Aeon Matrix

Yardian Max - Multifunctional Smart Controller User Guide

2024 Q3 Ver. 001 (ENG)

The Yardian Max is perfect for faculty agriculture

Facility Environmental Control Solution Features

Local Operation

The Yardian Max come with a 4-year warranty. The system operates locally without relying on an internet connection. Data can be saved locally through the Yardian Data Hub. Remote control and monitoring are possible when an internet connection is available.

Flexible scheduling

We offer various scheduling options, including Quick Control and Quick Program to activate stations immediately, Manual Program to activate stations based on set dates and times, and Conditional Program to create automated routines for different scenarios with corresponding sensors.

Versatile Station Control

Maximize the Yardian Max system's versatility with the One-at-a-Time Group function. This feature lets you configure the controller to run specific stations sequentially for tasks like irrigation or operate multiple stations simultaneously for other applications.

Flexible Master Control

Maximize control with the Master by Station feature, activating the master station only for selected stations. Ideal for irrigation, it provides control without engaging the master valve or pump relay.

Edge computing secures your investment without internet reliance

Wi-Fi Direct Connect

No need for internet connection, you can connect to the controller using your phone's Wi-Fi, enabling direct operation and setup.

Control Through The Cloud

You can remotely control using your smartphone browser, connect via Wi-Fi or Ethernet, and optionally add a LTE router for internet access.

Simultaneously used for various purposes—irrigation, equipment control, and environmental monitoring

connecting to solenoids | through relays | through local network

Irrigation Control

Motor
Sprinkler
Valve

Device Control
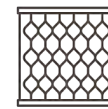

Electrical Cabinet

Fan | Shading Net | Light

Water Wall | Humidifier | Roller Blinds
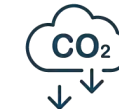
Sensor Integration

Yardian Data Hub

Light | Temperatur | Humidity

Rainfall | Soil | Air

Create Automated Routines for Different Scenarios

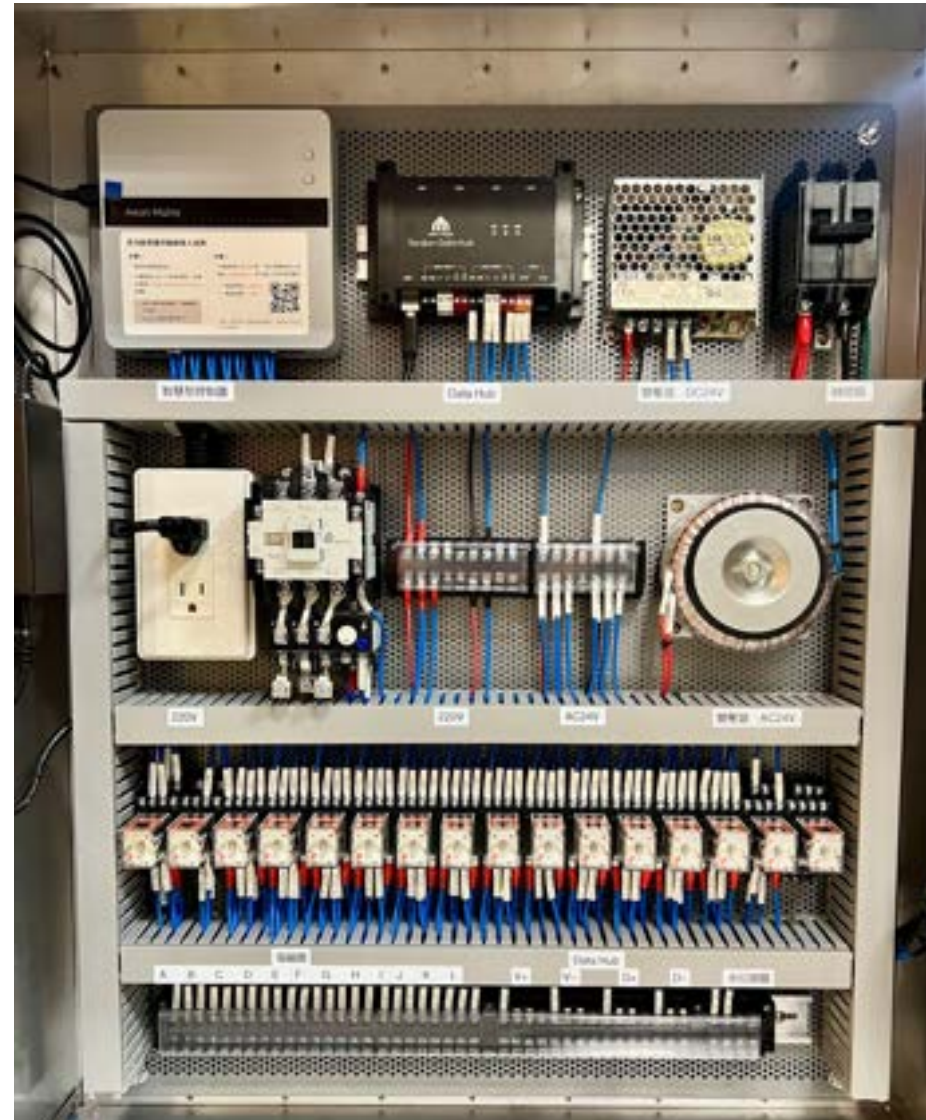|			
☀	Daily 09:00~15:00	light sensor **higher than** 50k lux	→ *close the shading net*
	Daily 09:00~18:00	light sensor **lower than** 8000 lux	→ *turn on light for 30 minutes*
🌡	Daily 09:00~15:00	temperature **higher than** 25°C	→ *Turn on the fan for 40 minutes*
	Daily 00:00~06:00	temperature **lower than** 20°C	→ *Turn on heater for 20 minutes*
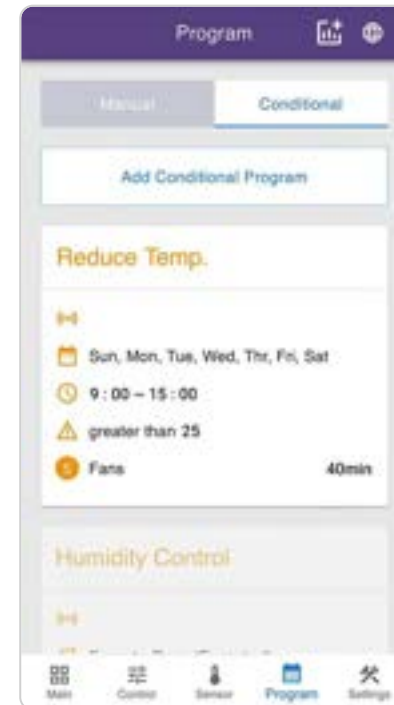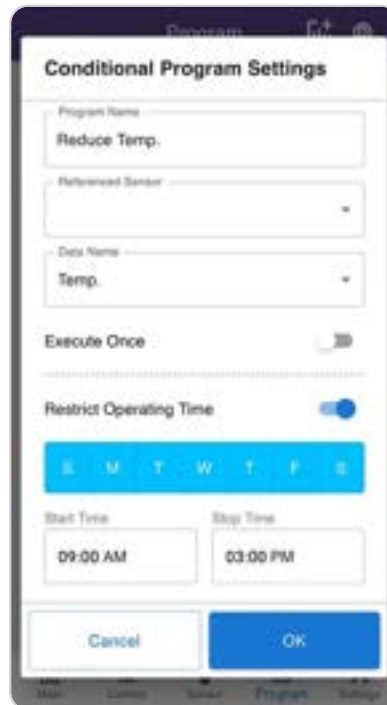
Multifunctional Smart Controller
Irrigation Application Wiring Diagram
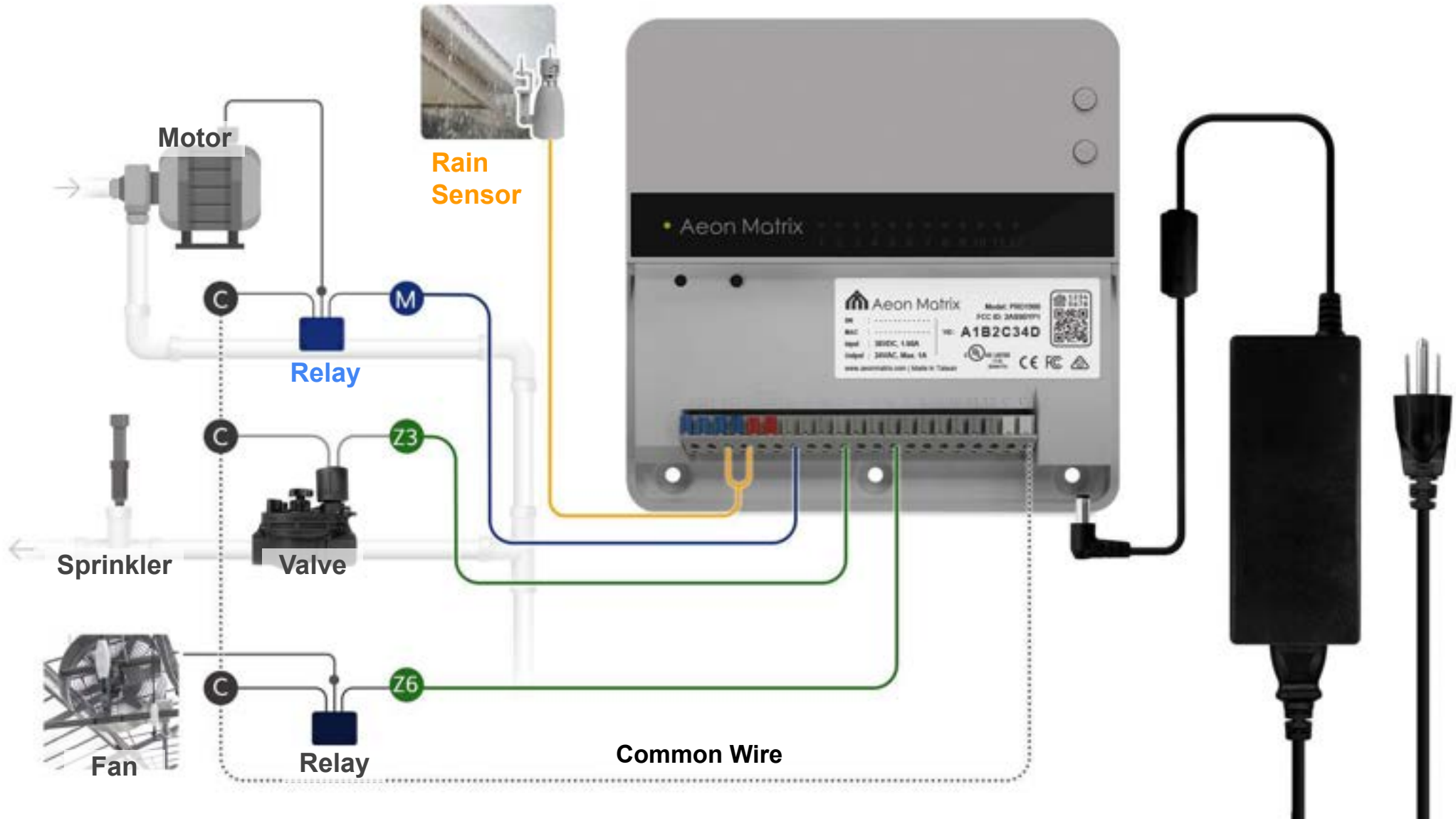
Multifunctional Smart Controller
Sensor Data Collection Kit Diagram

8G USB drive
(For data storage)

Various Types of USB
Interface Sensors

USB cable

Various Types of RS485
Interface Sensors
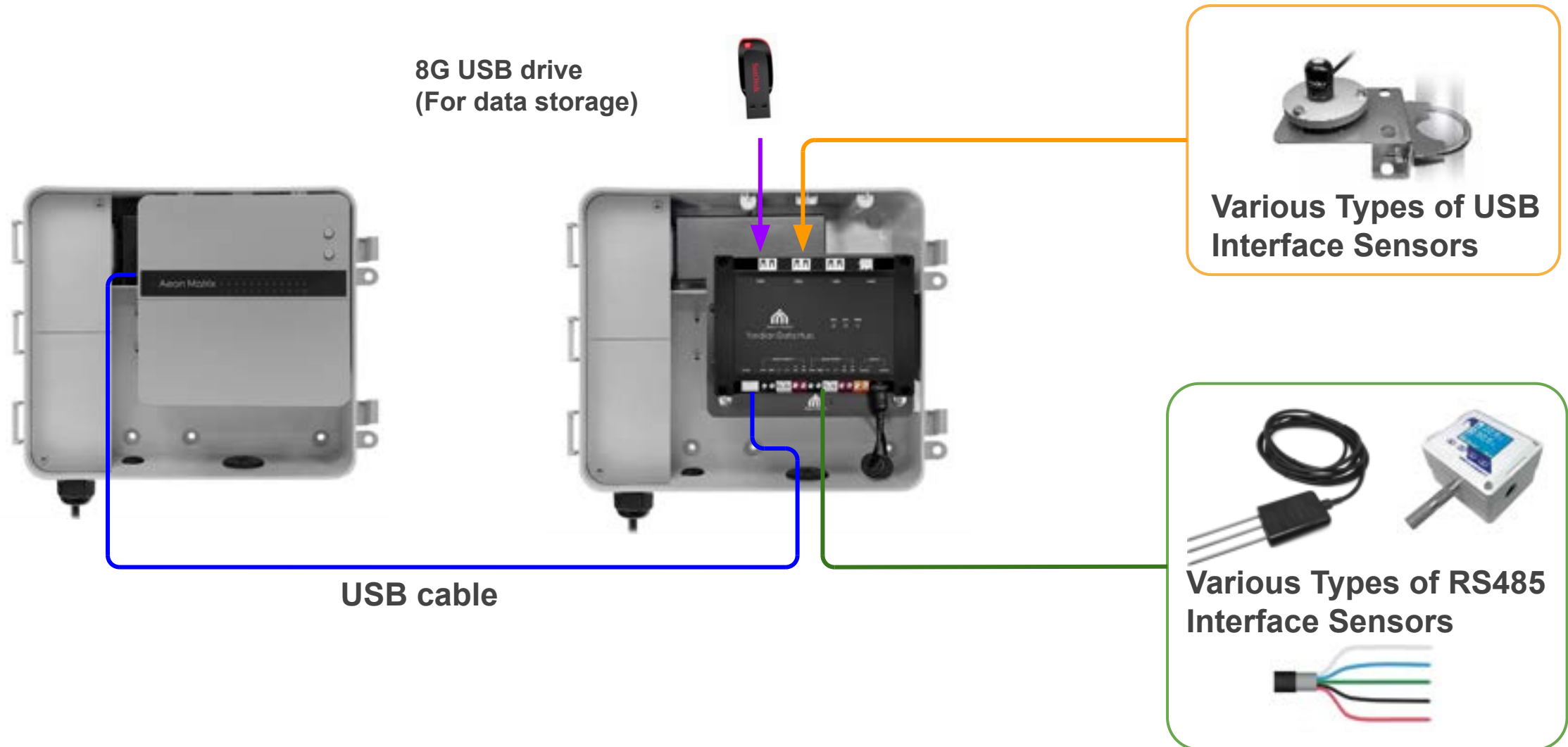
Multifunctional Smart Controller Equipment Control Panel Diagram

