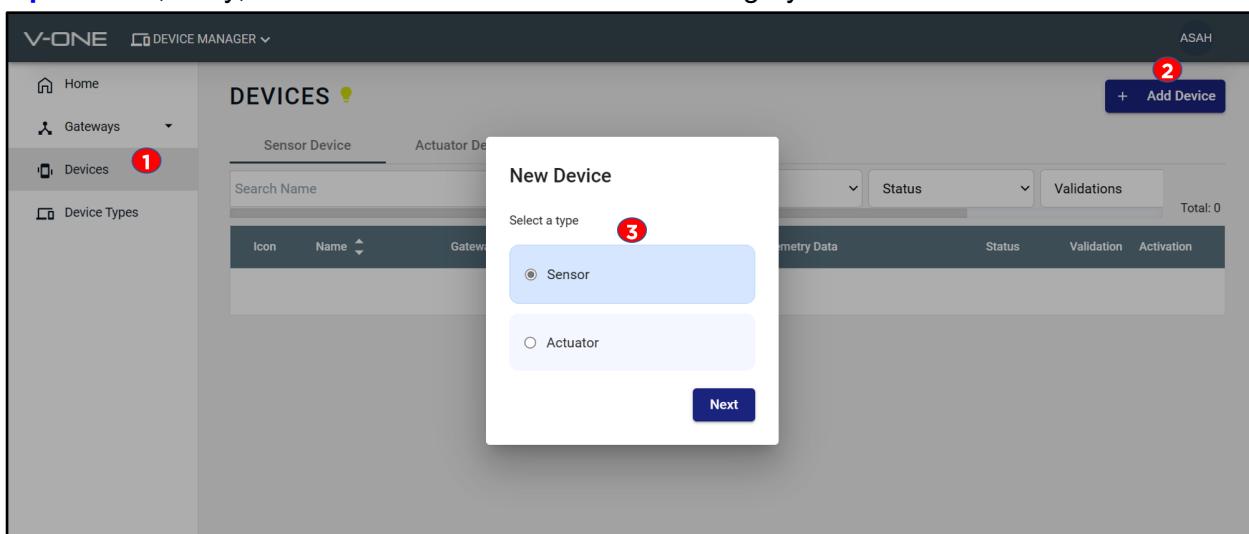
Please make sure that all the sensor and actuator types are already registered to proceed with this part. Now, you will assign all those sensors and actuators under your gateway. Every device will have a **unique deviceID** once it has been assigned under a gateway.

To add a device, go to “**Device Manager**”.



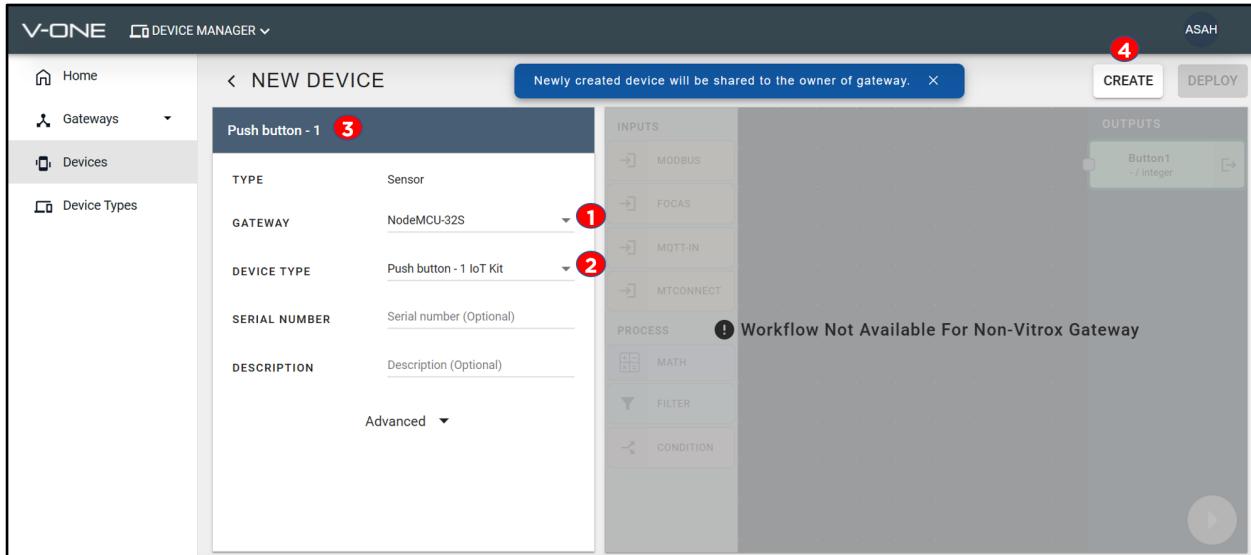
In the **Devices** tab, click “**Add Device**” and then choose “**Sensor**”.

Tips: Servo, relay, and LED are under the **Actuator** category.

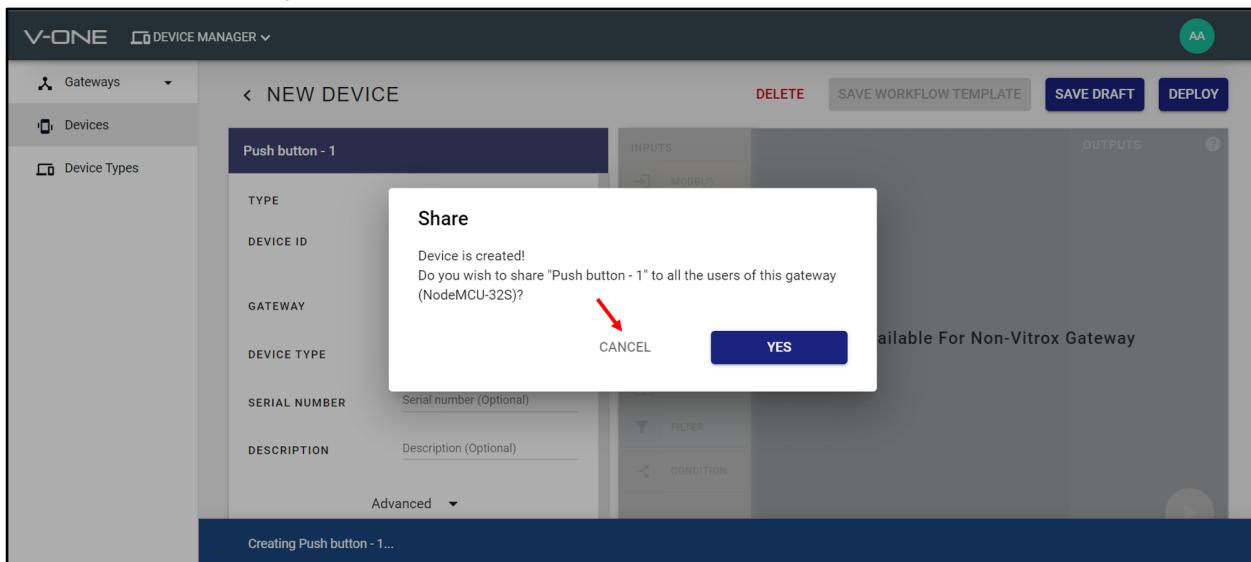


Choose the corresponding **gateway** and **device type**. Type in a name for the new device. You can use the same name as the device type to avoid confusion. Then, click the “**Create**” button.

Note: You need to type in the device name, select the gateway, and device type first to enable create button.



A pop-up will appear, just click “**Cancel**” to proceed.



You can go back to the **Devices** tab and check if the new device has been successfully added to the gateway. Here you will see that the added sensor is still in **Draft mode**. To deploy it, you need to **upload the code first** and make the **gateway online**.

Tips: Add all the sensors and actuators first, then you can simply deploy all the devices together once you upload the code later.

V-ONE DEVICE MANAGER ▾ ASAH

Home Gateways Devices Device Types

DEVICES

+ Add Device

Sensor Device Actuator Device

Search Name Gateway Device Types Status Validations Total: 1

Icon	Name	Gateway	Device Type	Telemetry Data	Status	Validation	Activation
	Push button - 1	NodeMCU-32S	Push button - 1 IoT Kit	(info)	—	Deploy	Draft

Lastly, click on the device and you can see the **deviceID** that will be used in the project code later.

Tips: Use the copy button function to make your life easier.

The screenshot shows the V-ONE Device Manager interface. On the left sidebar, under the 'Devices' section, there is a 'Devices' tab selected. The main area displays a device configuration for a 'Push button - 1'. The device has the following details:

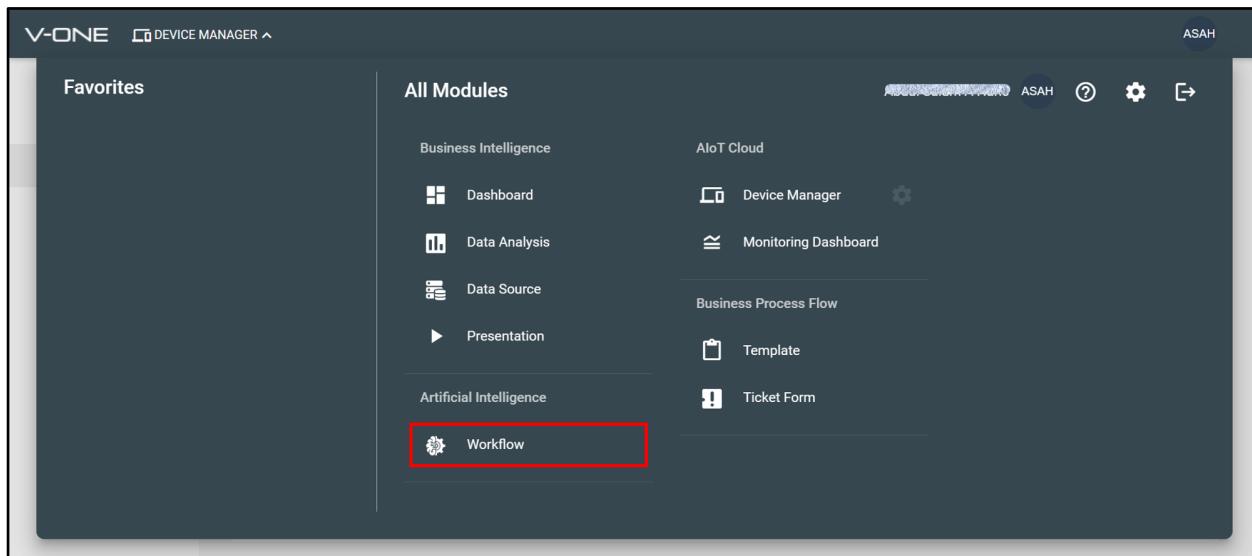
- Name:** Push button - 1
- Activation:** Draft (highlighted with a red arrow)
- Device Type:** Push button - 1 IoT Kit
- Gateway:** NodeMCU-32S
- Status:** ((?))

A 'Copy to clipboard' button is visible next to the activation status. To the right, there is a 'TELEMETRY DATA' section showing a single entry: 'Button1' with a value of '-'. The bottom right corner indicates 'Last Updated: null'.