Yardian Max Product specification

Interfaces	8-zone/12-zone with surge and overcurrent/short protection - On-device buttons for "zone status detection" and "instant watering control" - RJ45 port and USB port - Dedicated master valve/pump - Dedicated 24VAC output port Two sensor ports - Wire range: 14AWG – 22AWG
Dimensions and Weight	6" L x 6" W x 1.38" H (15cm x 15cm x 3.5cm) 1lbs (0.45Kg)
Controller Power	- Yardian must be connected to the power adapter included - Input: 36VDC, 1.66A - Output: 24VAC, Max.1A
External Power Adapter	- Input: 100 – 240VAC, 50 – 60Hz, Level VI efficiency - Output: 36VDC, 1.66A

APP	- iOS 10.0+ and Android™ 5.0 Lollipop®+ - Web control available
Rain Sensor Support	Programmable to Normally Closed (NC) or Normally Open (NO)
Flow Sensor Support	Pulse output sensor
Operating Temperature	-22°F to 140°F (-30°C to 60°C)
Warranty	2-year limited warranty
Design	Indoor use (with optional Weatherproof Outdoor Enclosure)
Internet Connection	Built-in Wi-Fi 2.4G, 802.11 b/g/n
Future Proof	Future integrations through Over-The-Air software updates
Certification	UL, CE, FCC and RCM certified

Yardian Data Hub specification

Interfaces	3x USB 2.0 Type-A ports 2x RS485 ports, each has 2x GND - D- (A) D+ (B) 12VDC 24VDC 1x USB 2.0 Type-C port (USBC) for connecting Yardian accessories 1x USB 2.0 Type-B port (USBM) for connecting the Yardian controller 24VDC power input ports - Terminal block - DC jack
Dimensions and Weight	5.7" L x 3.7" W x 1.57" H (14.5cm x 9.4cm x 4cm) 0.44lbs (0.2Kg)
Data Hub Power	- Input: 24VDC/2A - Output: 24VDC/1A, 12VDC/1A - USB 5V/1A
Operating Temperature	-22°F to 140°F (-30°C to 60°C)
Warranty	2-year limited warranty
Design	- Can be installed using screws or DIN rail TS-35/7.5mm - Indoor use with optional Weatherproof Outdoor Enclosure - Optional 24VDC power supply available to fit the outdoor enclosure

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How to Use the "Instant Control Button"

➔ Automatic detection of solenoid valve

➔ Instant watering control

Automatic Detection of Solenoid Valve
Verify and Check the Connection Status of the Solenoid Valve

Press/hold Select and Run/Stop at the same time

Green LEDs: Solenoid valves attached

Red LEDs: Faulty solenoid valves detected

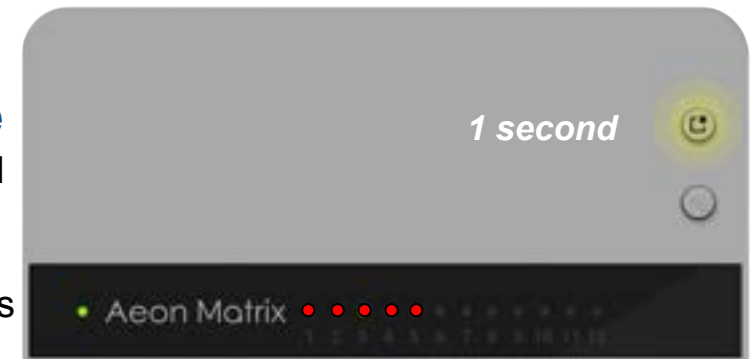# Instant watering control - Activate and set the desired watering time for the solenoid valve

1. Select a zone

Press Select on the top to specify a zone in Zone Selection Mode (green LEDs)

1 second

2. Set the duration time

Hold Select for over 1 second to switch to Time Selection Mode (red LEDs), and press Select to specify duration in minutes

★ 1 red light = 1 min, 2 red lights = 2 mins... up to 12 mins for one zone

3. Run the zone

Press Run/Stop to run the zone

4. Stop the zone

To stop watering at any time, press/hold Run/Stop for over 3 seconds

3 seconds
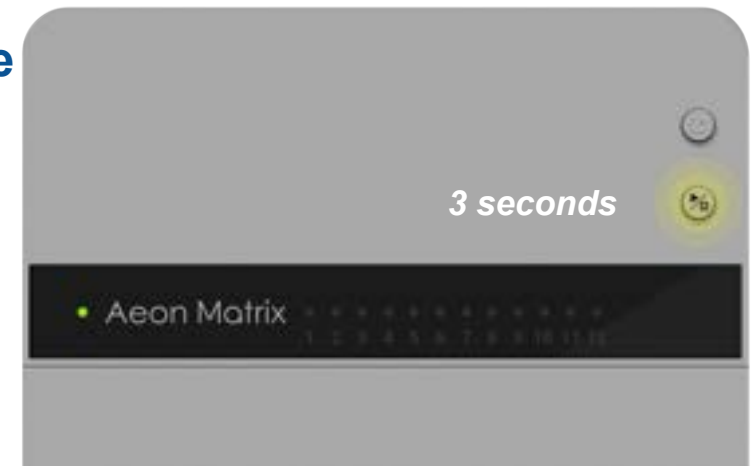
Connect to your controller

1. Wi-Fi Direct Connection - Direct Connect Mode (Default)
2. Internet Connection via WiFi - WiFi Router Mode
3. Internet Connection via Ethernet cable

\# Remote access is available only for controllers with activated cloud services. Please contact Aeon Matrix to activate it.

\# After the controller is connected to the internet with Aeon Matrix cloud service, remote operation, and OTA updates will be functional.

Wi-Fi Direct Connection - Direct Connect Mode
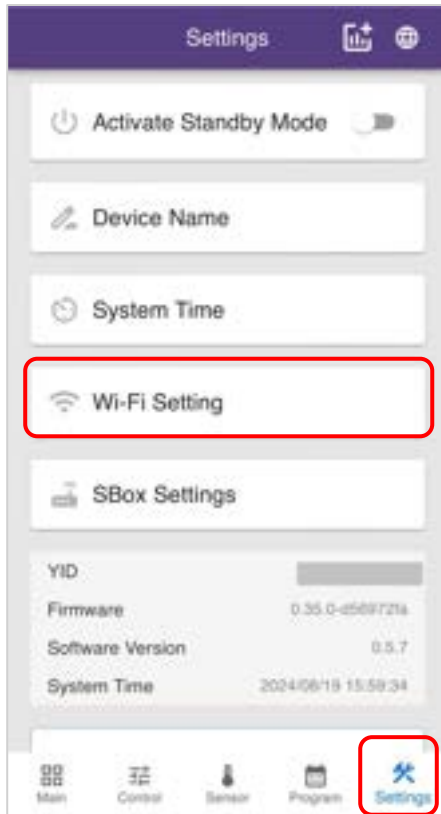
1.Tap Setting → Wi-Fi setting

2. Choice → Direct Connect mode

- The default Wi-Fi setting is Direct Connect Mode, allowing direct connection between a smartphone and the controller.

- In Direct Connect Mode, you can only access the controller through a browser.
  Refer: "Use "Direct Connect Mode" on your phone to log in via the browse"

- When there is no internet at the site, use "Direct Connect Mode" to connect your smartphone directly to the controller for configuration.

- Note: Stay close to the controller when using "Direct Connect Mode" to ensure a stable connection.

Internet Connection via WiFi - WiFi Router Mode
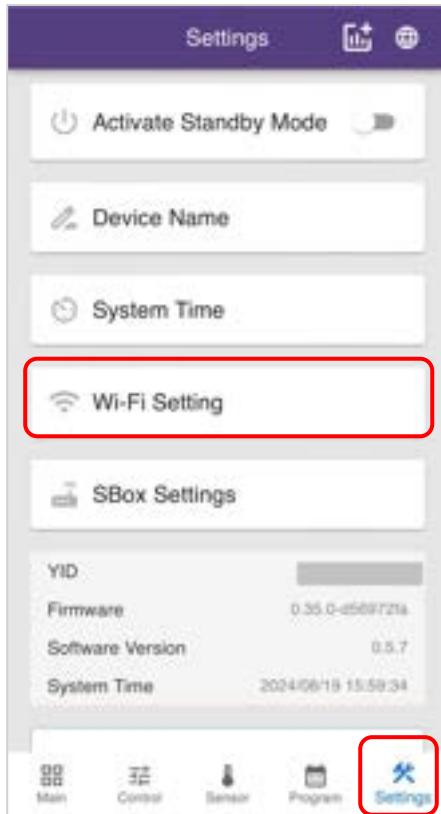
1.Tap Setting → Wi-Fi setting

2.Choice → WiFi Router mode

SSID: Wireless Network Name

Password: Wireless Network Password

- Connect the controller to your Wi-Fi router with internet access (**2.4GHz** supported)

- To access the control interface, you must pair the controller with the Yardian app. Refer: "Activate the cloud service by signing in with the 'Yardian' app"

- Yardian APP Download：https://www.yardian.com/app/

- After successfully connecting to the internet using 'WiFi Router Mode,' the controller's indicator light will remain steadily lit in **Green**

- Note: If you want to switch from 'WiFi Router Mode' back to 'Direct Connect Mode,' you can set it in the Yardian app. Alternatively, you can press and hold the Wi-Fi button on the control panel for 3 seconds to return to 'Direct Connect Mode'

Internet Connection via Ethernet cable

Connect the multifunctional smart controller to an internet-enabled router using an Ethernet cable. Once connected successfully, the indicator light will turn solid **blue**

Ethernet cable
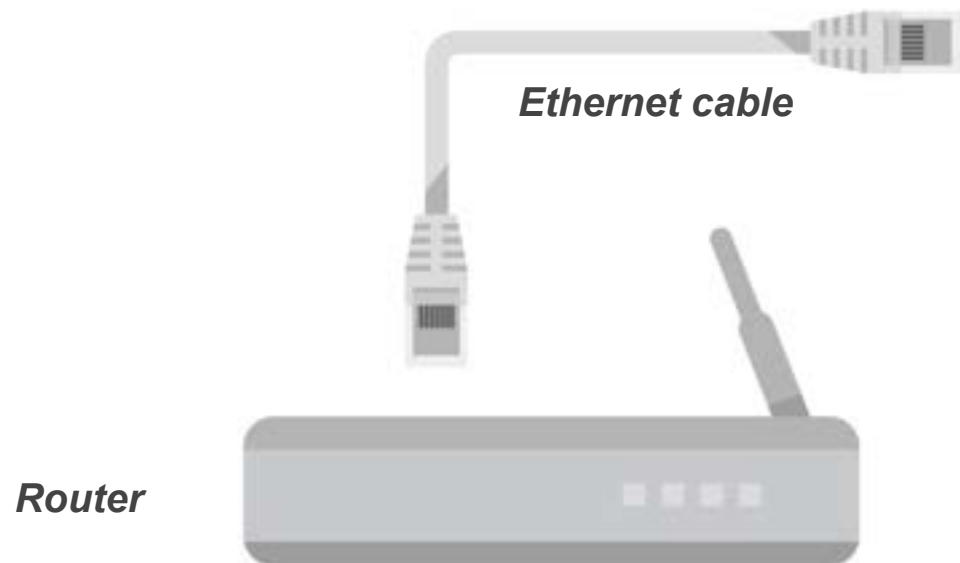
Router

Note: When you connect to the internet using an Ethernet cable without setting up WiFi router mode, you can access the control panel in Direct connect mode or use the Yardian app

How to login

1. Use "Direct Connect Mode" on your phone to log in via the browser
2. Activate the cloud service by logging in with the "Yardian" app

Use "Direct Connect Mode" on your phone to log in via the browse

Just two simple steps to access the control panel

Step One

Turn on your mobile phone's (Wi-Fi) wireless network, locate the controller device with the designated 'ID' on-site.

Connect to the device as illustrated, using "ami-control-xxxxxxxx".
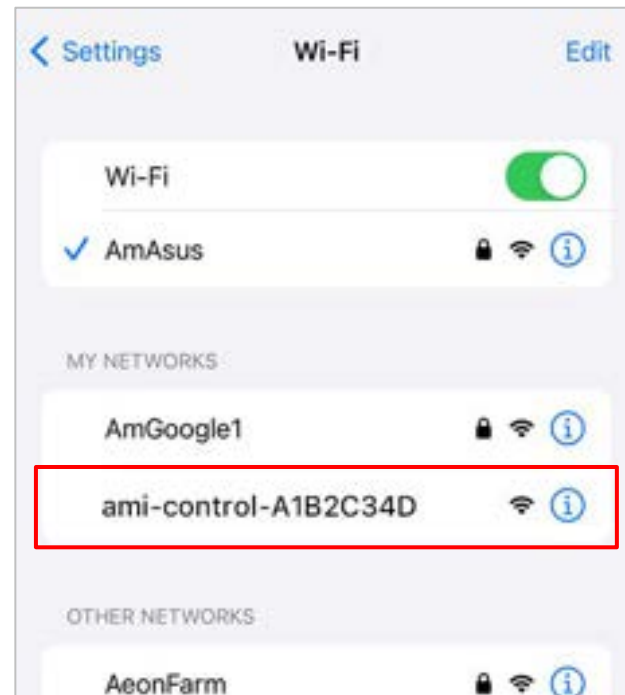
Step Two

Scan the QR code with your mobile phone or enter 10.88.88.1 in the browser address bar to access the control management screen

Admin：

- Account：admin
- Password：1234

Guest：

- Account：guest
- Password：1234

Account

Password

Sign In

10.88.88.1
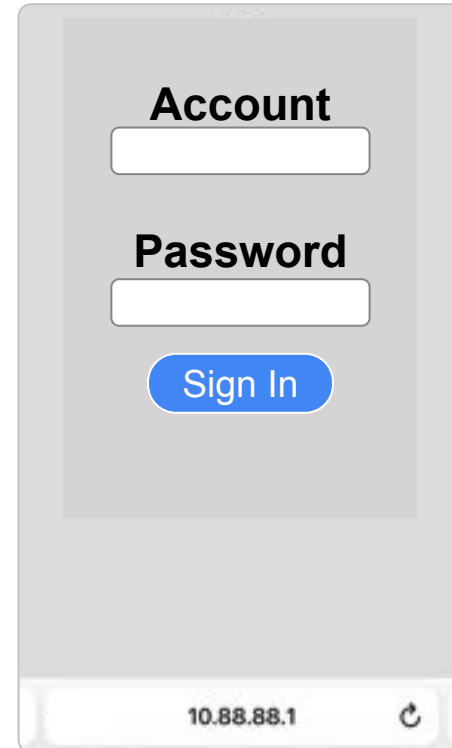
Activate the cloud service by signing in with the "Yardian" app

Just three simple steps to access the control panel

Step One - Sign In

- Yardian APP download link:
  https://www.yardian.com/app/

- After entering the Yardian APP, please select "Sign In" and enter your email and password.

- After entering your email and password, please select "Sign In.

- If you forget your password, please select "Forgot Password." After entering your email, go to your email inbox to reset your password.
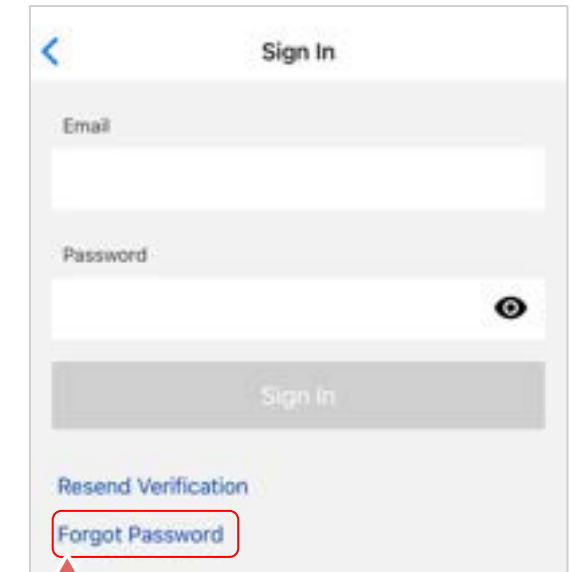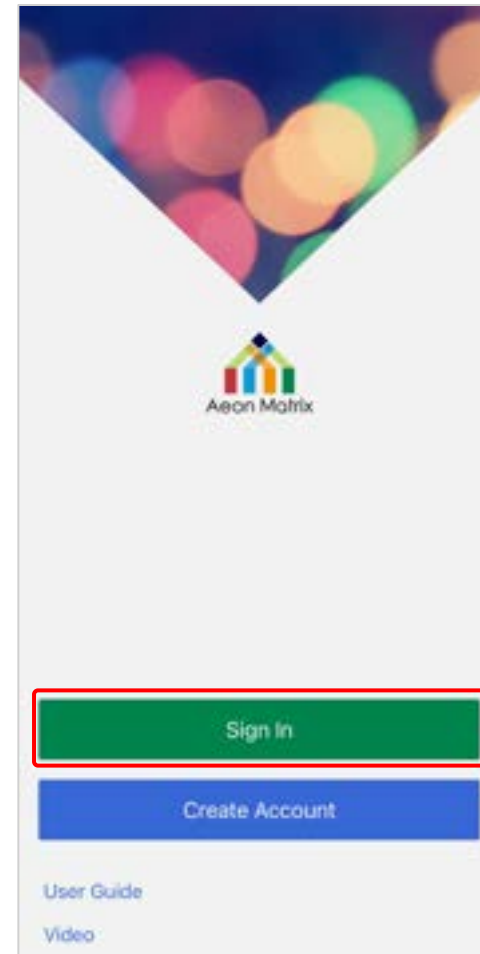
Create Account

- If you haven't created an account, please select "Create Account."

- Enter your email and password, select "I Agree," then click "Create Account."

- After registration, please check your email for a confirmation message and click the confirmation link in the email to complete your registration.

  - Note: If you don't receive the confirmation email within three minutes, please check your spam or junk mail folder.
  - If you can't find it in your spam folder, go to "Sign In" and select "Resend Verification Email" or contact Aeon Matrix.
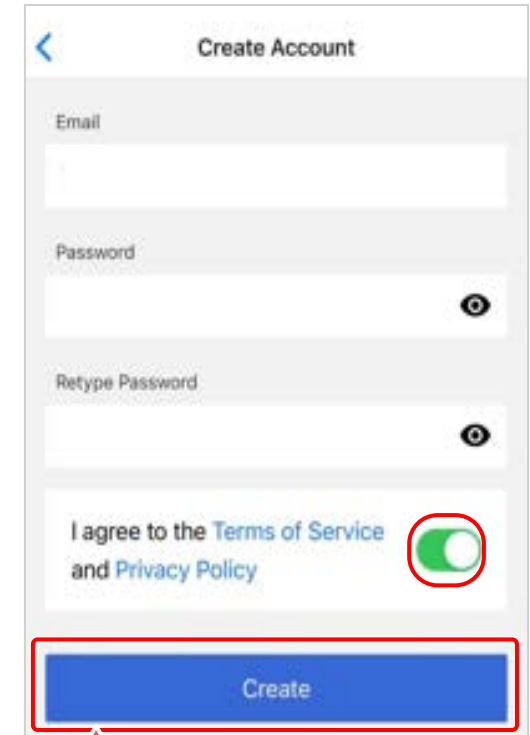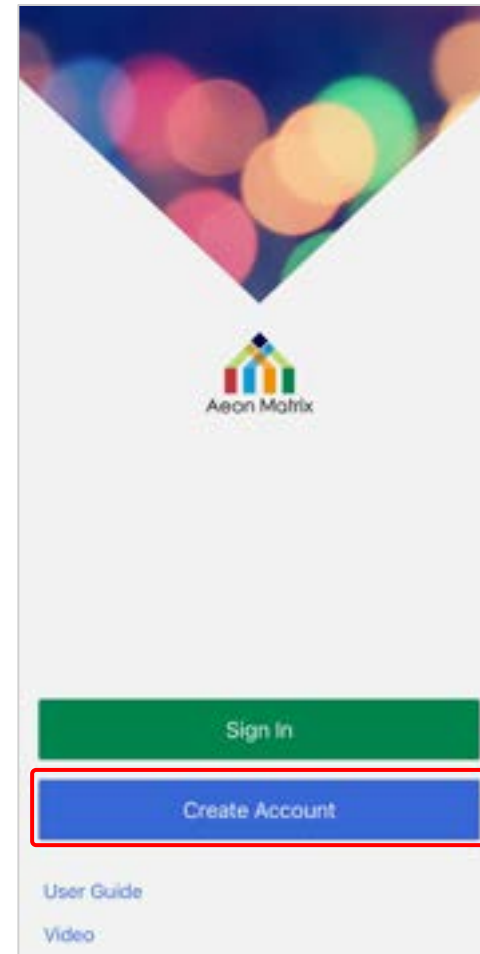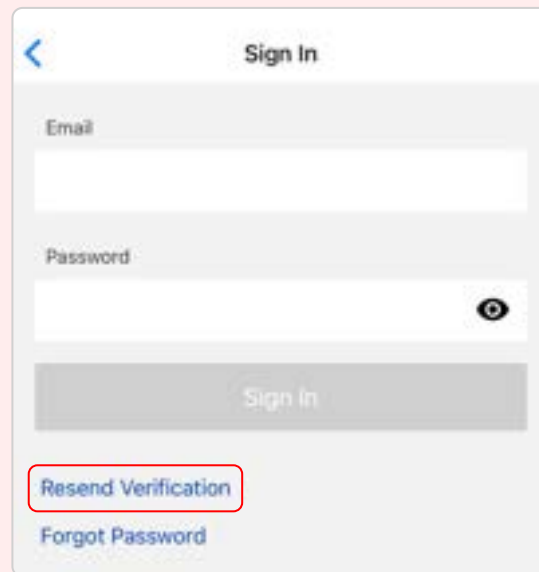
Step Two - Settings

- After entering the Yardian APP home page, please first select "Create New Home."

- Once set up, please select ⚙ to access your home settings and start editing "Location" and "Weather Station."

- For additional details about "Home," please refer to the "Home" information.
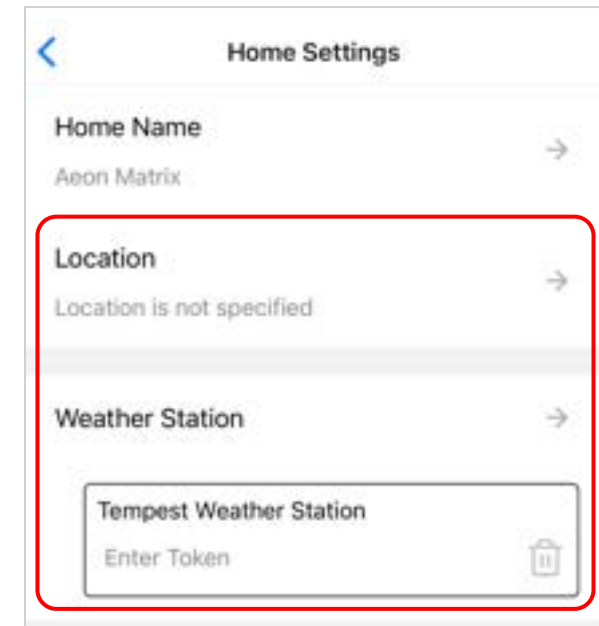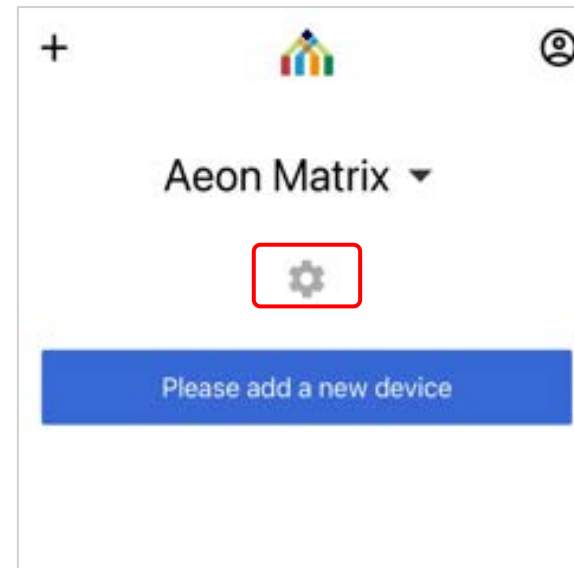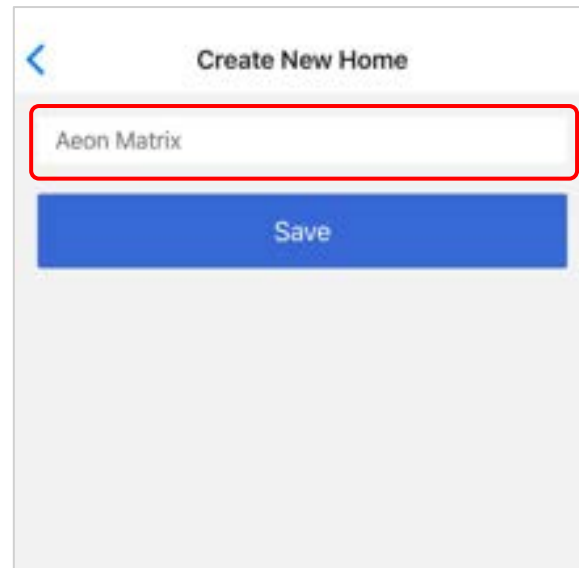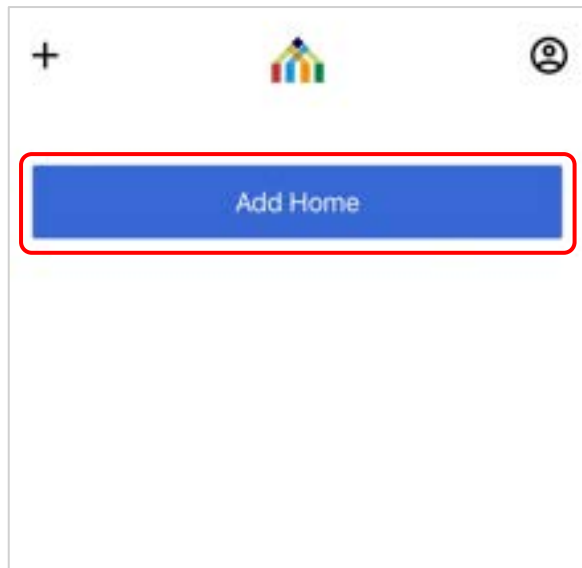
"Home" Additional Information

You can decide how many new homes to add based on the number of controllers you need.

==!!Controllers in the same location would usually be placed in the same home.==

- You can tap the " + " in the top left corner of the screen to create your second or third new home

- Tap the ▼ to enter your other "homes"

- ❖ You can have up to 5 homes in one account
- ❖ A single home can pair with up to 10 controllers

Aeonmatrix ▼

Yardian Max- A1B2C34D →

My Home

Aeon Matrix2

Aeonmatrix

Cancel
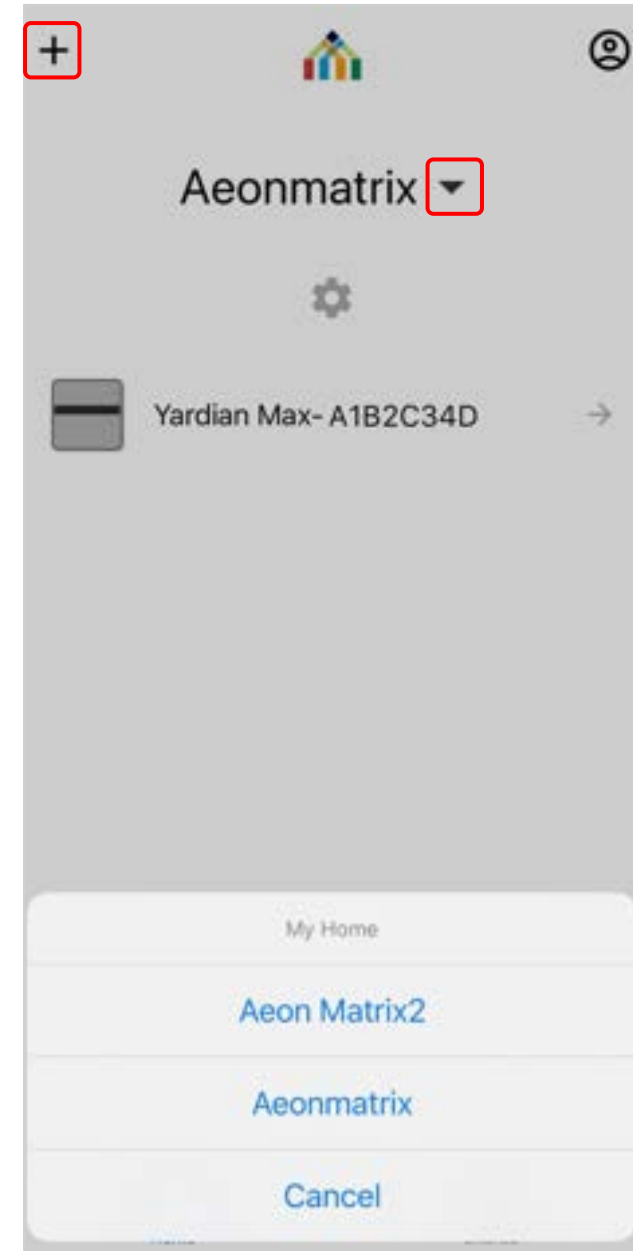
Step Three - Add Device

- Tap "Please Add a New Device" on the homepage and enter the YID on the controller.