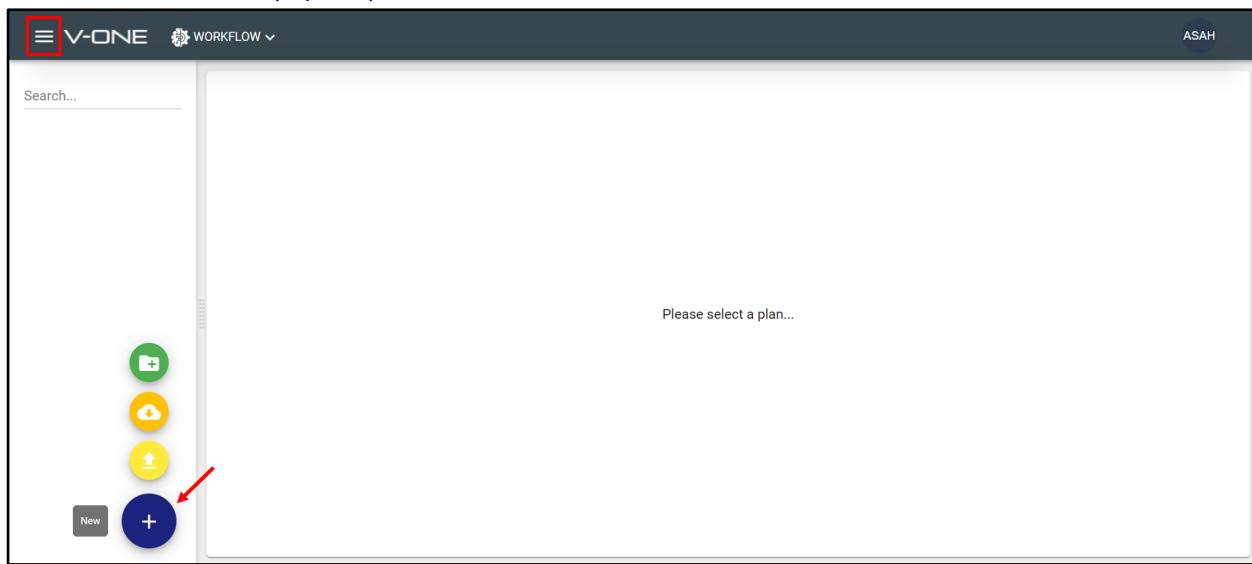
Workflow

Workflow is used for **email notifications** that are triggered once any sensor readings reach the threshold value. It becomes very useful, especially when doing IoT projects to alert the owner about the current condition of the projects.

Go to “Workflow”.

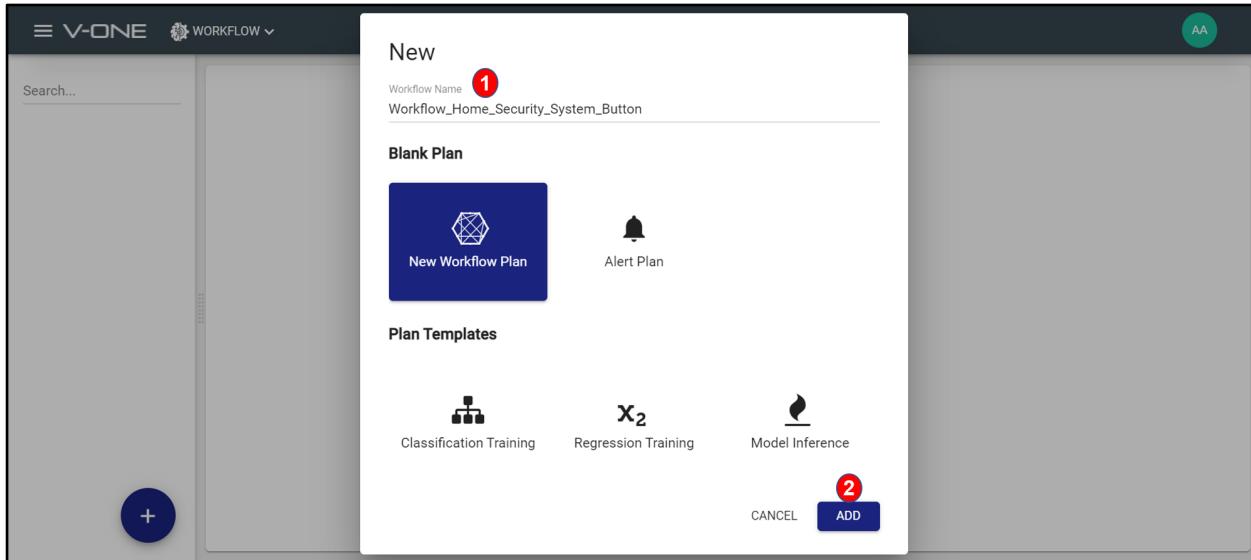


Click on the sidebar (top left) and then click the “+” button to add a new workflow.

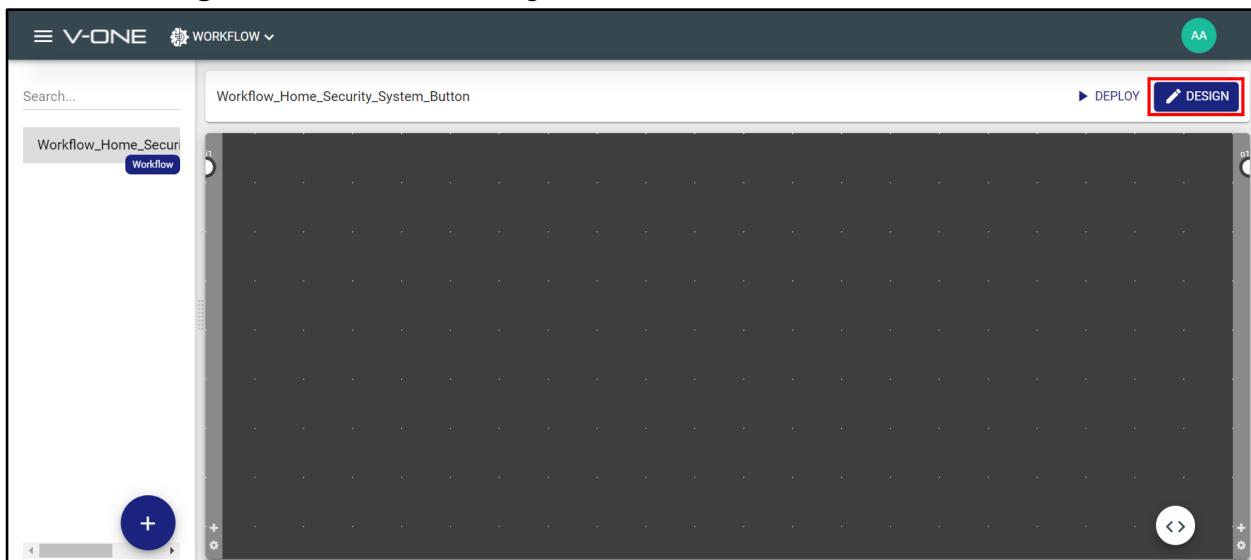


Insert **workflow name** and then click the “**Add**” button.

Tips: ‘Mailbox Notifications (Infrared Sensor)’ is just an example of the workflow name. You can put anything and it can be general such as ‘Project 1 & Project 2’ since one workflow can be used for multiple sensors/projects.



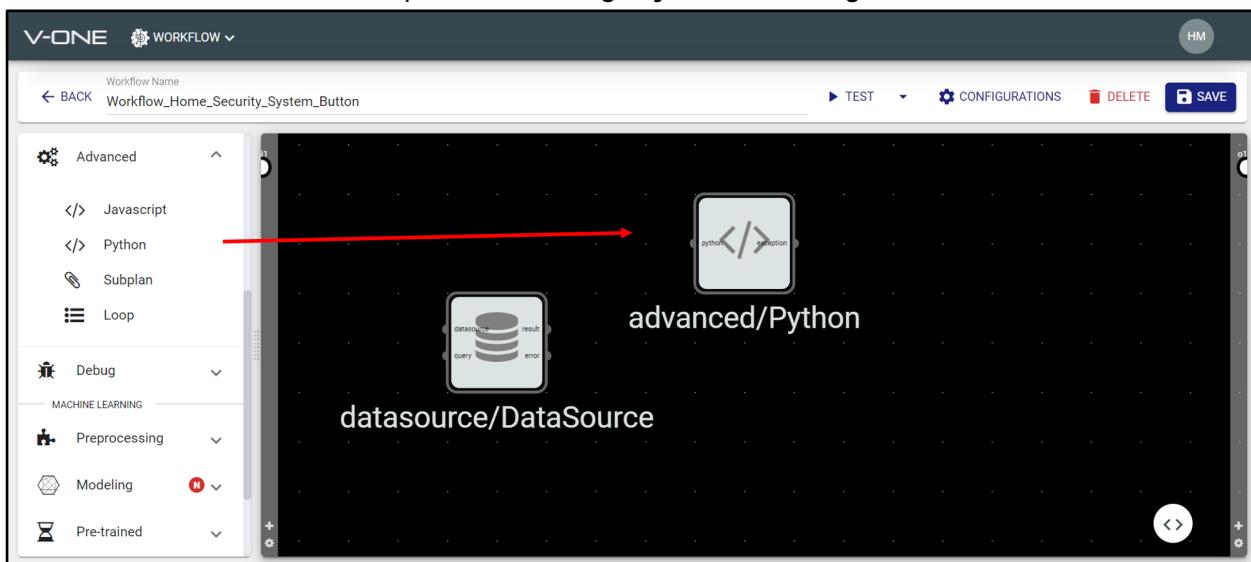
Click the “**Design**” button to start creating the workflow.



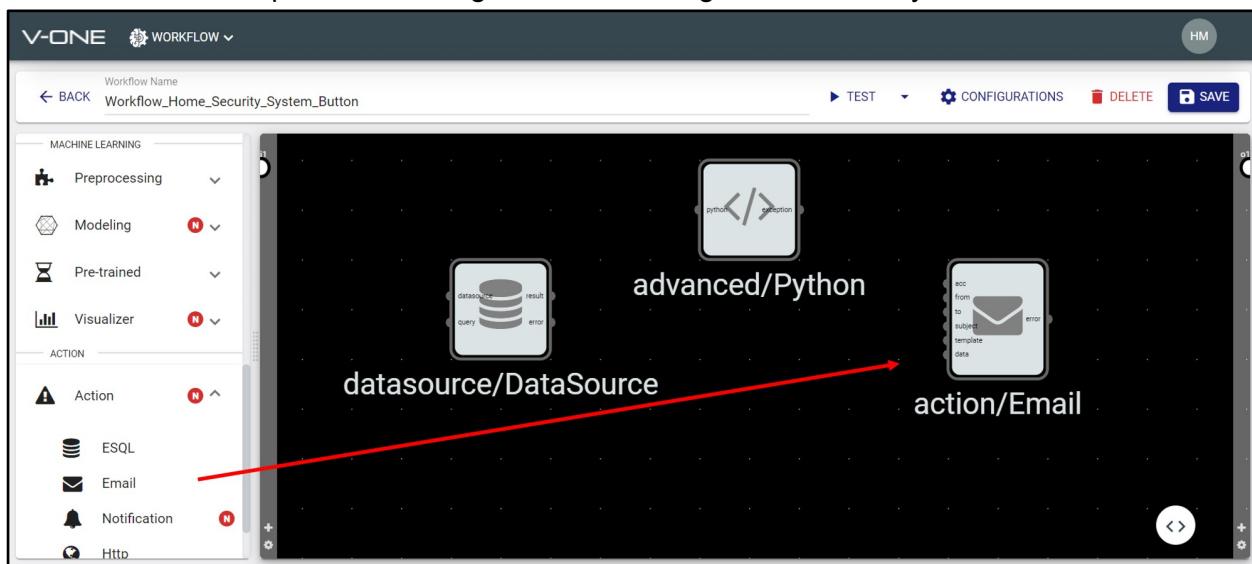
Under **Datasource** drop-down list, drag “**Datasource**” to the workflow space.