- After entering the YID, please tap "Next" to confirm the device you added. If everything is correct, please tap "Add".
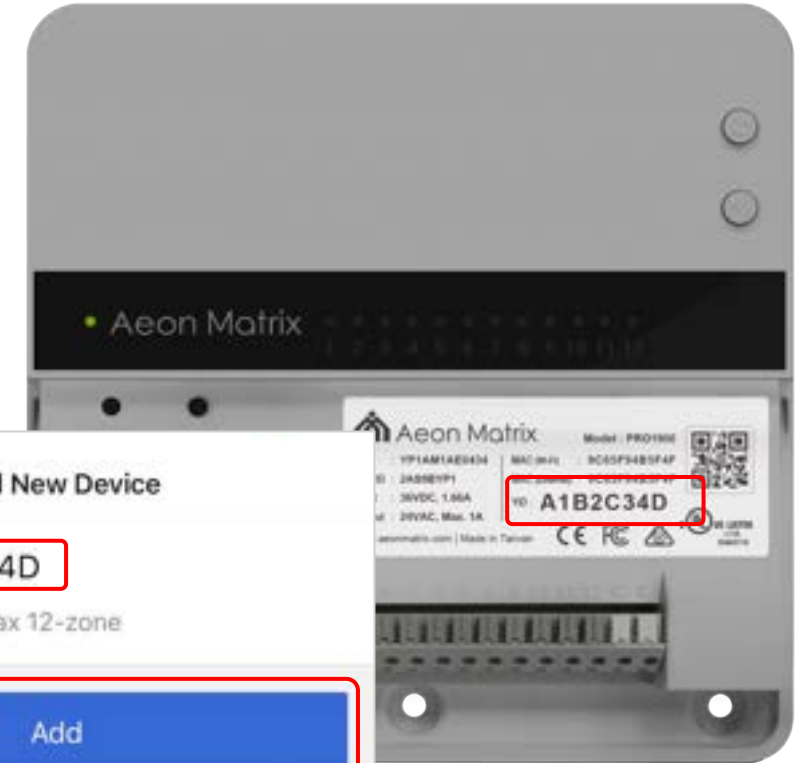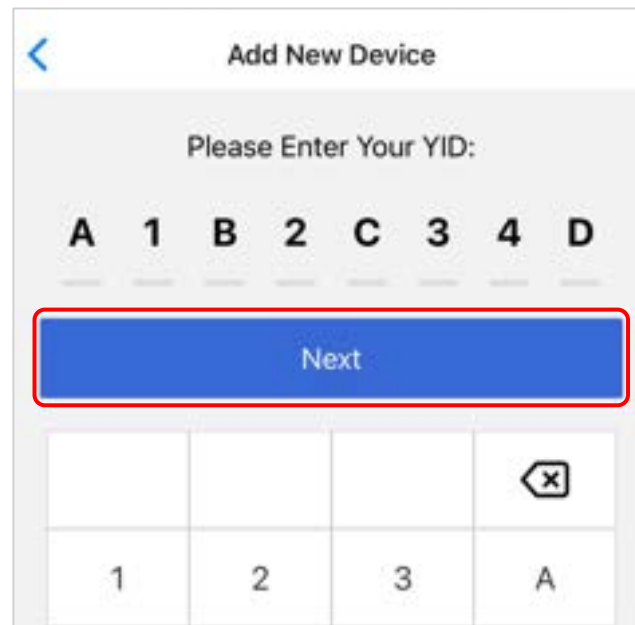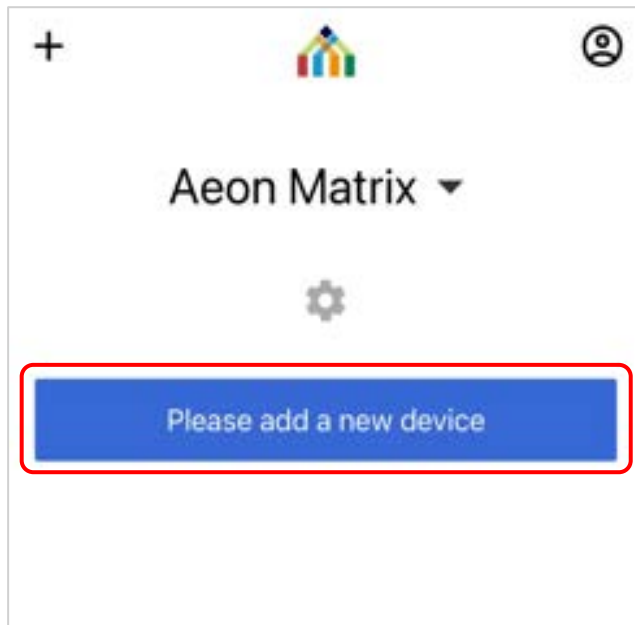
Access The Control Management Screen

Tap on the controller on the home screen, enter your account and password, and you'll access the control management screen.

Admin：

★ Account：admin

★ Password：1234

Guest：

★ Account：guest

★ Password：1234
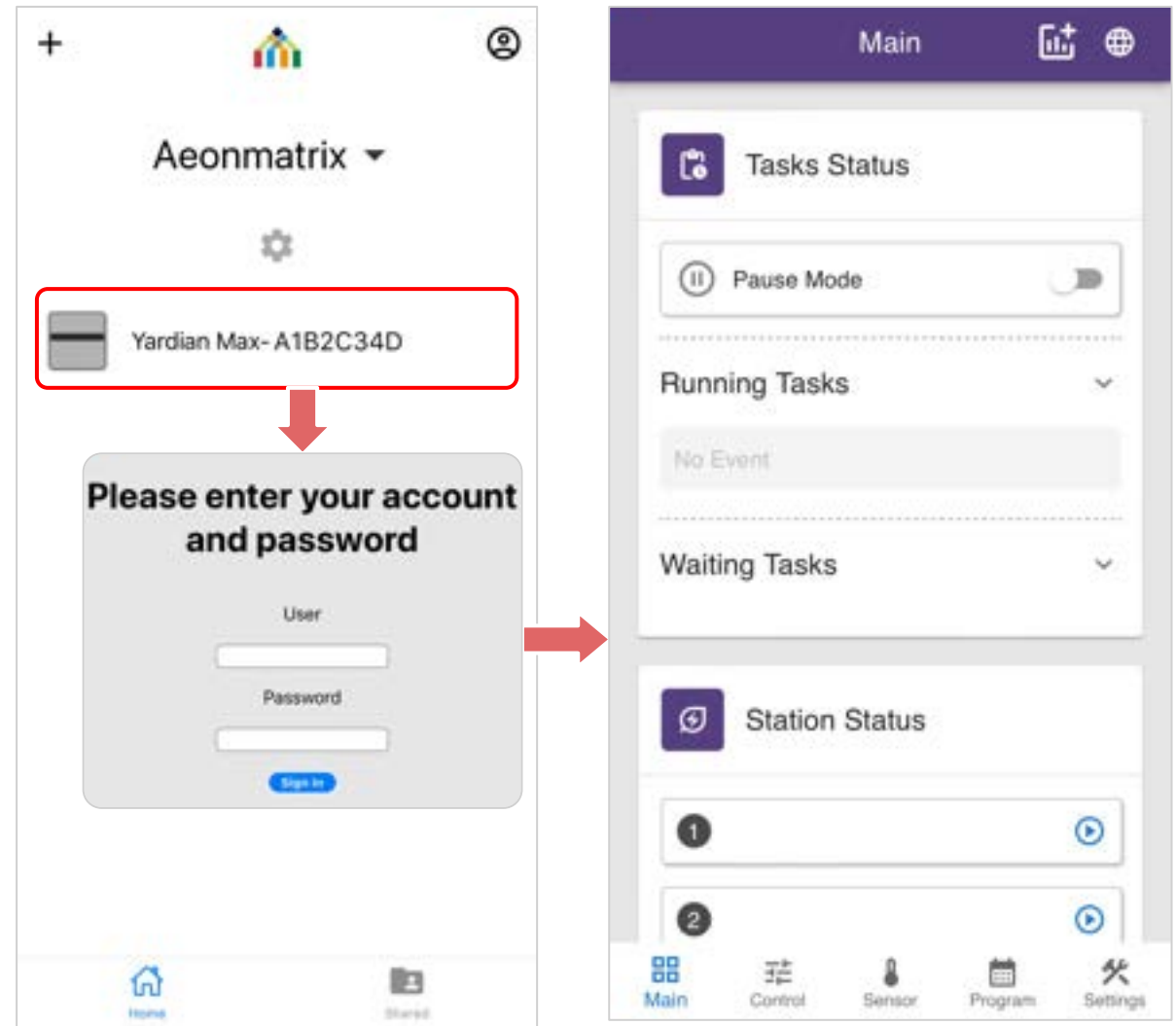
User Permission

【User Permission】

admin

The permission to configure and use all functions：

★ Quick Control

★ Quick Program

★ Manual Program

★ Conditional Program

★ Change Password

★ Edit Zone Name

guest

The permission to use functions：

★ Quick Control

★ Quick Program

★ Edit Zone Name
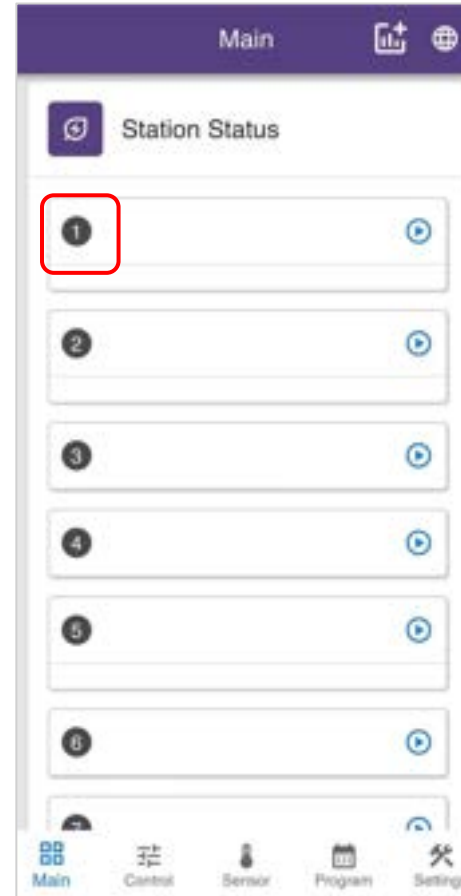
Change Password
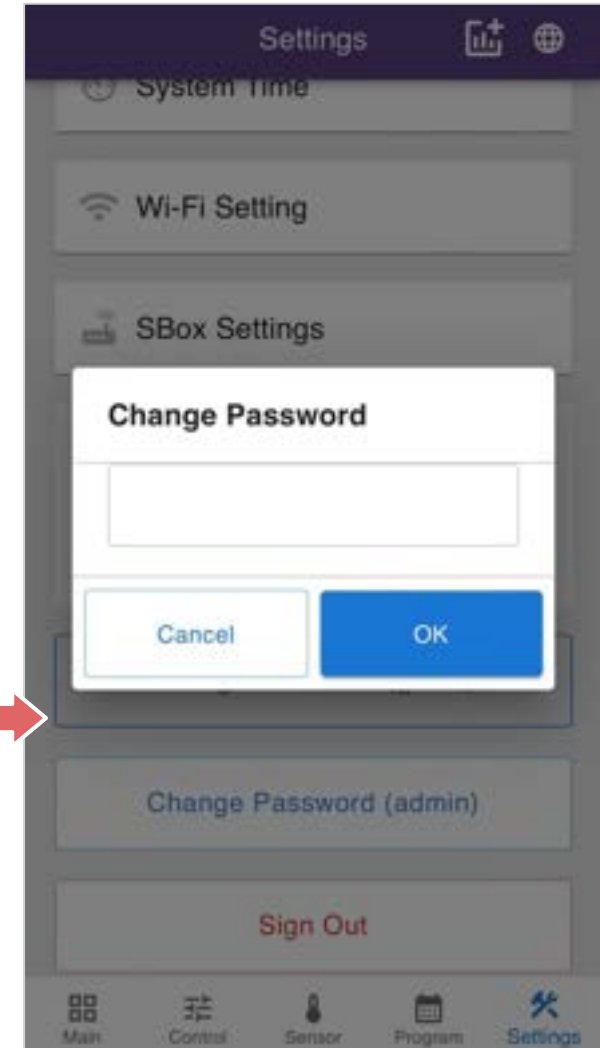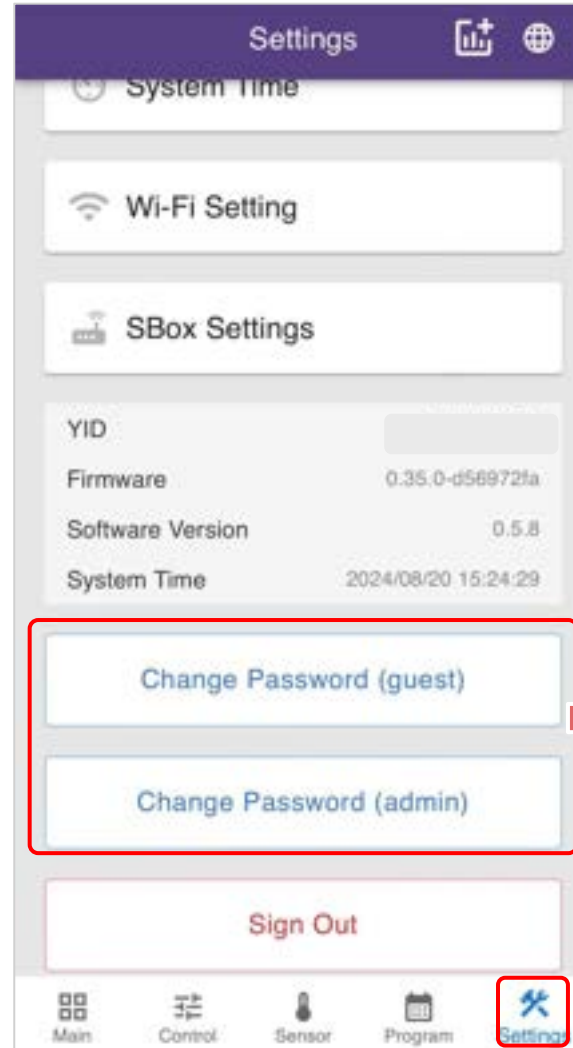
Station and advance settings
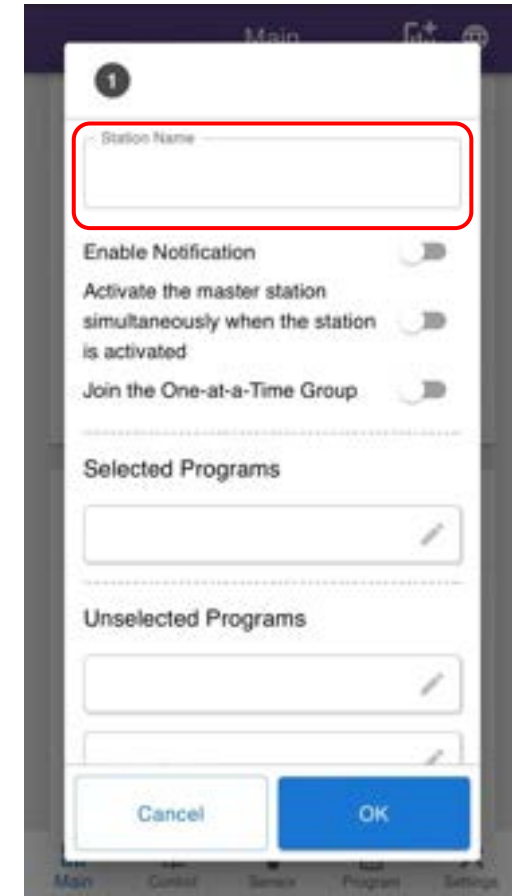
1. Edit Station Name