Then, under the **Advanced** drop-down list, drag “**Python**” to the right side of the Datasource icon.



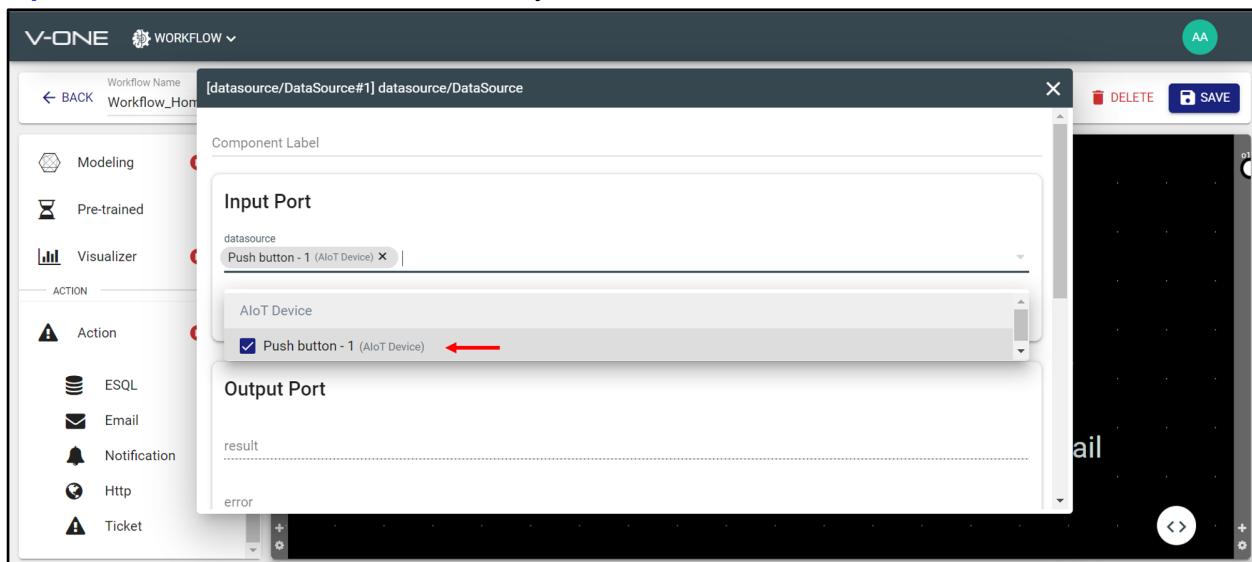
From the **Action** drop-down list, drag “Email” to the right side of the Python icon.



Click on the **Datasource icon**, and a small window will pop up. Under “**Input Port**”, choose the related sensor for the datasource. The workflow will trigger based on this datasource value.

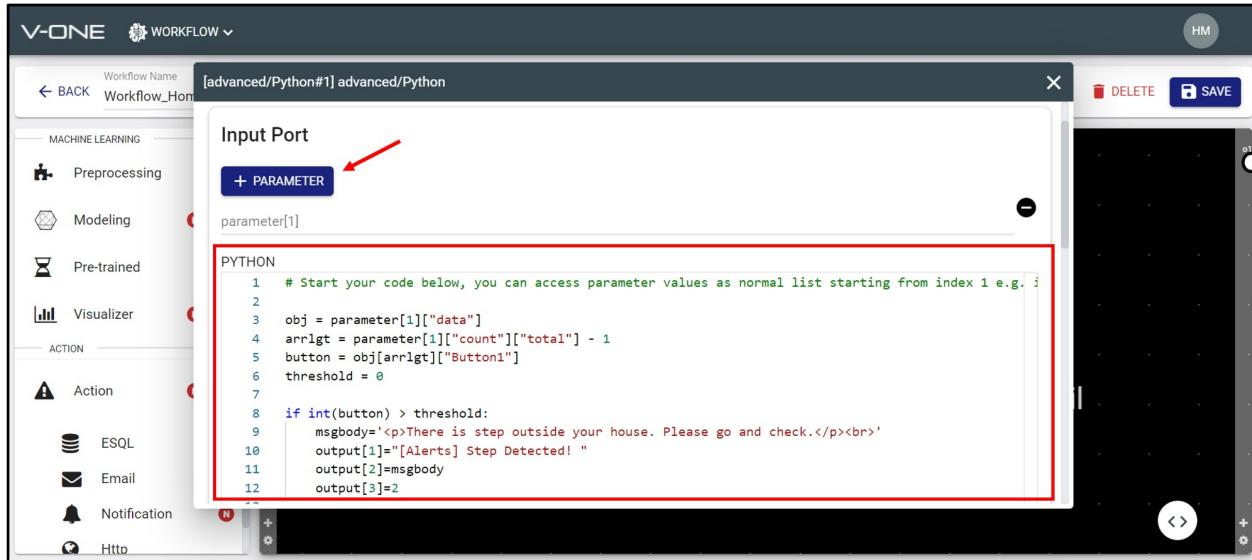
Close the Datasource window.

Tips: One datasource for one sensor only!



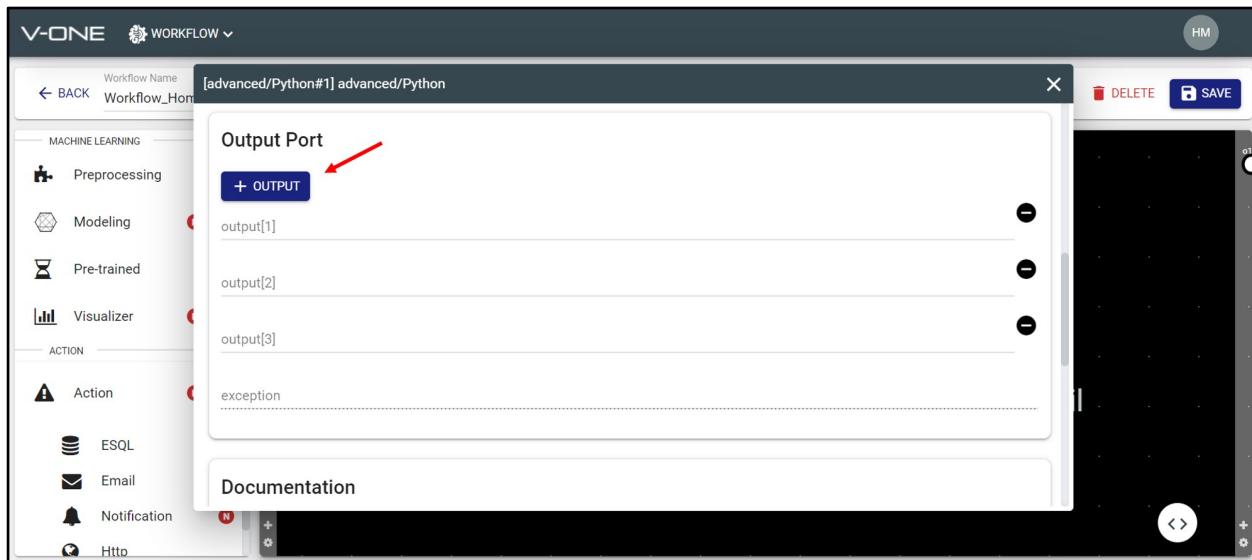
Then, click on the **Python icon**. Under **Input Port**, add **one** parameter by clicking on the “Parameter” button.

For Python code, you can just copy it from our [Github page](#). It is also provided in **Part 3** later for each IoT project.



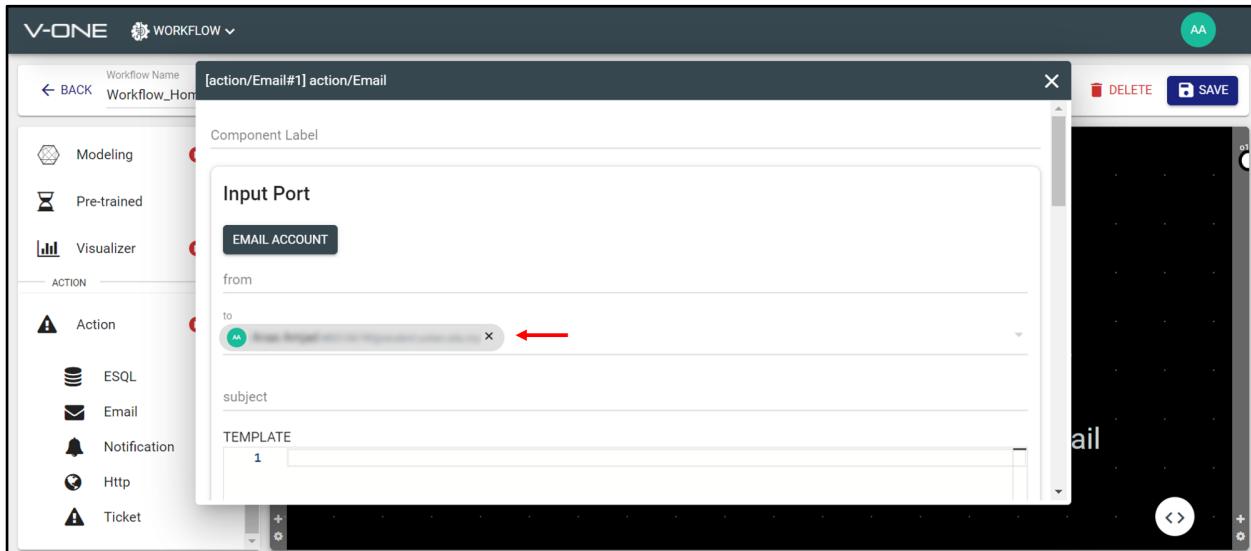
Scroll down and you will see the “Output Port” part. Add **three outputs** by clicking the “Output” button three times.

Close the Python window.



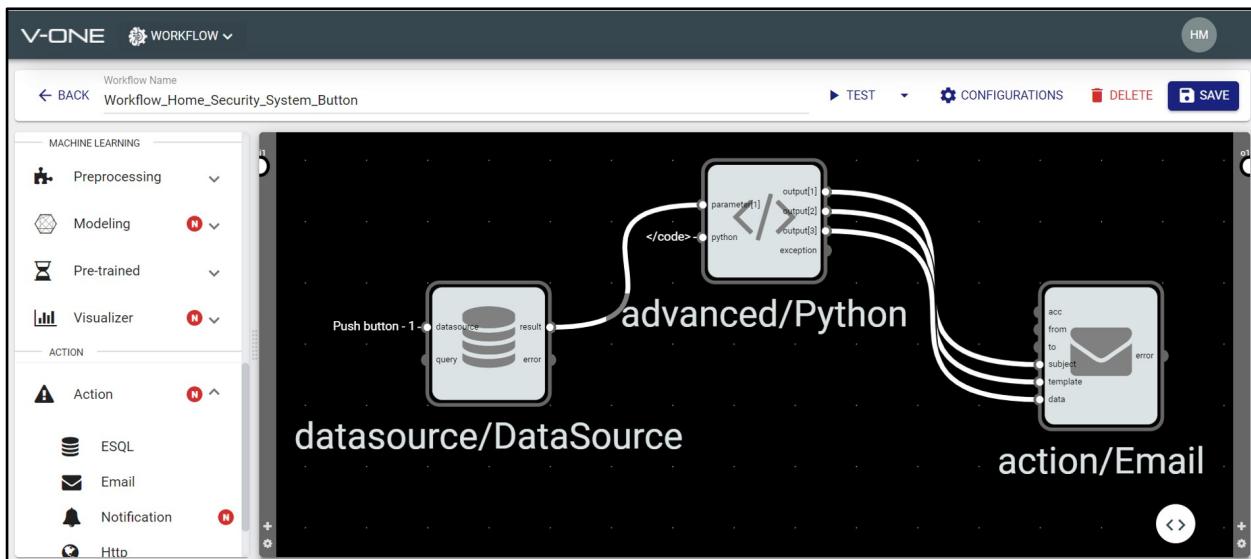
Open the **Email window**. Under Input Port, type in **your email** under the “**to**” section, and leave the “from” section empty.

Note: Press **Enter** once you have done type in your email address.



Lastly, create connections between the boxes as follows.

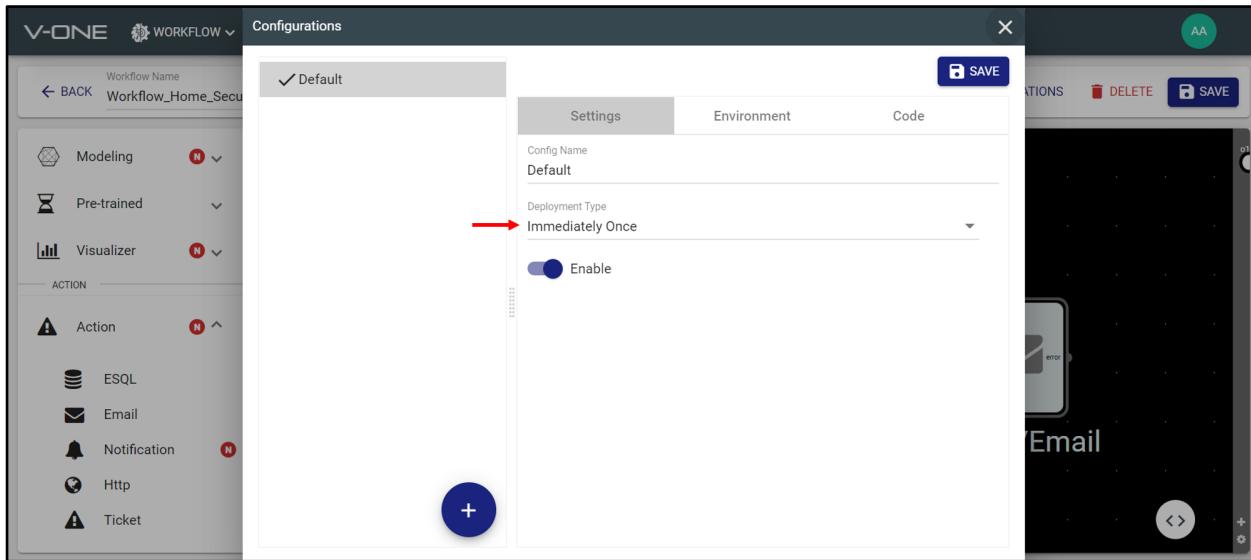
- result > parameter [1]
- output [1] > subject
- output [2] > template
- output [3] > data



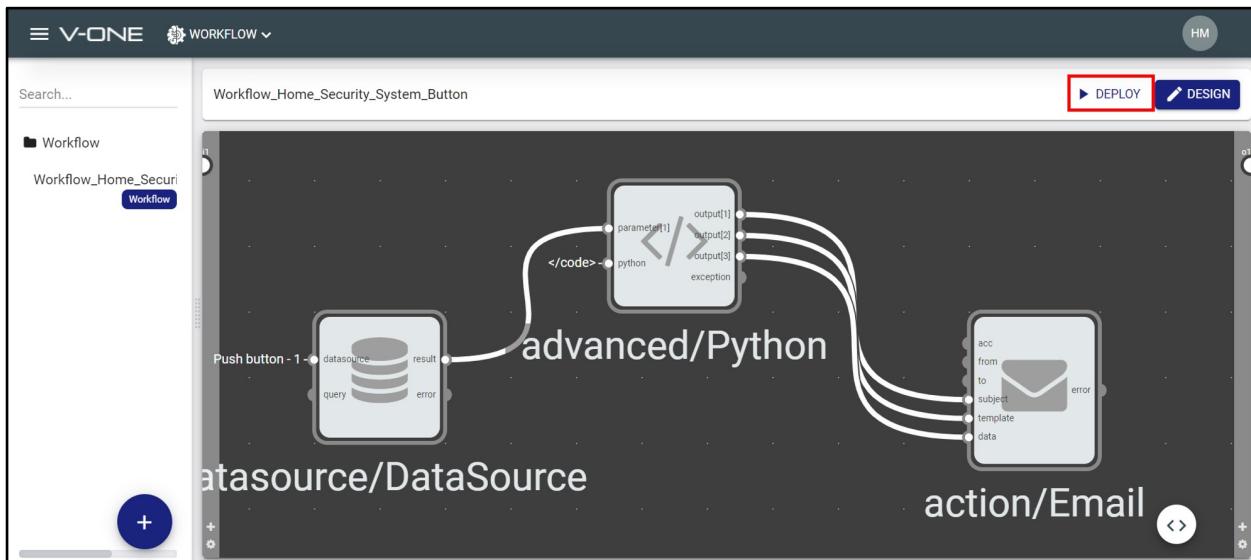
Open the configurations and you can change the “**Deployment Type**” according to your project preferences.

Tips: **Interval** and **Scheduled** will always be the best options since you don't need to always deploy the workflow when running the IoT projects.

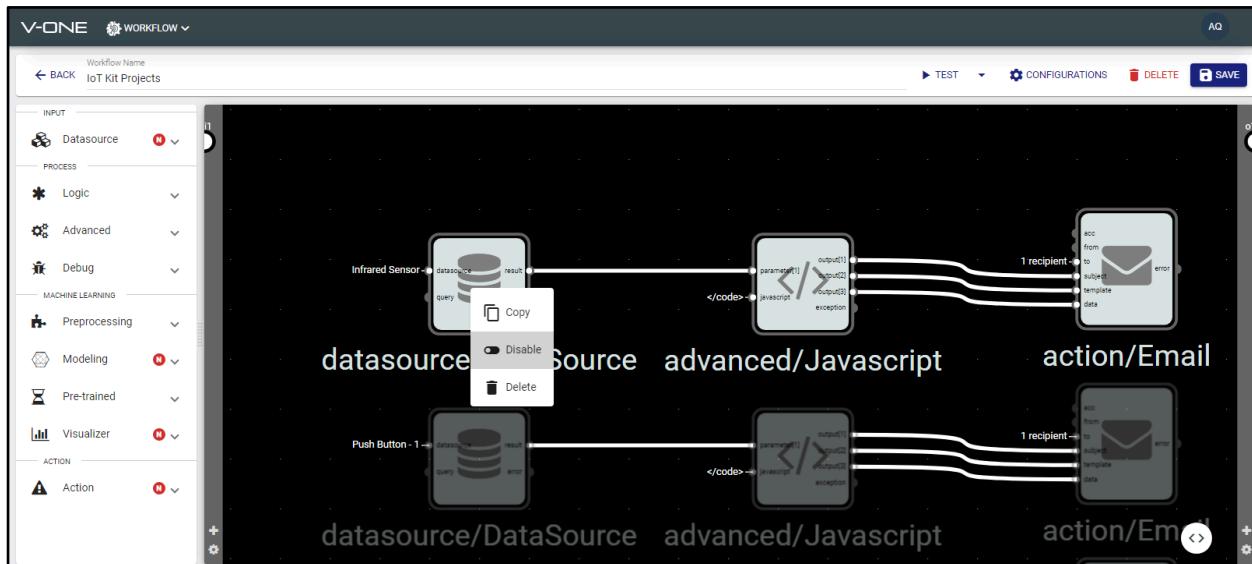
Don't forget to click the **save** button when you are done.



Note: Before you click the “Deploy” button, please make sure that **your project is already running**. You can just create all the workflow first and come back here to deploy it **later** once your IoT project is complete.



For the free V-ONE account, only **three workflows** are allowed. However, you can create multiple lines for each sensor/project in one workflow but you need to **disable** other lines that are not being used.



Tips: If you decide to use more than one line in a single Workflow, you can rename each block so that you will not confuse which block is for which projects.

```

function main(parameter){
  output=[];
  /* Start your code here, you can access parameter values as normal array starting from index 1 &
  var obj = parameter[1]["data"];
  var arrlgt = parameter[1]["count"].total - 1;
  obj.button = obj[arrlgt]["Button1"];
  threshold = 0;
  if(obj.button > threshold){

```

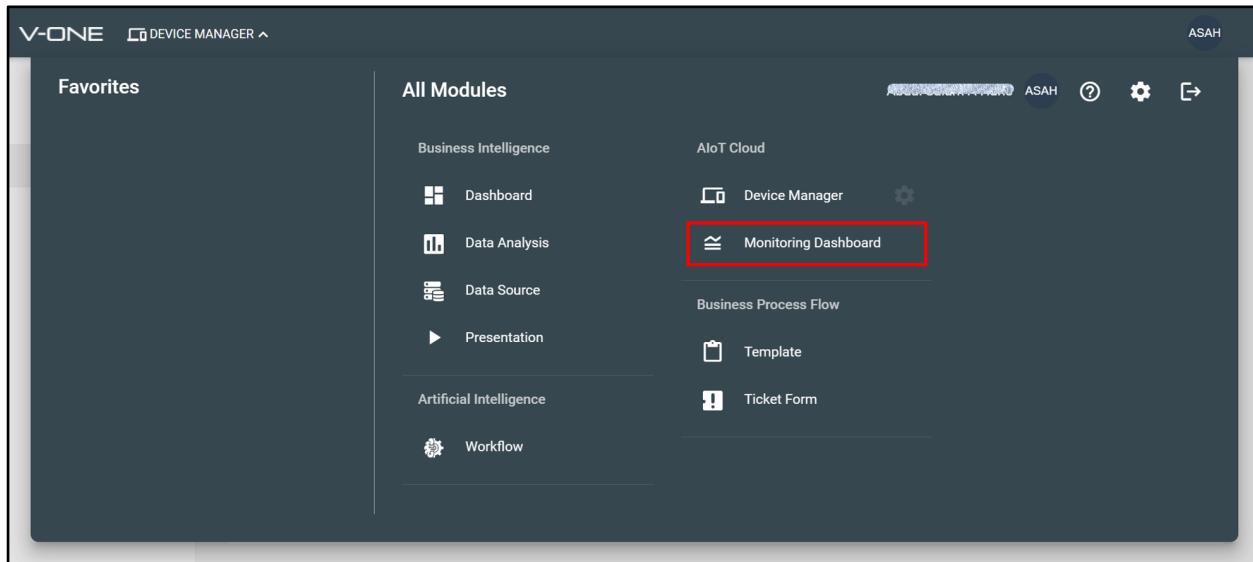
Monitoring Dashboard

For this section, every step is based on the sample IoT Projects to ease your understanding.