2. Station advance settings
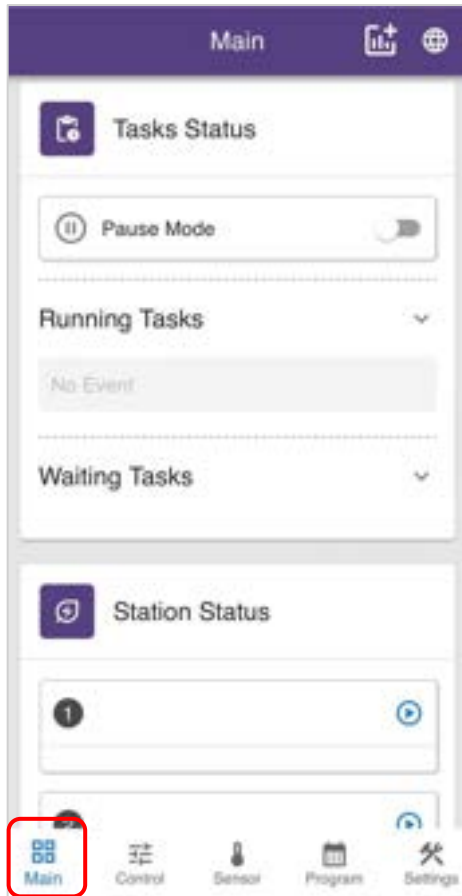
1.【Edit Station Name】

1. **Main → Station Status**

2. Tap the Station Number to access the station settings panel

3. Edit station name here

2.【Station advance settings】

Enable Notifications: Instant notifications for station activation and deactivation are enabled.

Activate the master station simultaneously when the station is active: When enabled, this station will simultaneously activate the pump start relay connected to the "M" terminal. If using a constant pressure pump or not connecting to the "M" terminal, this feature can be disregarded.

Join the Exclusive Single Activation Group: Primarily used for irrigation applications, this feature prevents simultaneous activation of multiple stations due to site water pressure limitations. When enabled, it rotates the activation sequence for multi-station irrigation.
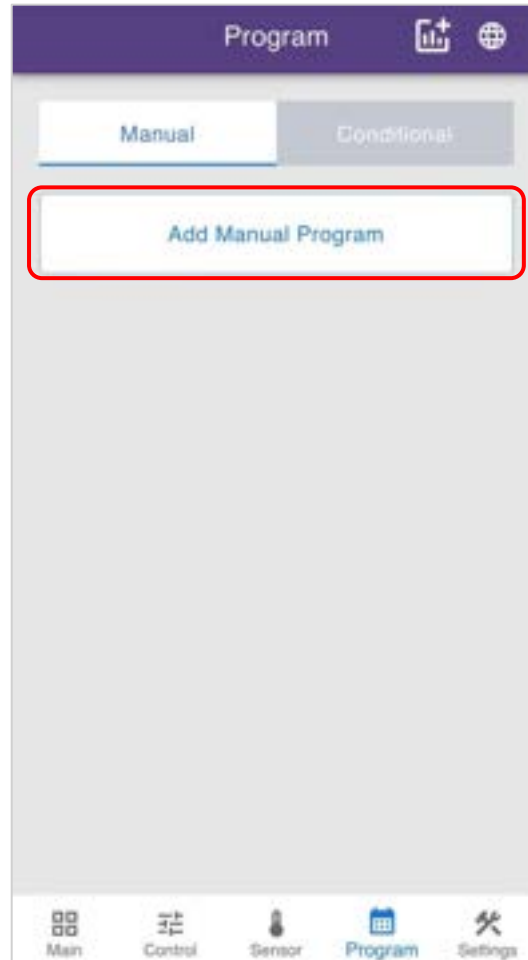
How to set up the "Manual Program"

1. Add Manual Program

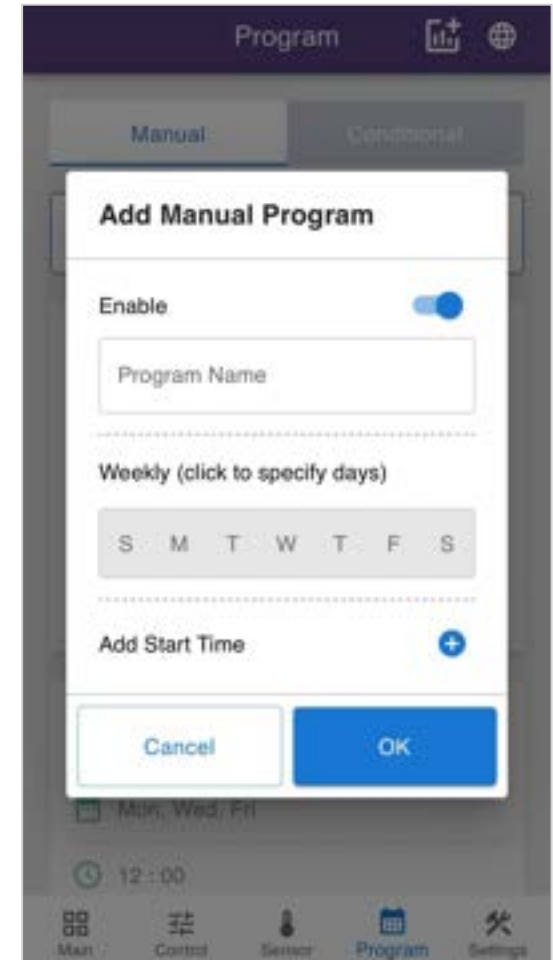2. Set a program name, date, and time

3. Add station and duration
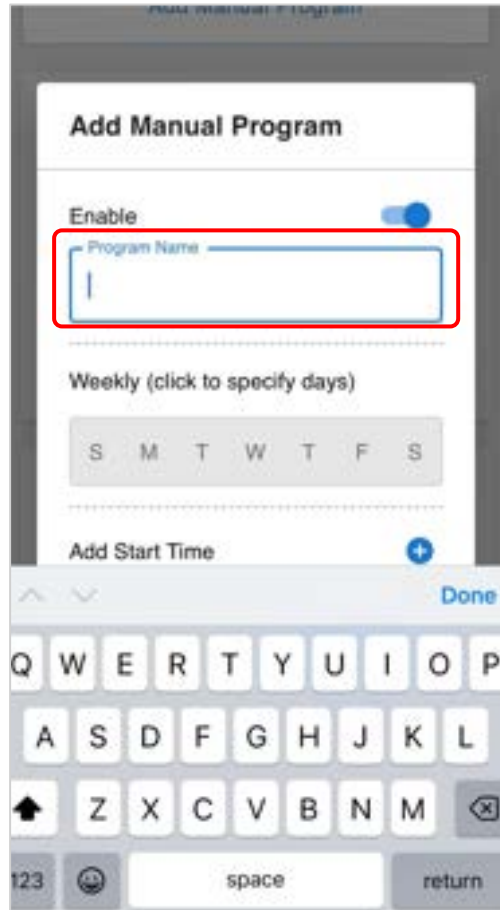
1. Add Manual Program
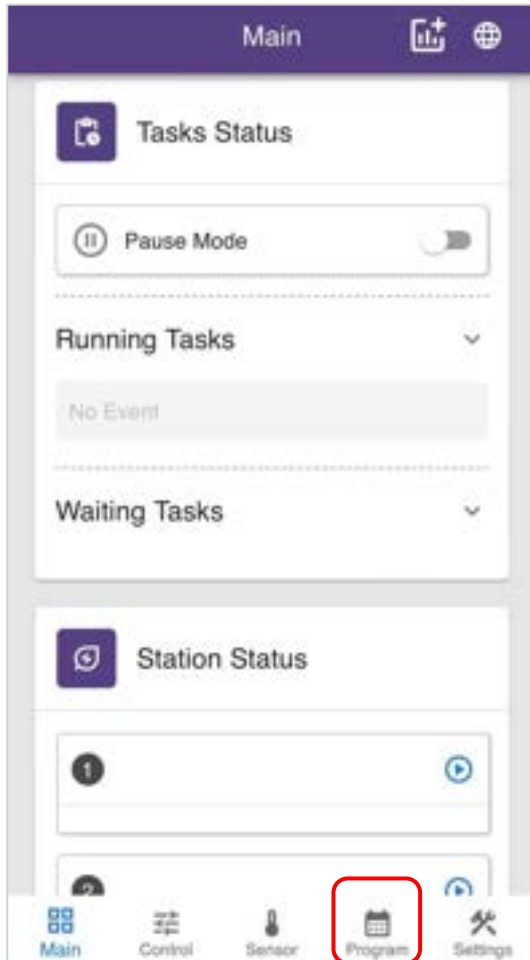
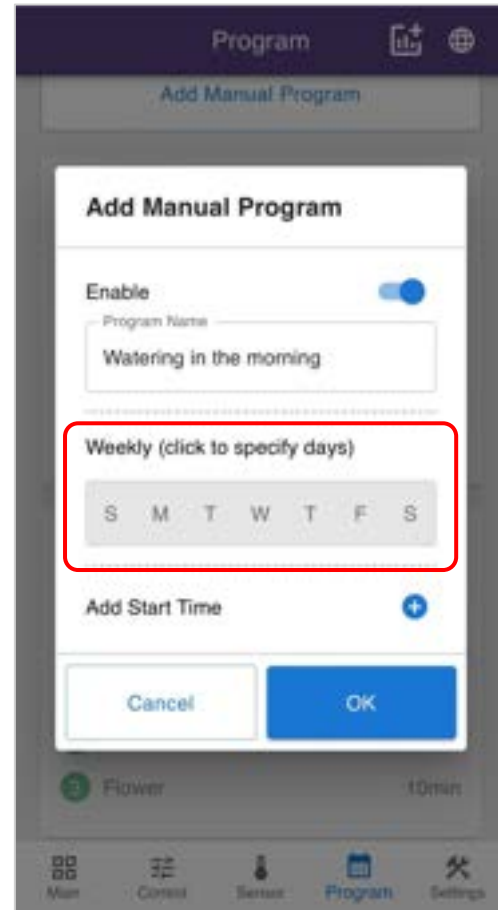**1. Tap "Program"**