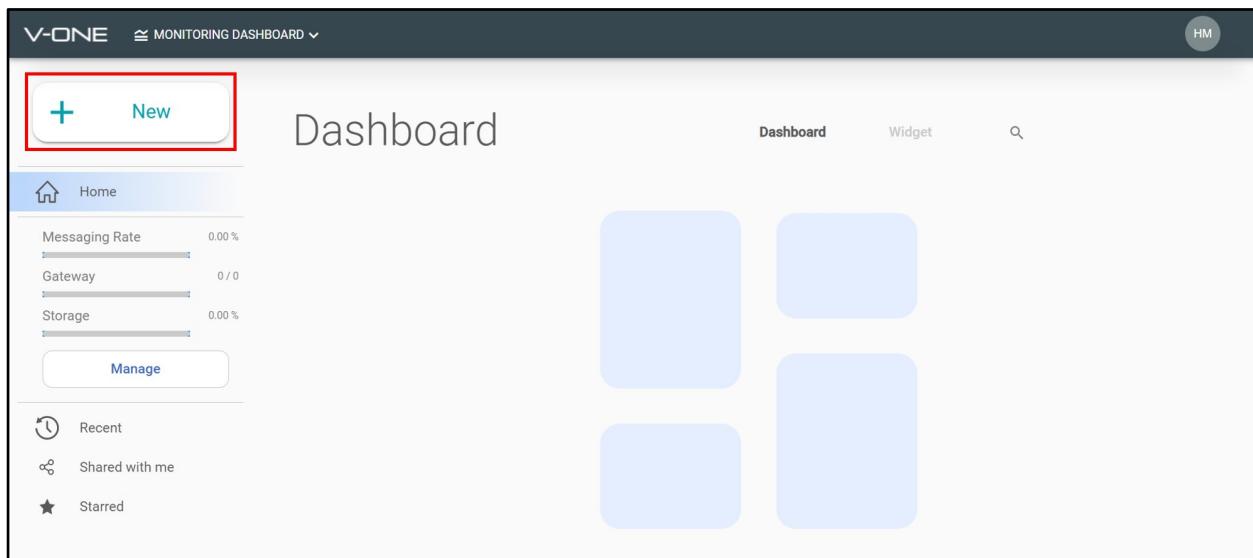
Project 8: Smart Agriculture

This project has both sensors and an actuator, so we will refer to it while learning how to set up the dashboard and widget.

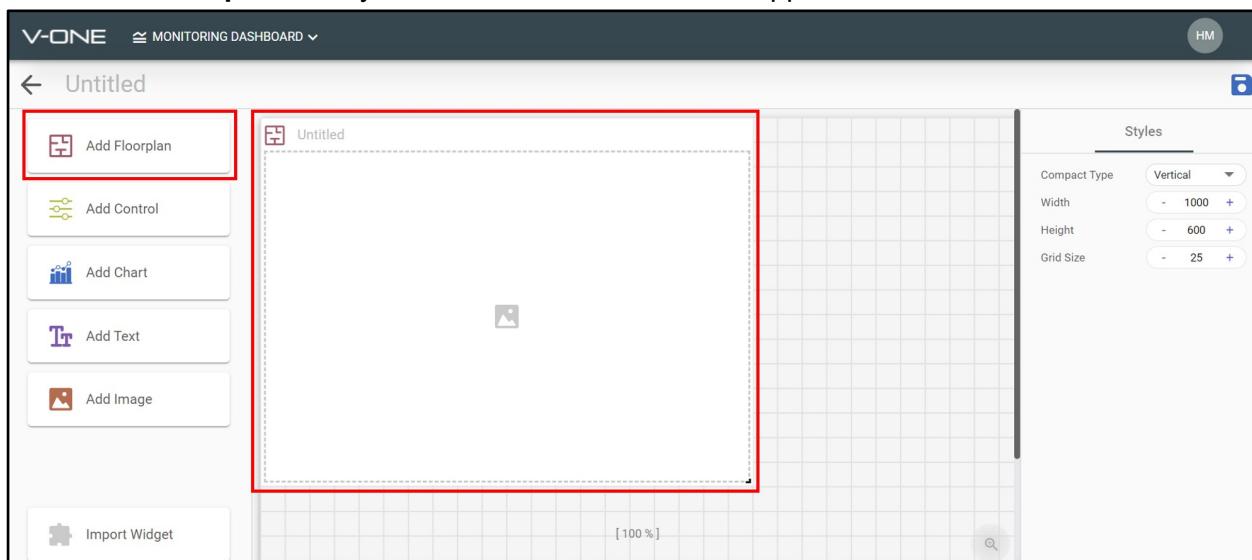
Make sure that you already registered the gateway and all devices used in this project. Then, go to “Monitoring Dashboard”.



Create a new “Dashboard”.



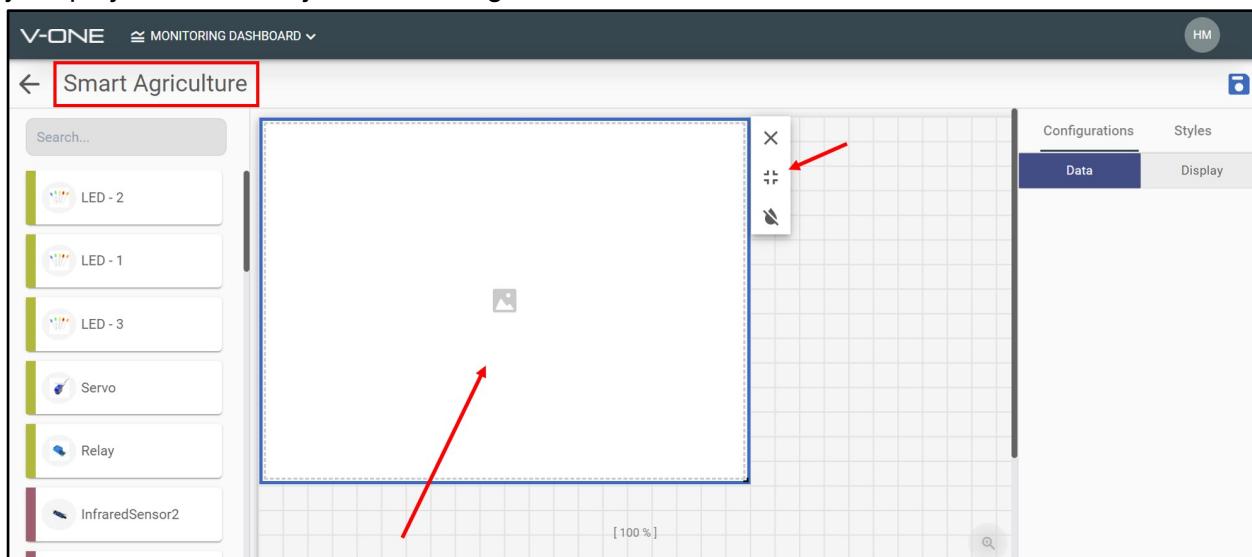
Click “**Add Floorplan**” and you will see a blank white box appears.



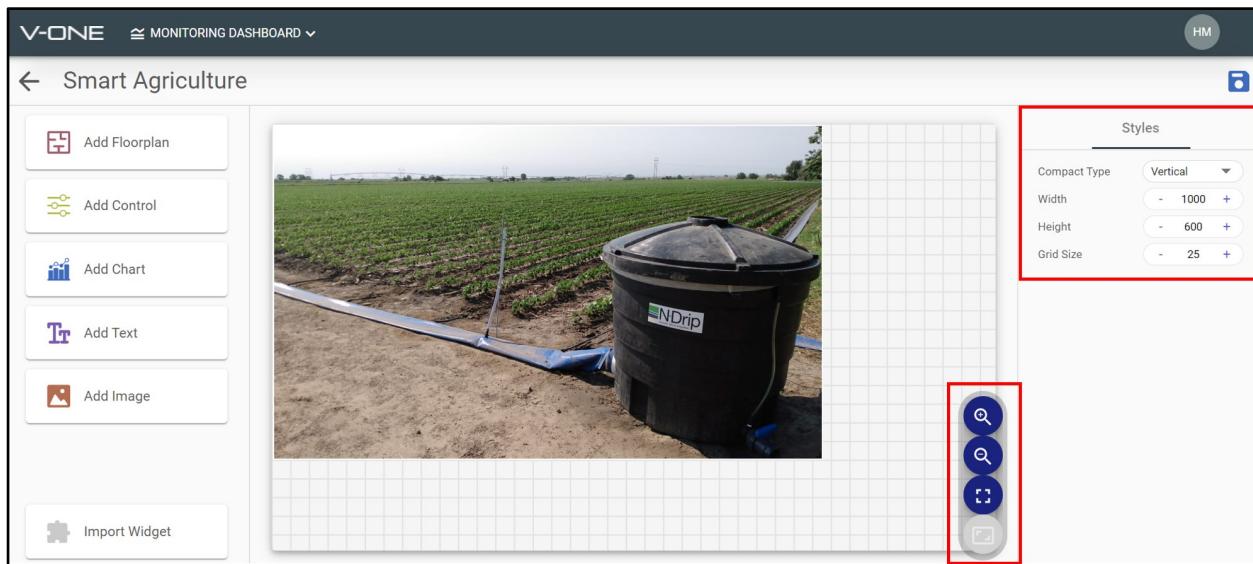
Give your monitoring dashboard a nice **title**. For this example we're using **Project 8** which is related to agriculture; so let's name our dashboard **Smart Agriculture**.

Tips: You can click on the **fullscreen icon** to hide the small title since the dashboard already has a main title.

Click the **gallery icon** to upload a background image. Kindly choose an image that is suitable for your project. As for Project 8, the image of a farm with a water tank is the most suitable.



Click on the grid background and you can play around with the dashboard settings in the red box shown below.

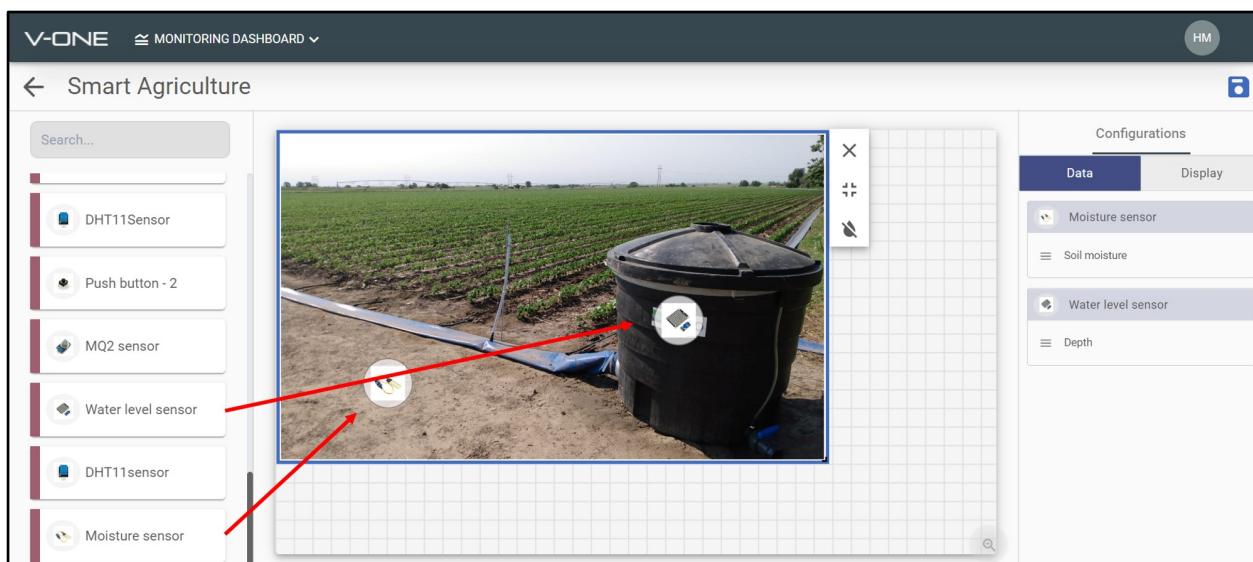


To **add sensors**, click on the uploaded image and you will see all the available devices on the left side of the screen. Drag each sensor that will be used in the project. To make it more interesting, you can put the sensor widget on the area of the image that it wants to measure.

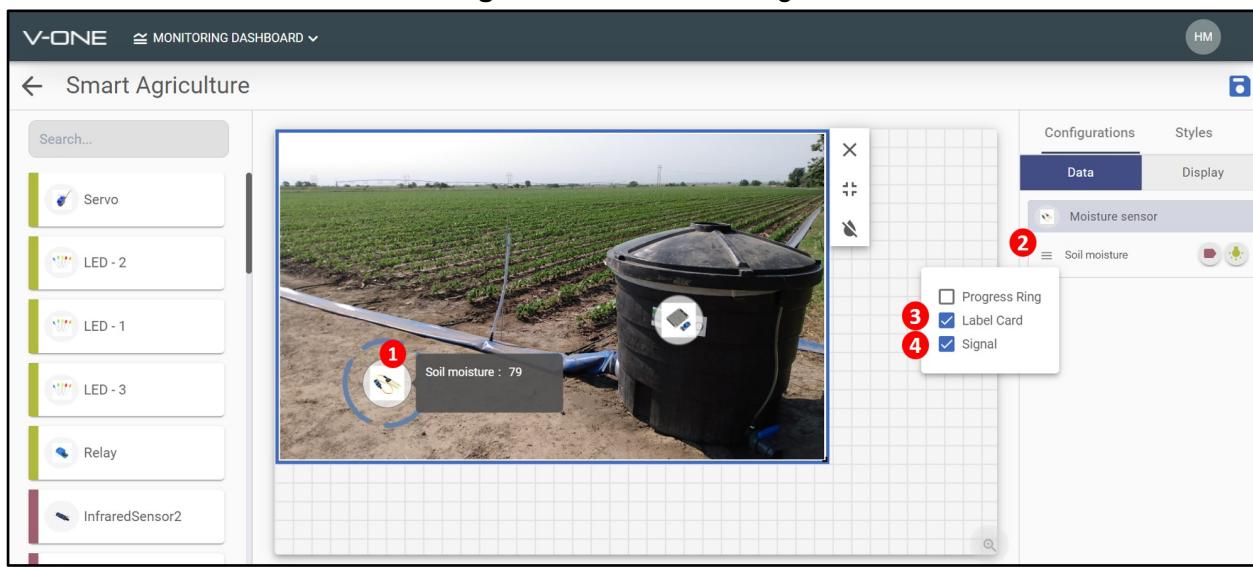
For example (**Project 8**):

Moisture Sensor - Place it on the soil area to indicate the soil moisture.

Water Level Sensor - Place it on the tank to indicate the water level in the tank.

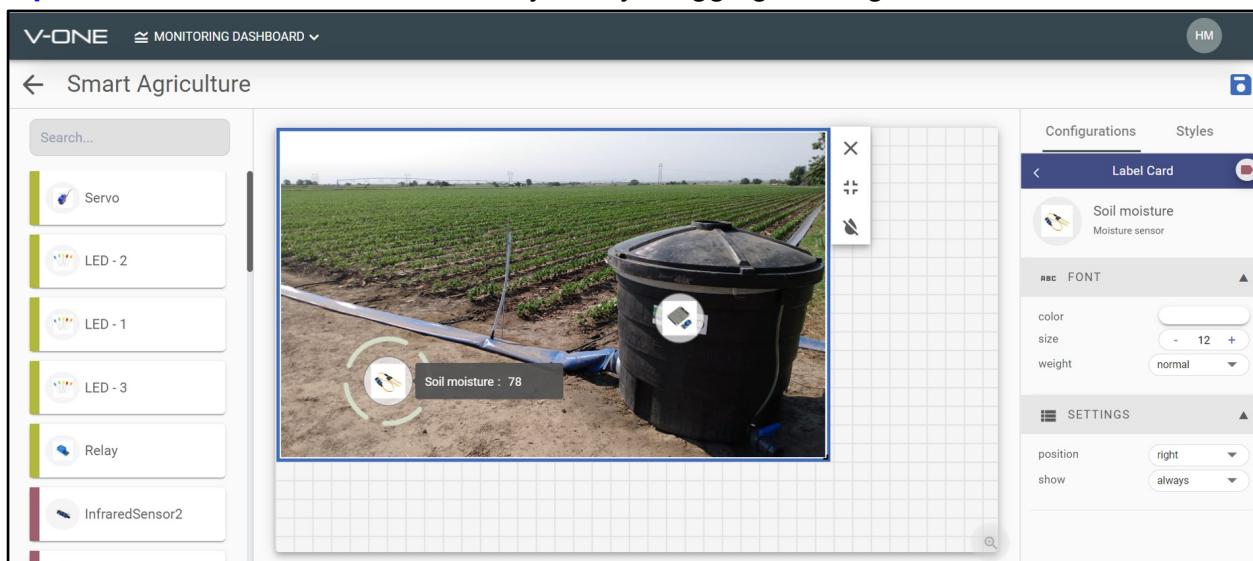


Then, enable the **Label Card** and **Signal** for the sensor widget.

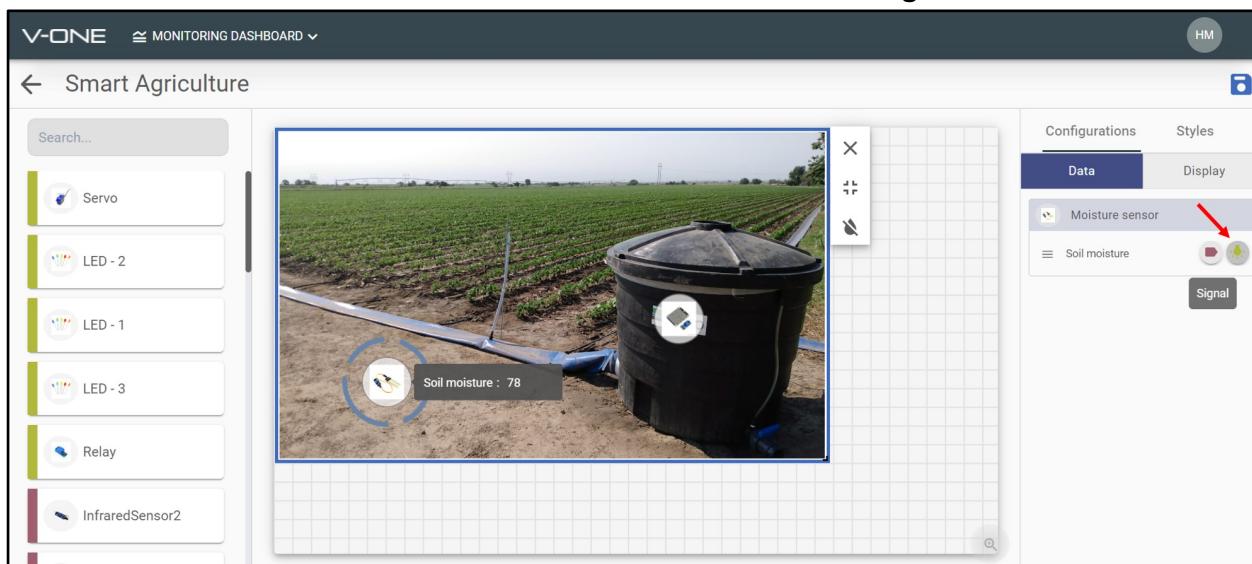


Go to the Label Card settings if you like to change anything.

Tips: You can resize the label card by easily dragging the edge of the label card.



Go back to the “Data” tab of the soil moisture sensor, and click the **Signal icon**.



Here, you can set the validation to turn on the signal or LED indicator. For the Signal settings, you can change the color of the LED indicator and set the validation or threshold value.

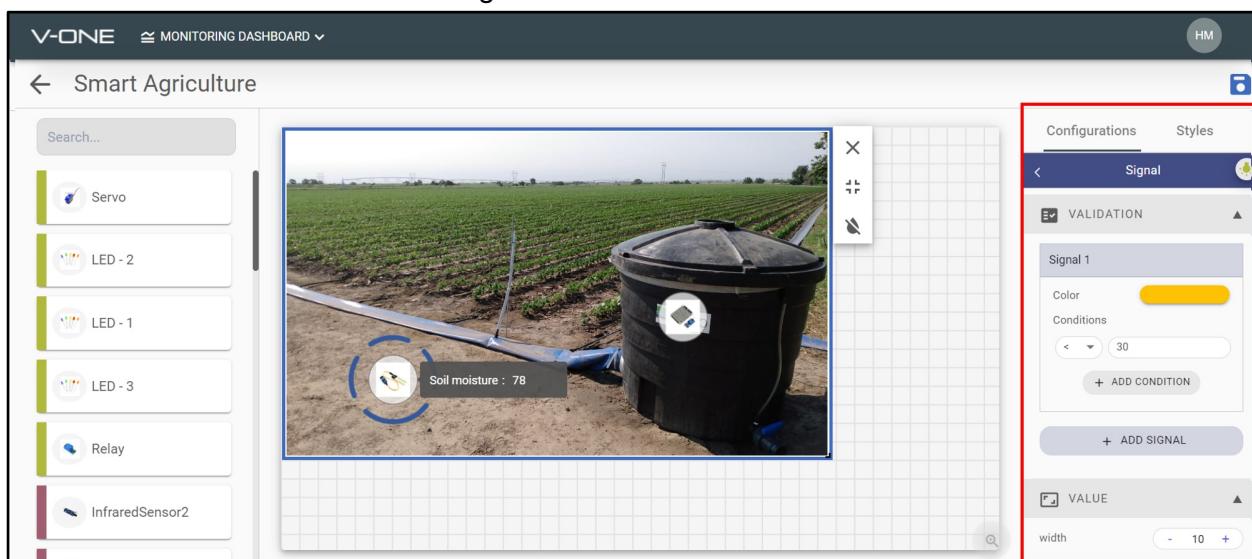
For example:

No LED - The soil moisture reading is above 30%

Yellow Color LED - The soil moisture reading is less than 30%

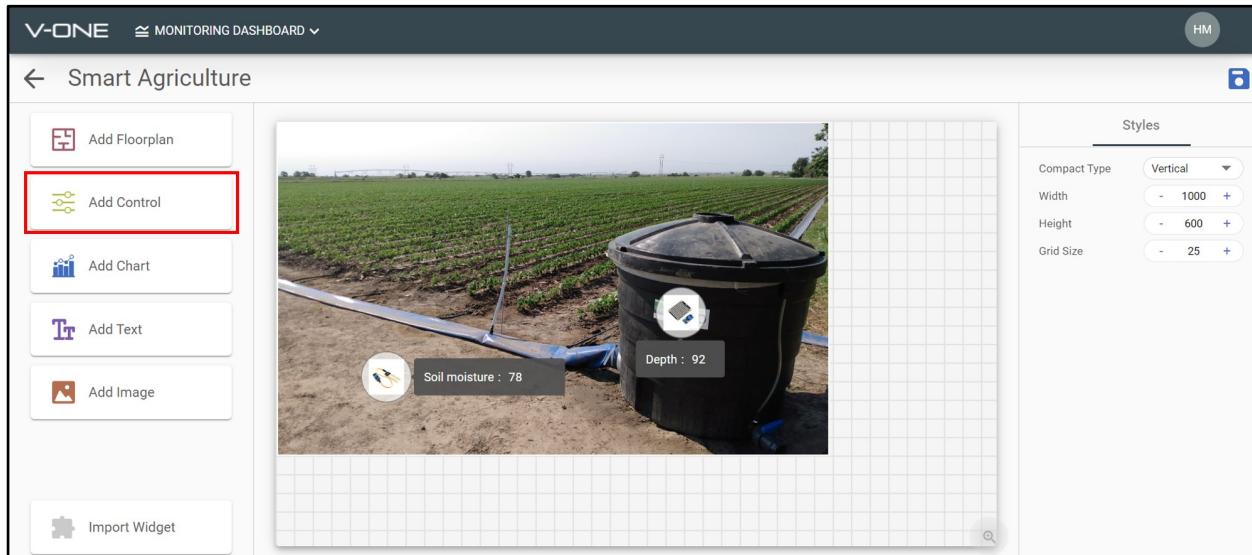
Change the width value to get a larger indicator.