2. Tap "Add Manual Program"

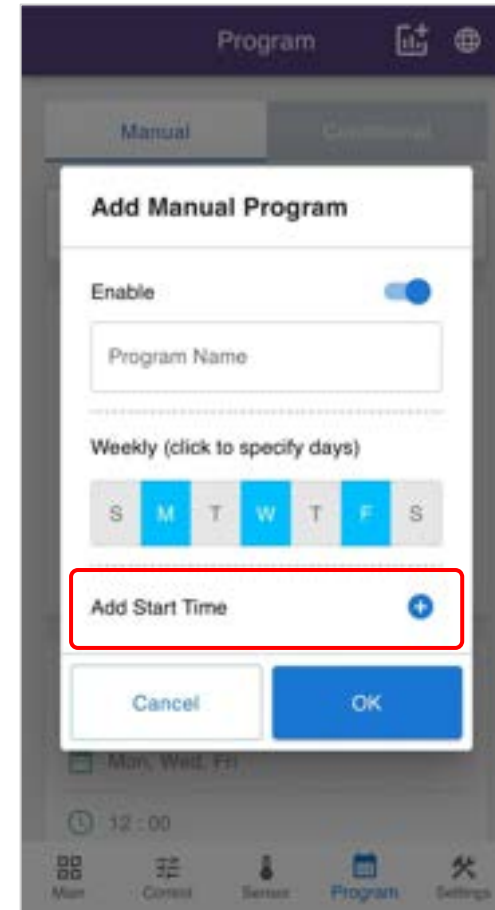**3. Enter setting manual**

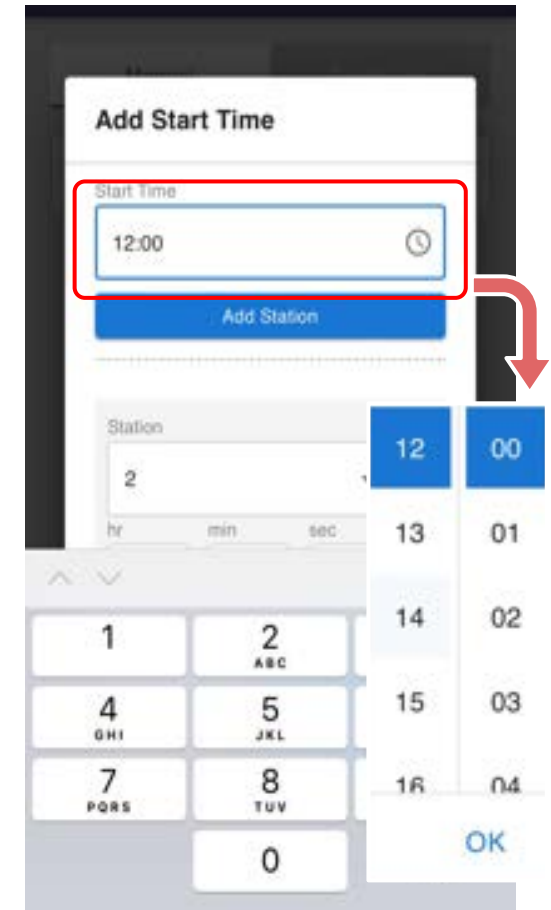# 2. Set a program name, date, and time

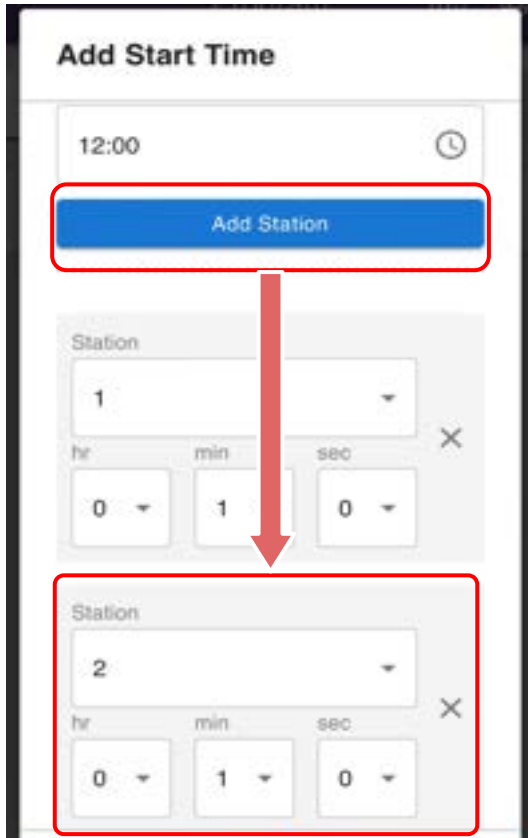**1. Enter " Program Name"**

2. Click to specify days

3. "Add Start Time" ⊕
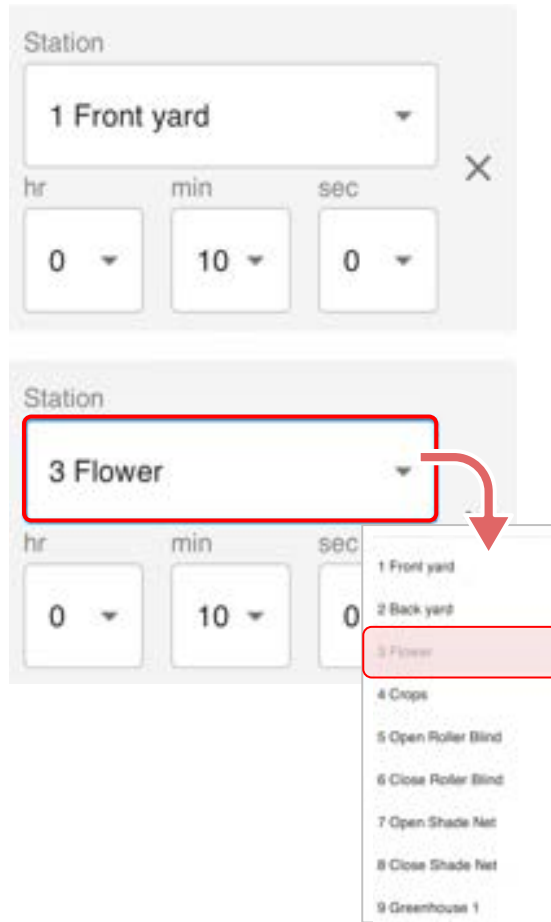**Multiple start times can be set.**

4. Tap "Start Time" to set the activation time, then tap "OK" when done
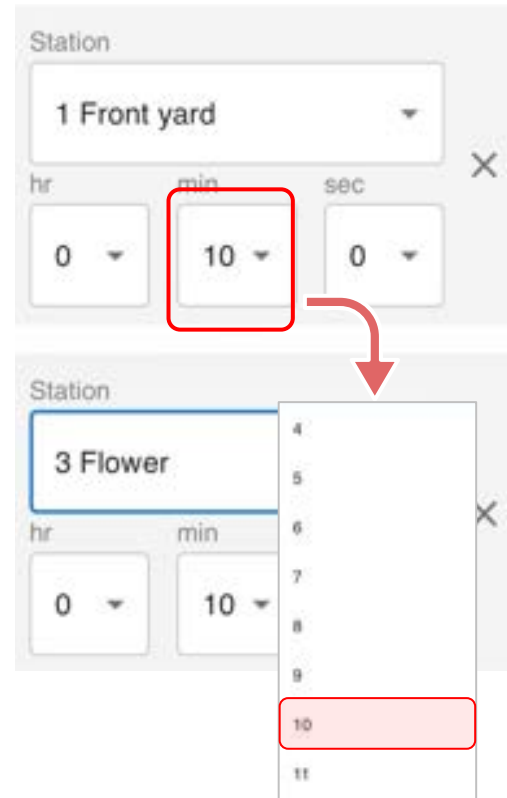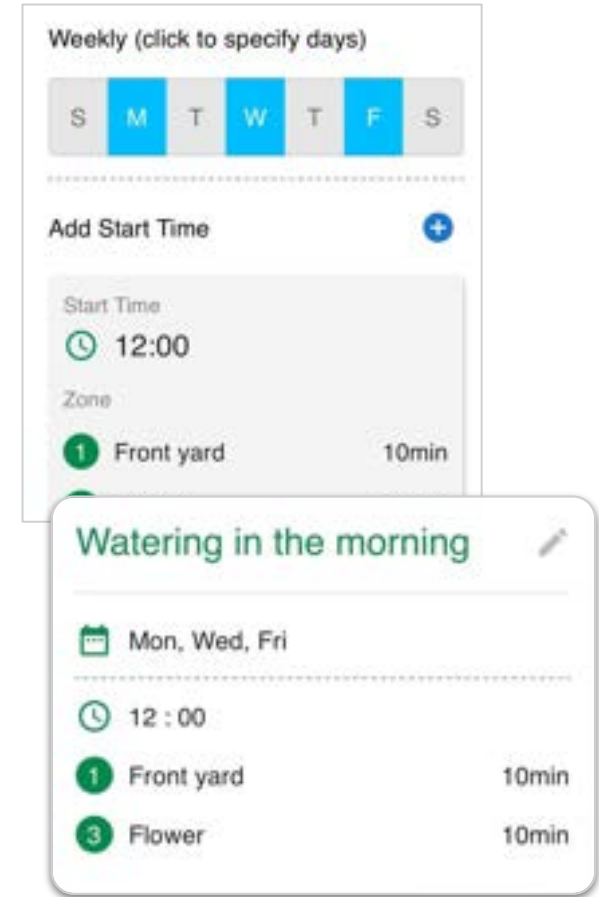
3. Add station and duration

1. Tap "Add Station" to increase the number of active stations in this program.

2. Tap "Station" to select which one from the list you want to activate.

3. Set the duration for each station.

※Each program allows for one start time, but you can set different durations for each station.

How to set up the "Conditional Program"

1. 【Conditional Program】General（Regular RS-485 interface sensor）

2. 【Conditional Program】Accumulated Solar Radiation（ Apogee Solar Sensor）

1【Conditional Program】General（Regular RS-485 interface sensor）

Conditional Program/General:

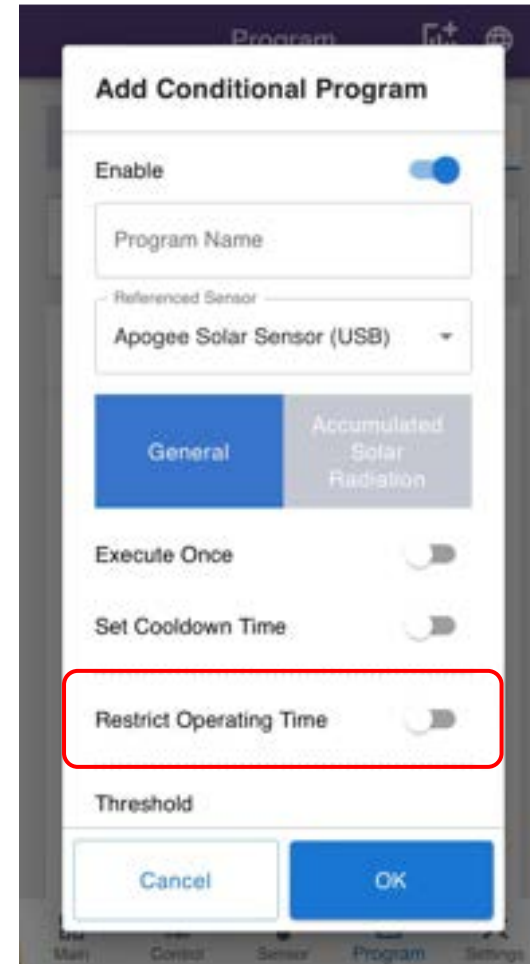|	
Program Name	Edit Program name
Referenced Sensor	Select the program data source (options are the sensors configured on the "Sensor" page)
General	Control stations based on the "threshold" value.
Execute Once	When the threshold condition is met, the schedule will run only once. To run it again, you need to set a 'specific execute-once program' to reset. The program will execute again when the reset condition is fulfilled. This is typically used for applications like winches, shade nets, and similar equipment）
Set Cooldown time	Duration of sensor detection pause after the threshold condition is triggered
Restrict Operating time	Set the days of the week and time slots for daily operation.
Threshold	Set sensor threshold to "greater than/less than" and specify the value
Add Station	Add stations to activate when the threshold value is reached
Specify Execute-Once Programs to Reset	When the reset condition is met, the execute-once program will activate again

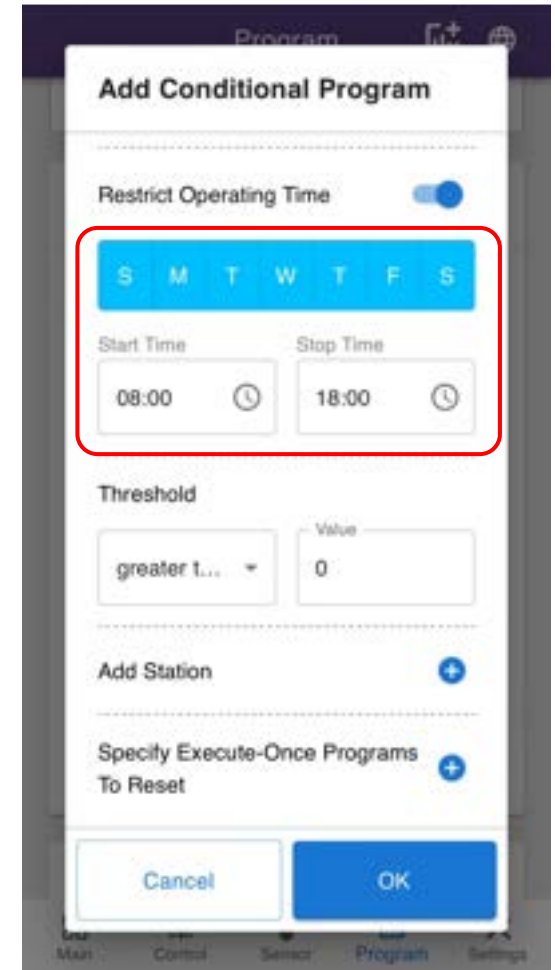# a. Conditional Program - General（Regular RS-485 interface sensor）

1. Add conditional Program. Tap Program -> Conditional -> Add Conditional Program

2. Enter Program Name -> Select Referenced Sensor -> Choose General

3. Enable Restrict Operating Time

4. Set the days of the week and time slots for daily operation

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b. Conditional Program - General（Regular RS-485 interface sensor）

5. Set sensor threshold to "greater than/less than" and specify the value

6. Tap ➕Add Station　Add stations to activate when the threshold value is reached

7. Select the stations to turn on or off, and adjust the duration

8. Tap OK to complete the set up

Conditional Program/Accumulated Solar Radiation:

Program Name	Edit Program name
Referenced Sensor	Select the program data source (options are the sensors configured on the "Sensor" page)
Accumulated Solar Radiation	Control stations based on the "Accumulated Solar Radiation" threshold value
Restrict Operating time	Set the days of the week and time slots for daily operation
Energy Threshold	Set the accumulated threshold with multiple time periods. When the threshold is reached, it triggers, resets to zero, and triggers again when accumulated
Continuously Accumulate During Execution	Continue accumulating values while the station is running
Daily Reset Accumulation	When not enabled, the last untriggered solar radiation value of the day will accumulate to the next day
Add Station	Add stations to activate when the threshold value is reached

Add Conditional Program
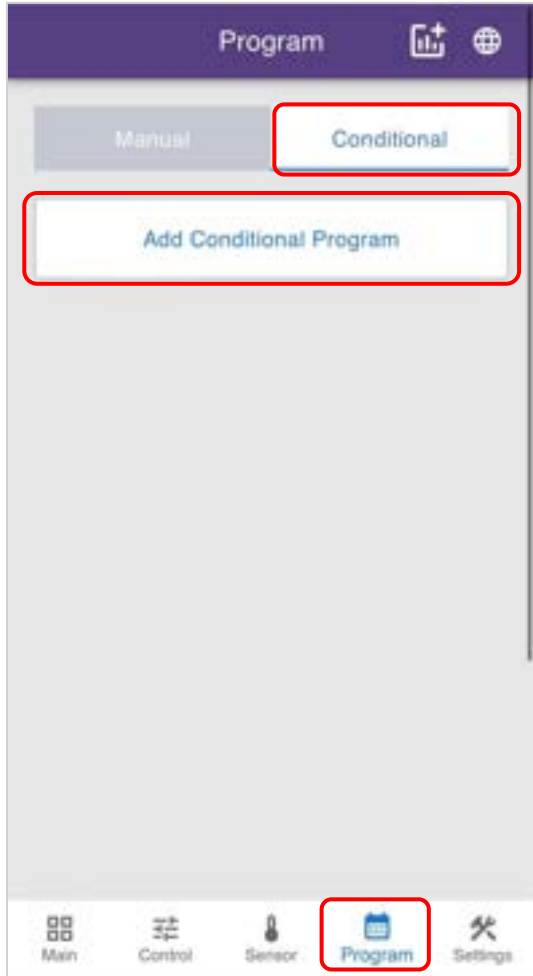
Enable

Program Name

Referenced Sensor

Apogee Solar Sensor (USB)

General | Accumulated Solar Radiation

Restrict Operating Time

Energy Threshold

Start Time

07:00

Threshold

10   J/cm^2

Continuously Accumulate During Execution
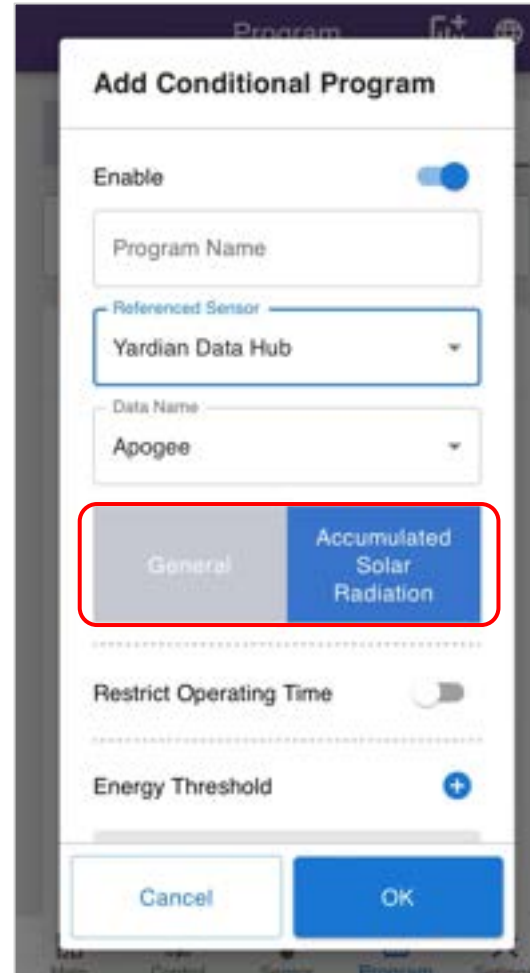
Daily Reset Accumulation