Note: You can add more than one signal for each sensor!

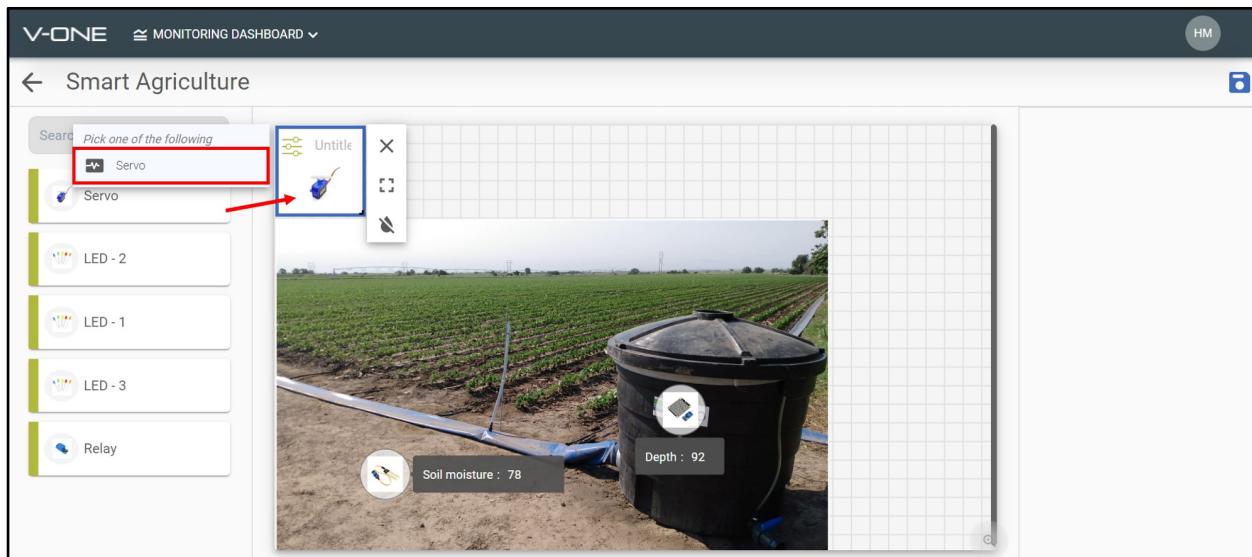


Done with the sensors part, let's move on to the actuator part. Click “**Add Control**”.

Note: Widget for actuators cannot be inserted in the background image. So, you can place it in the grid area.



For the actuator in **Project 8**, a servo is used to symbolize the water sprinkler. Drag **Servo** to the actuator box and pick “**Servo**” for the options.

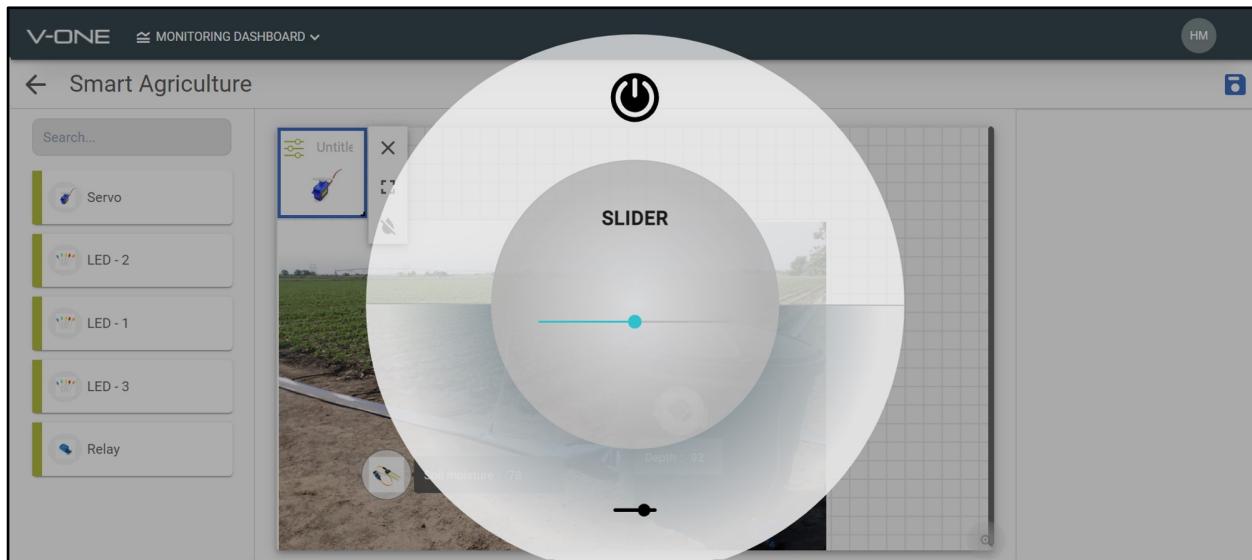


There are two choices of widgets available for the servo.

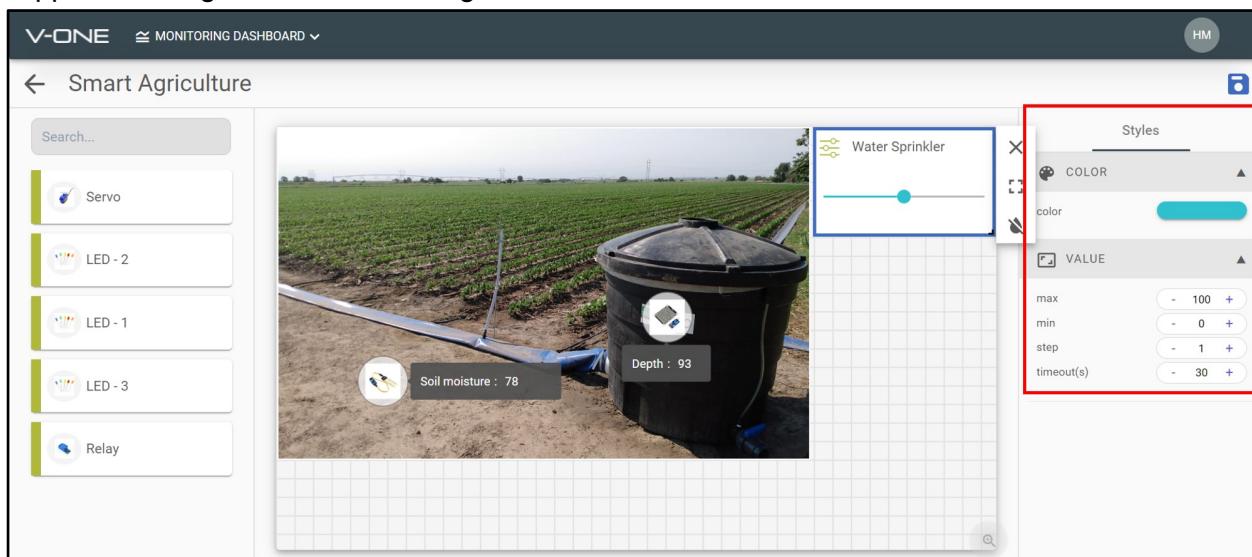
Slider - slide to simply change to any value.

Button - fix at one value to turn ON/OFF.

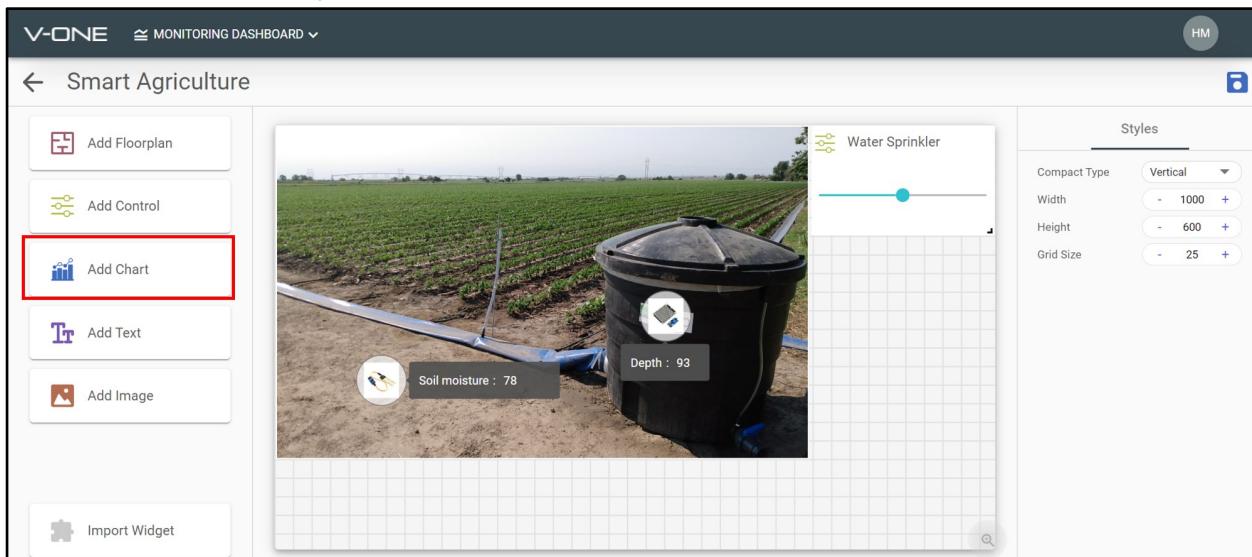
Let's proceed with Slider first.



Click on the slider widget. There you can change the color and value settings. Since this servo support 180 degrees rotation, change the **max value** to **180**.