Add Station

Cancel   OK

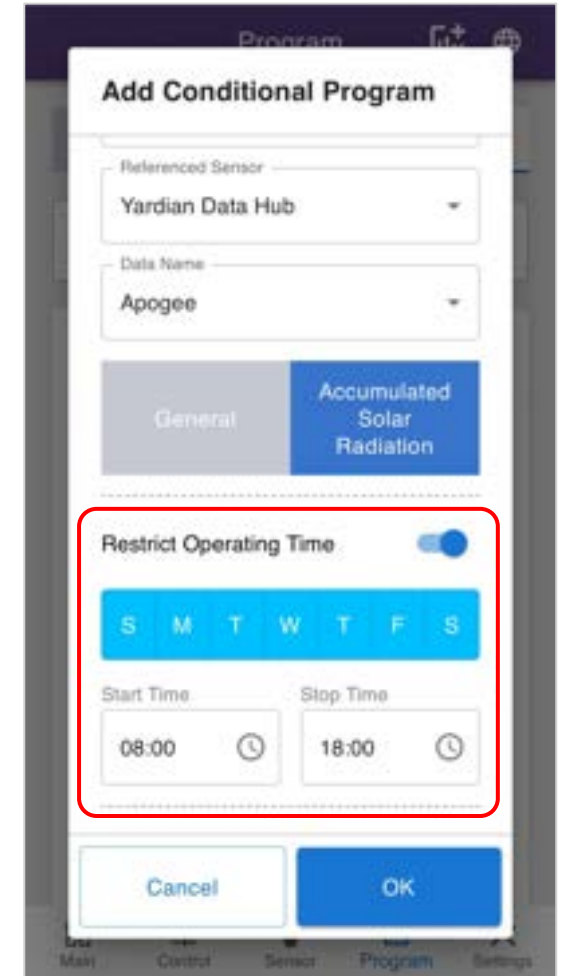# a. Conditional Program】Accumulated Solar Radiation（Apogee Solar Sensor）

1. Add conditional Program. Tap Program -> Conditional -> Add Conditional Program
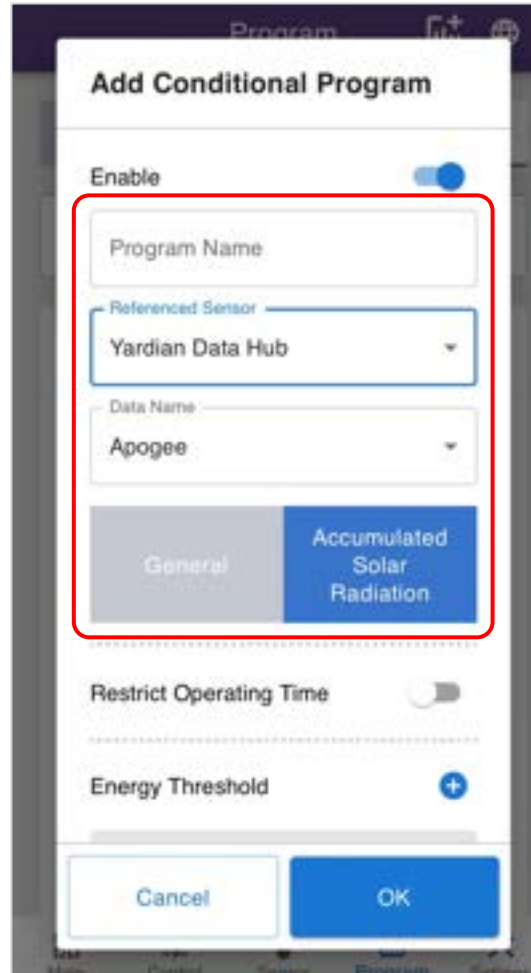
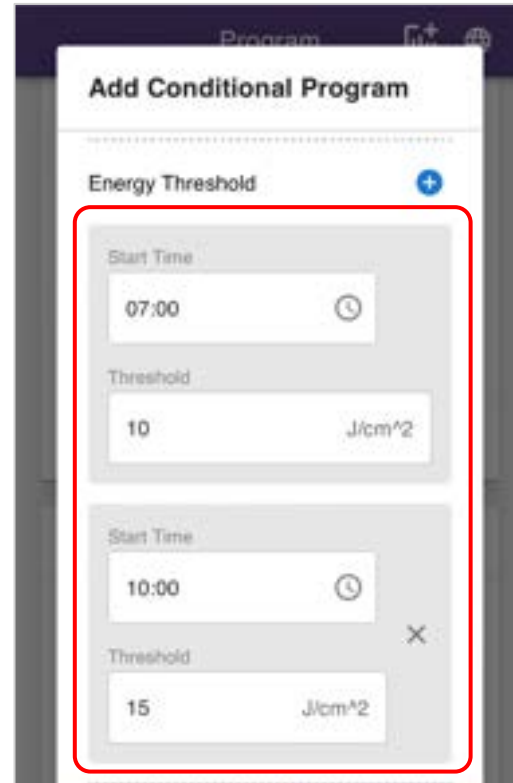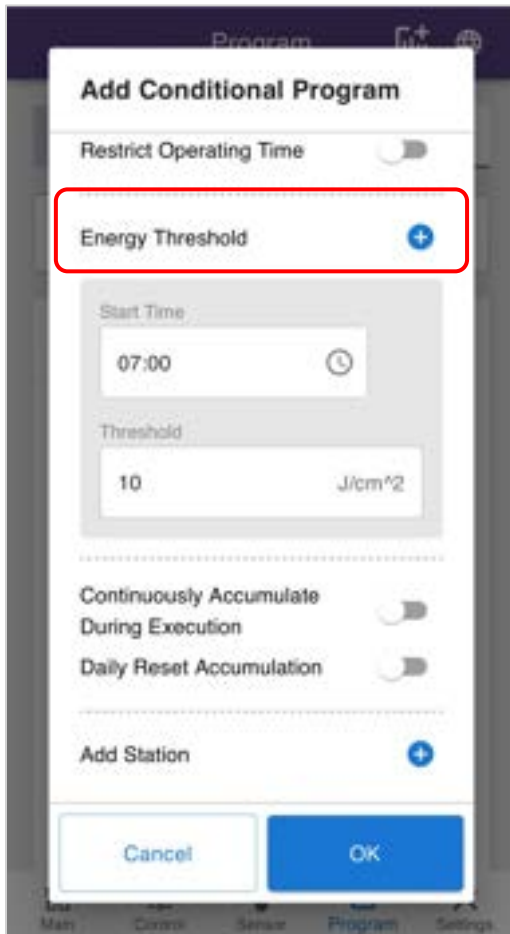**2. Enter Program Name -> Select Referenced Sensor -> Choose Accumulated Solar Radiation**
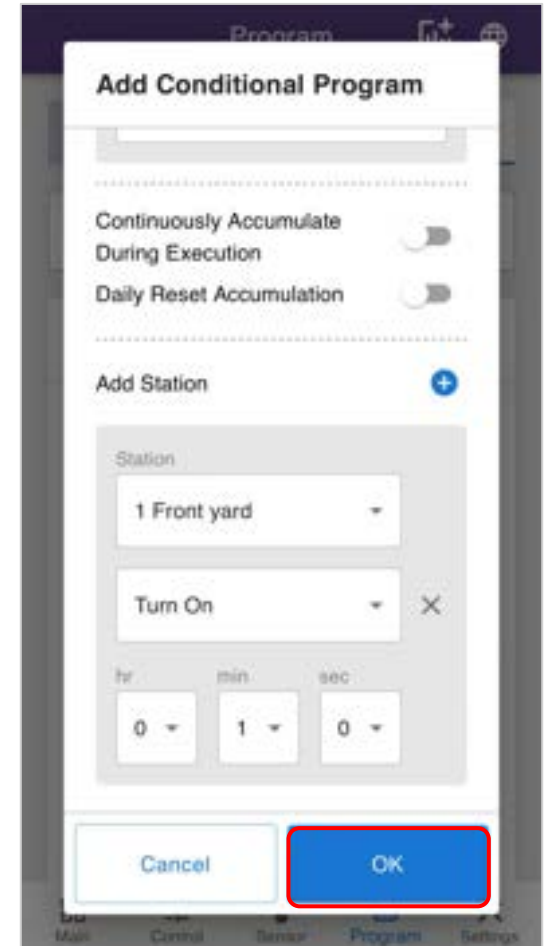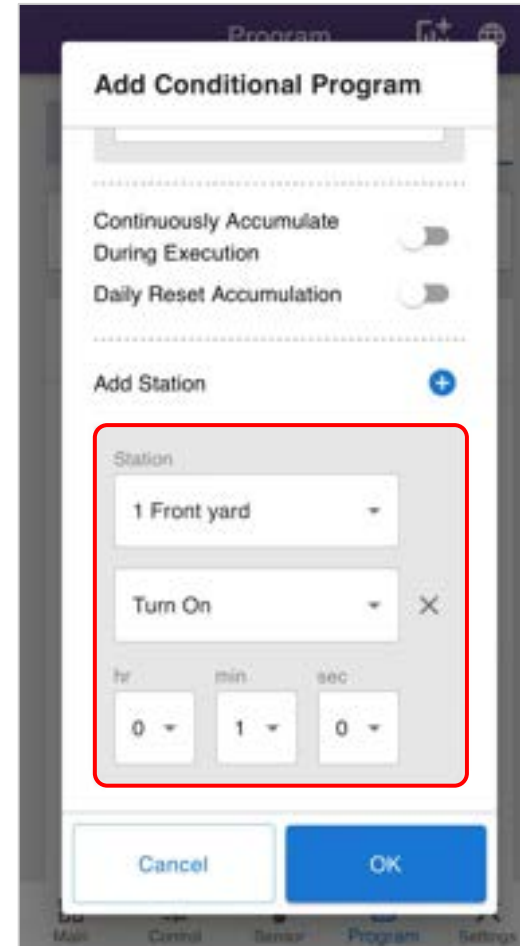
3. Enable Restrict Operating Time

4. Set the days of the week and time slots for daily operation

b. Conditional Program】Accumulated Solar Radiation（Apogee Solar Sensor）

Add Conditional Program

Restrict Operating Time

Energy Threshold ⊕

Start Time
07:00 🕐

Threshold
10 J/cm^2

Continuously Accumulate During Execution
Daily Reset Accumulation

Add Station ⊕

Cancel | OK

Add Conditional Program

Energy Threshold ⊕

Start Time
07:00 🕐

Threshold
10 J/cm^2

Start Time
10:00 🕐 ✕

Threshold
15 J/cm^2

※In the example, if the accumulation reaches 10 J/cm² between 7:00 and 9:59, it will trigger and reset to 0, triggering again at 10 J/cm². From 10:00 until the end time (or midnight if not set), it requires 15 J/cm² to trigger, and so on.

Add Conditional Program

Continuously Accumulate During Execution
Daily Reset Accumulation

Add Station ⊕

Station
1 Front yard ▼

Turn On ▼ ✕

hr | min | sec
0 ▼ | 1 ▼ | 0 ▼

Cancel | OK

Add Conditional Program

Continuously Accumulate During Execution
Daily Reset Accumulation

Add Station ⊕

Station
1 Front yard ▼

Turn On ▼ ✕

hr | min | sec
0 ▼ | 1 ▼ | 0 ▼

Cancel | OK

---

5. Tap ⊕ Set the solar accumulated threshold, set multiple time periods when necessary

6. Tap ⊕ add station to turn on or off, and adjust the duration
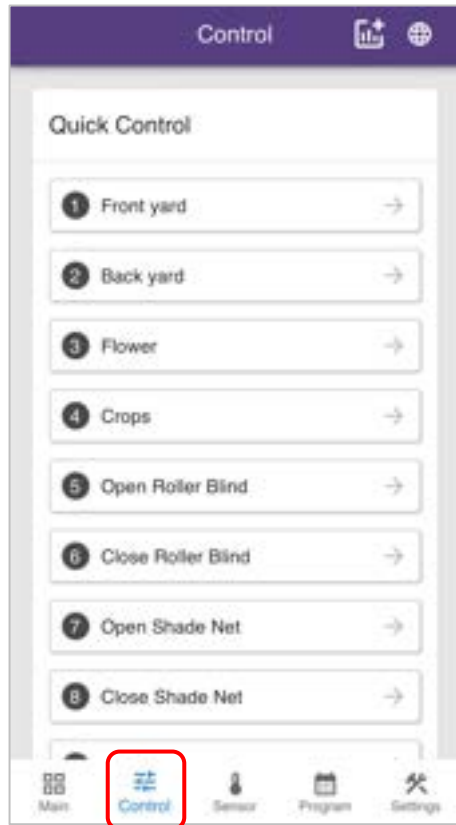
7. Tap OK to complete the set up

How to Use the "Quick Control" and "Quick Program"
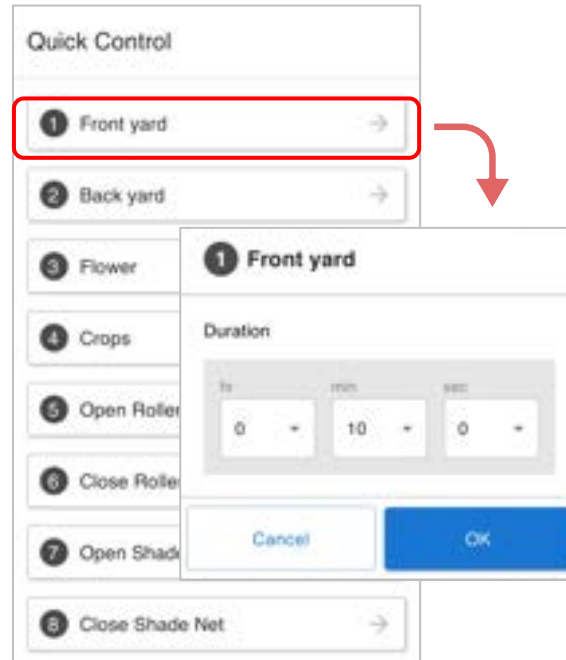
➔   Run the "Quick Control"