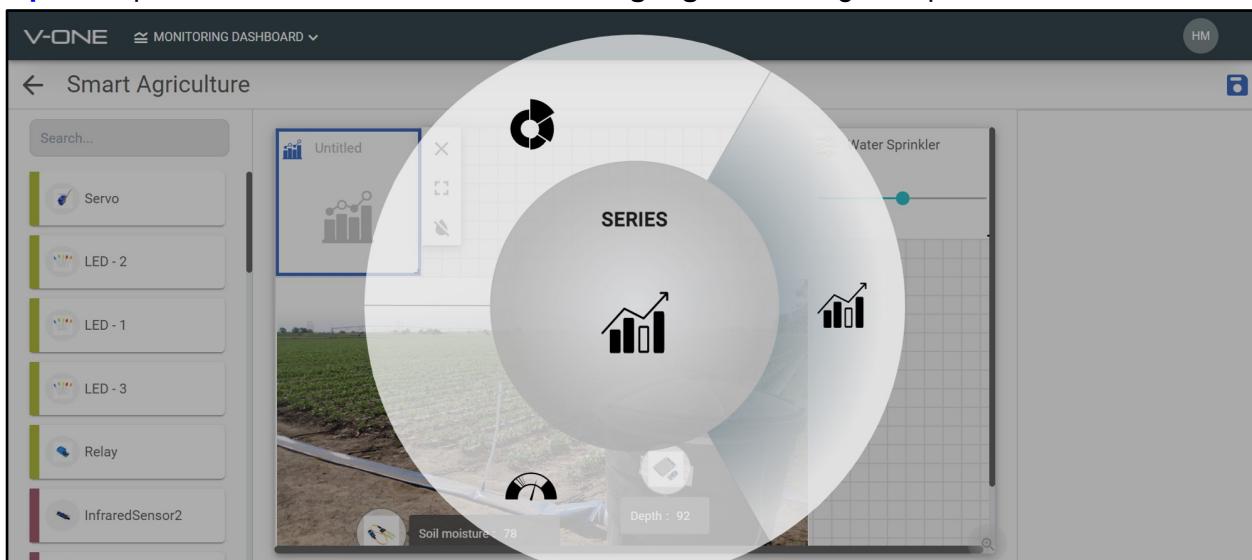


Last but not least, let's add a chart to the dashboard so that you can observe and analyze all the data collected in this project.

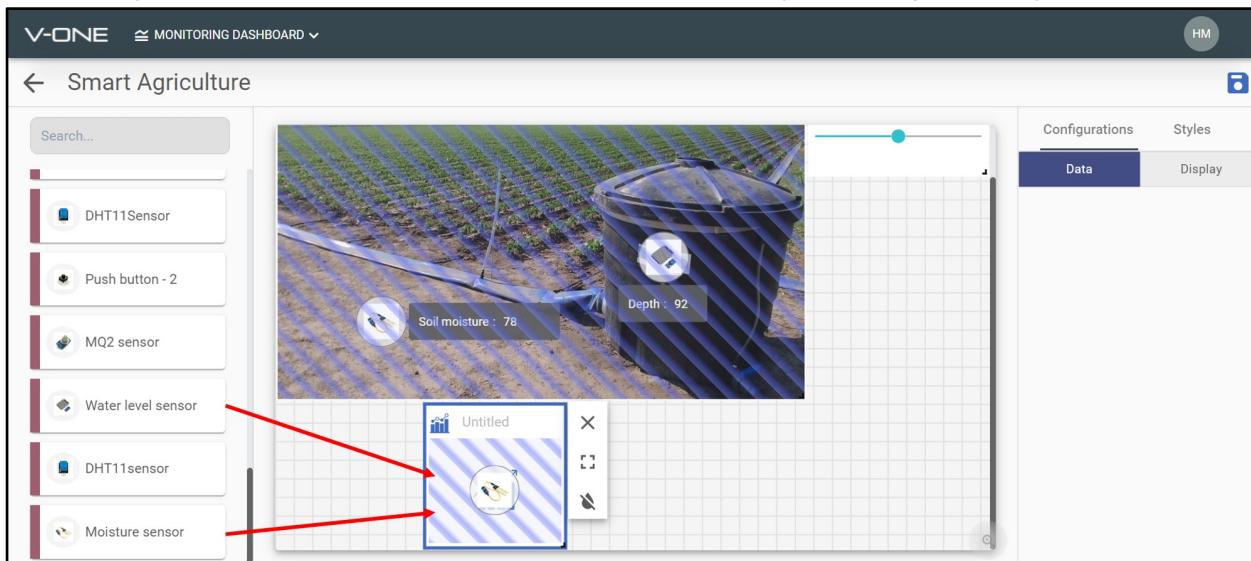


Choose the “**Series**” type chart.

Tips: For parameter like water level sensor, the **gauge** will be a good option.

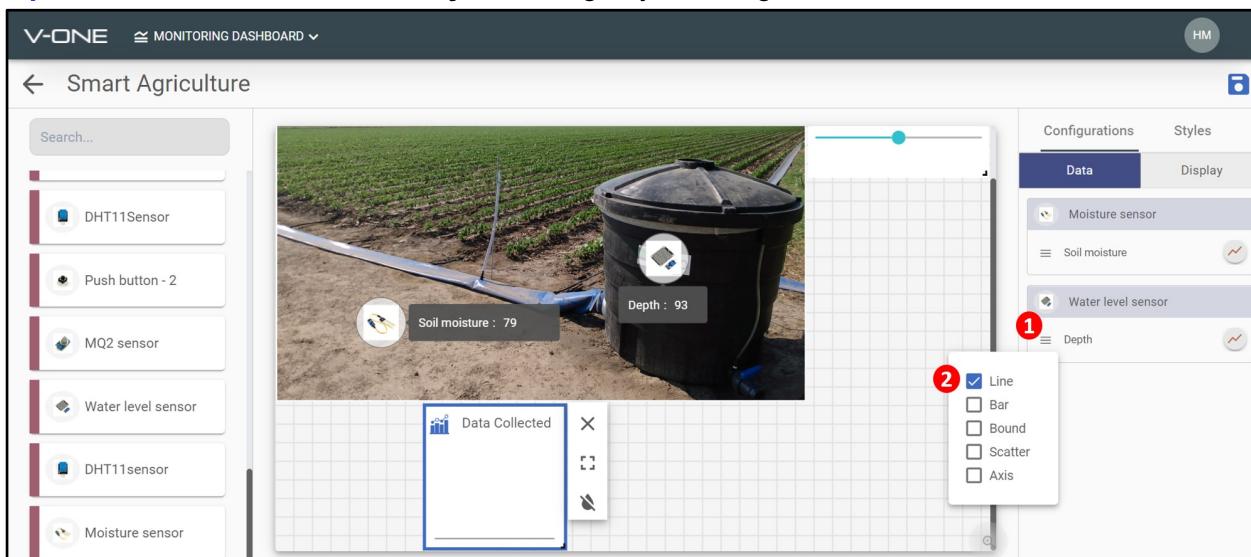


Similar to the actuator setup before this, drag any sensor to the chart box. You can drag more than one type of sensor into the chart and it will automatically plot the graph for you.



Enable the “Line” graph for both sensors.

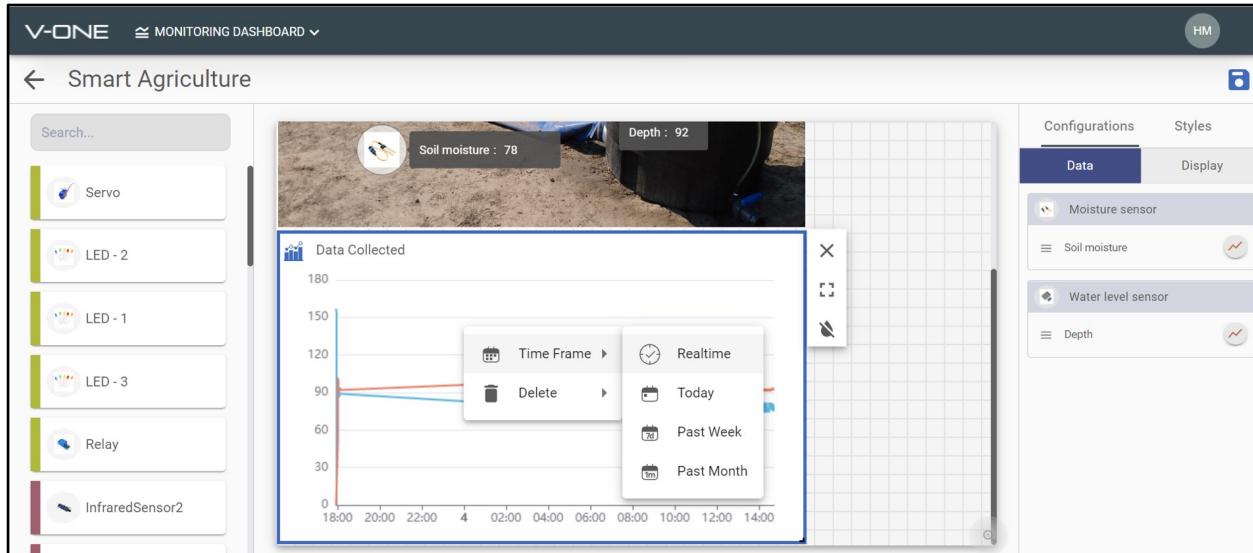
Tips: You can also customize the **y-axis** range by enabling the **“Axis”**.



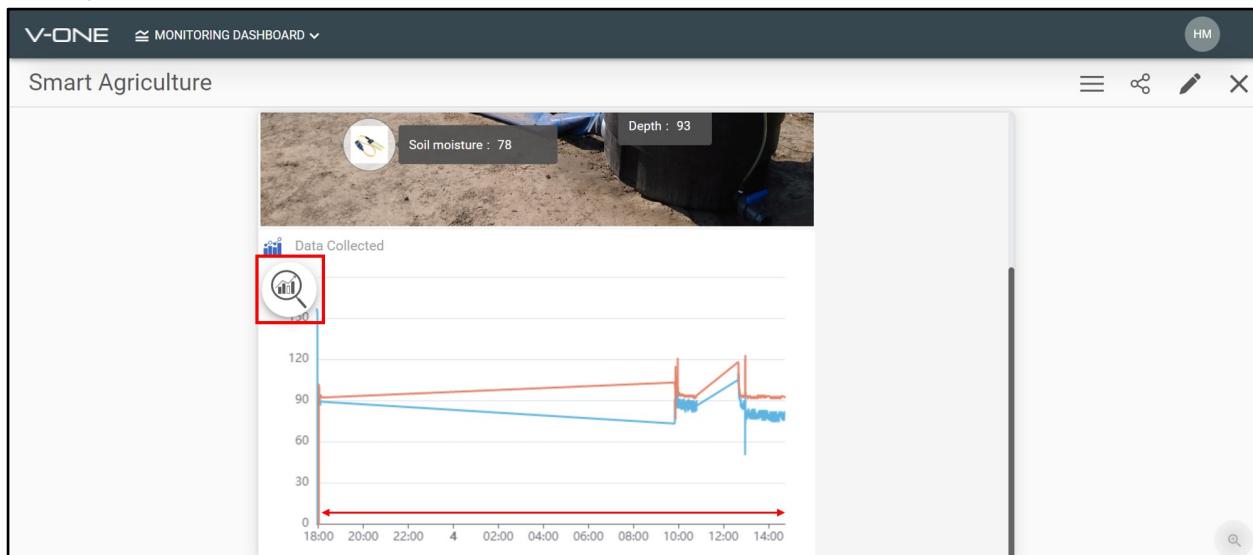
There you can see that a graph is created automatically, plotting real-time readings of the sensors.

Right-click on the chart to change the “Time Frame”. Then, click the save icon.

Note: You can change the color of each graph in the “Line” chart settings.



In view mode, you can zoom on any part of the chart by clicking on the magnifying glass icon. Scroll your mouse to zoom in and out.



Some beneficial connectivity features of the V-ONE dashboard:

- The sensor widget will have a red icon on the top left if the sensor is disconnected.
- The slider will turn into a grey color and you cannot move the slider if the servo is disconnected.
- The color of button widget will become dim if the actuator is disconnected.

Congratulations! You have successfully built the final dashboard. Now you can proceed to the next part to start creating IoT projects.