➔   【Quick Program】Add Zone and Duration

➔   【Quick Program】Pause and Delete
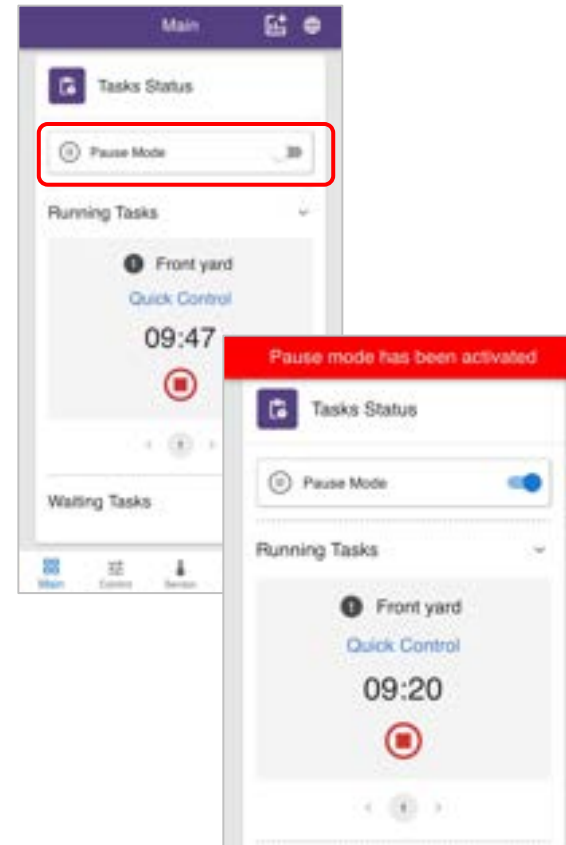
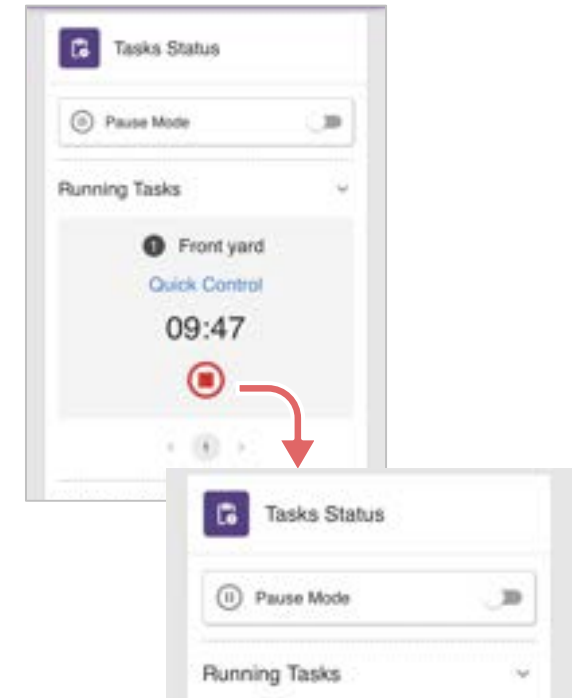# 1. Run the Quick Control

1. Select "Control" → Quick Control & Quick Program at same window

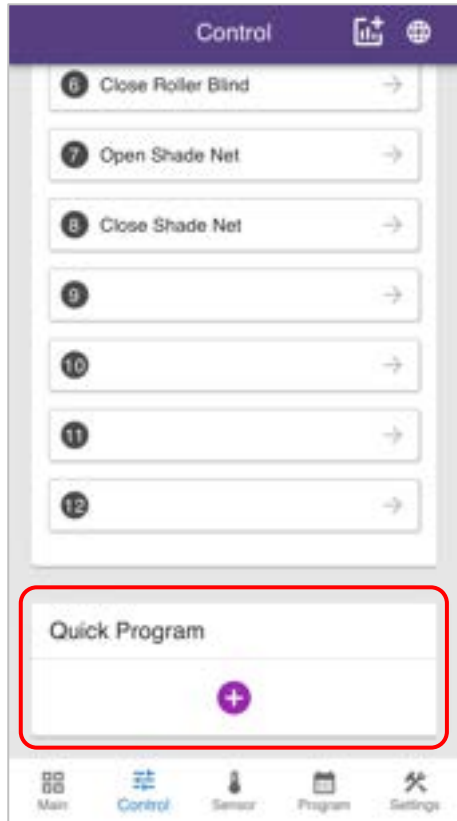**2. Set Zone 1 to run for 10 minutes → Click OK → It will return to the Main page while running.**

3. "Main"→ Task Status
 Running Task (countdown)

4. Pause → Pause Mode (Zone 1 paused in operation)

5. Cancel the Pause mode
(Continue running task for Zone 1)

Click ⏹ to delete the running quick program

2-1【Quick Program】Add Zone and Duration

1. Quick Program （Click ➕ ）
→ Quick program setting window

2. Add Zone （ Click ➕ ）
（Adjust zone execution order according to your needs)

3. Set different durations for each zone, then click "Save"

4. Click ▶ to run the quick program

2-2【Quick Program】Pause and Delete

1.Click OK → It will return to the Main page while running.
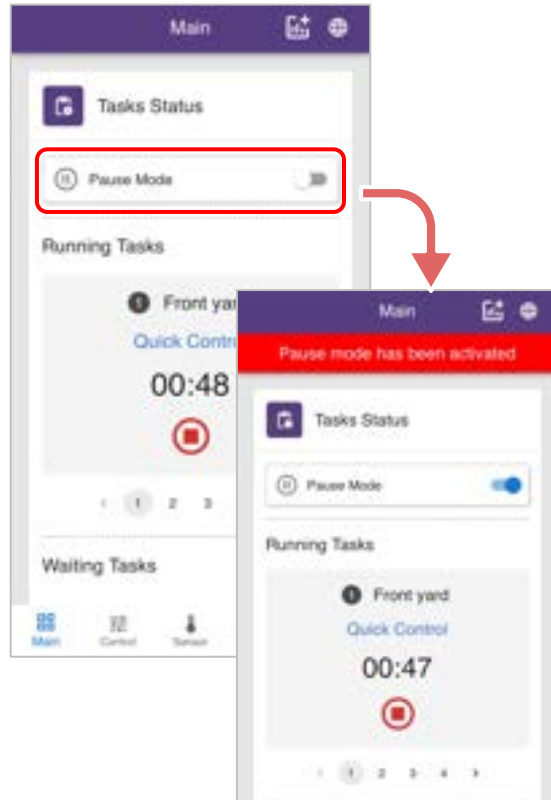
2. "Main"→ Task Status
   Running Task (countdown)
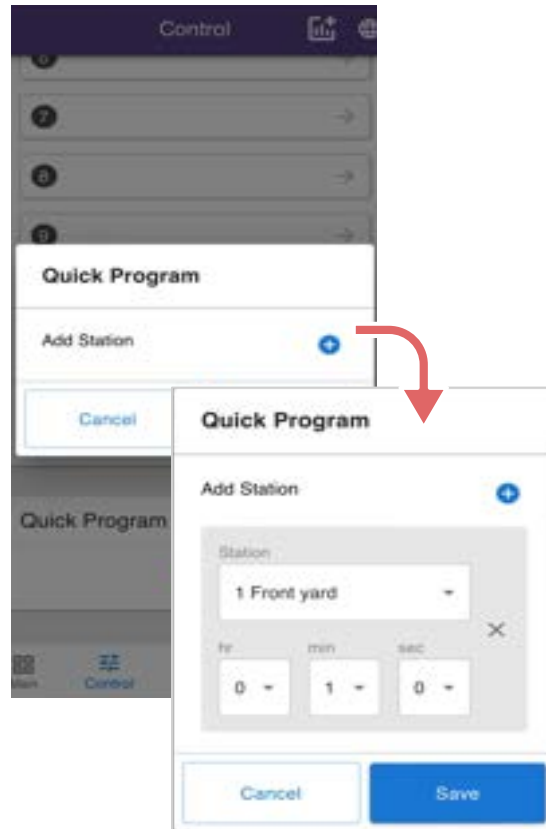
3. Pause → Pause Mode
   (Zone paused in operation)
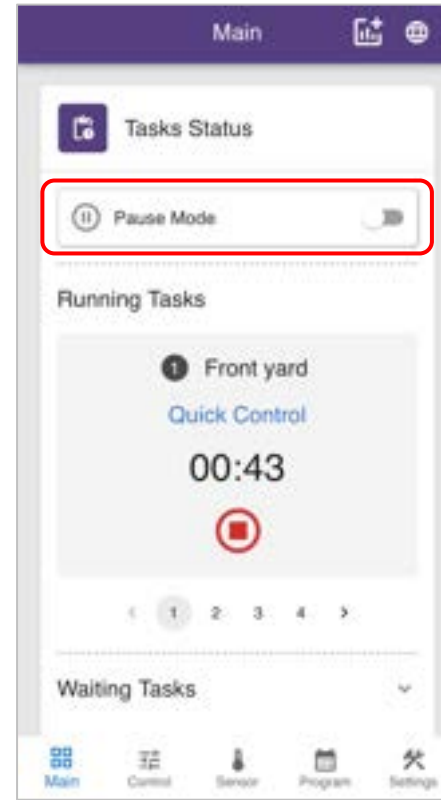
4. Cancel the Pause mode
(Continue running task

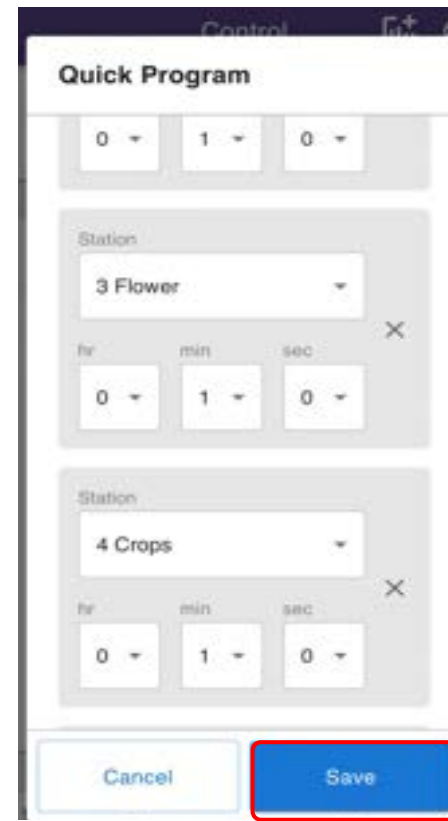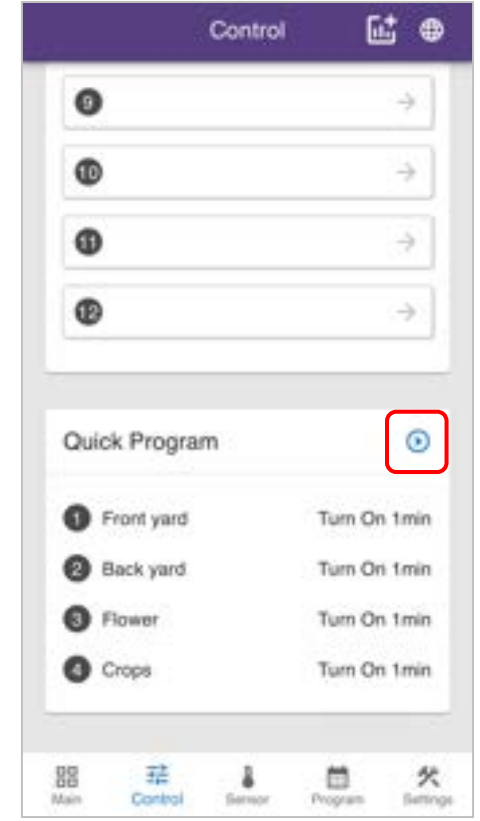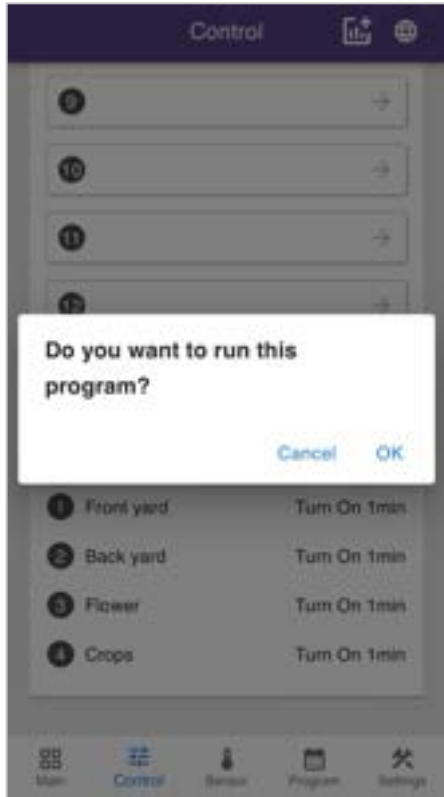Click ⏹ to delete the running quick program

Download sensor data

1. Sensor Data Download (Controller Connected to the Internet)
2. Sensor Data Download (Controller Not Connected to the Internet)

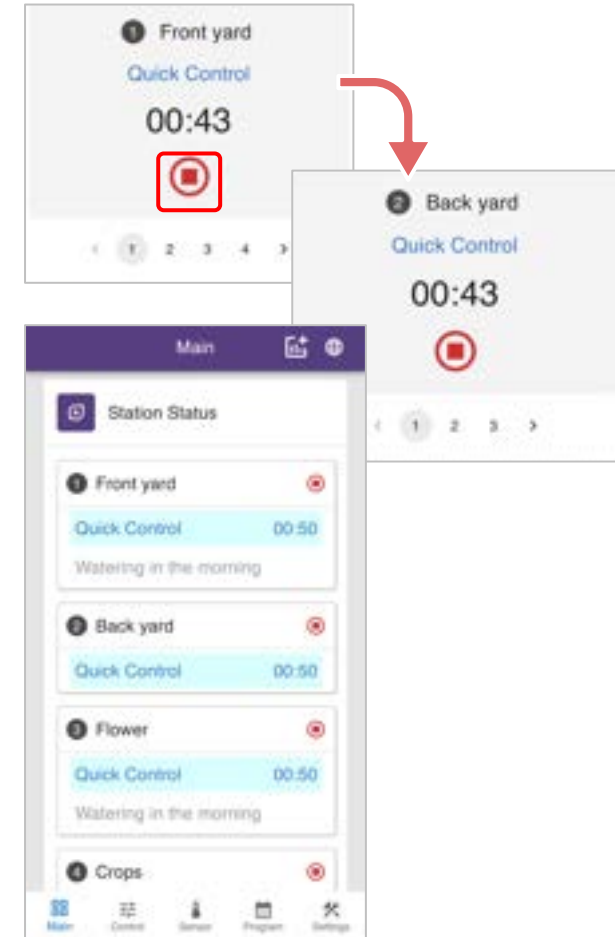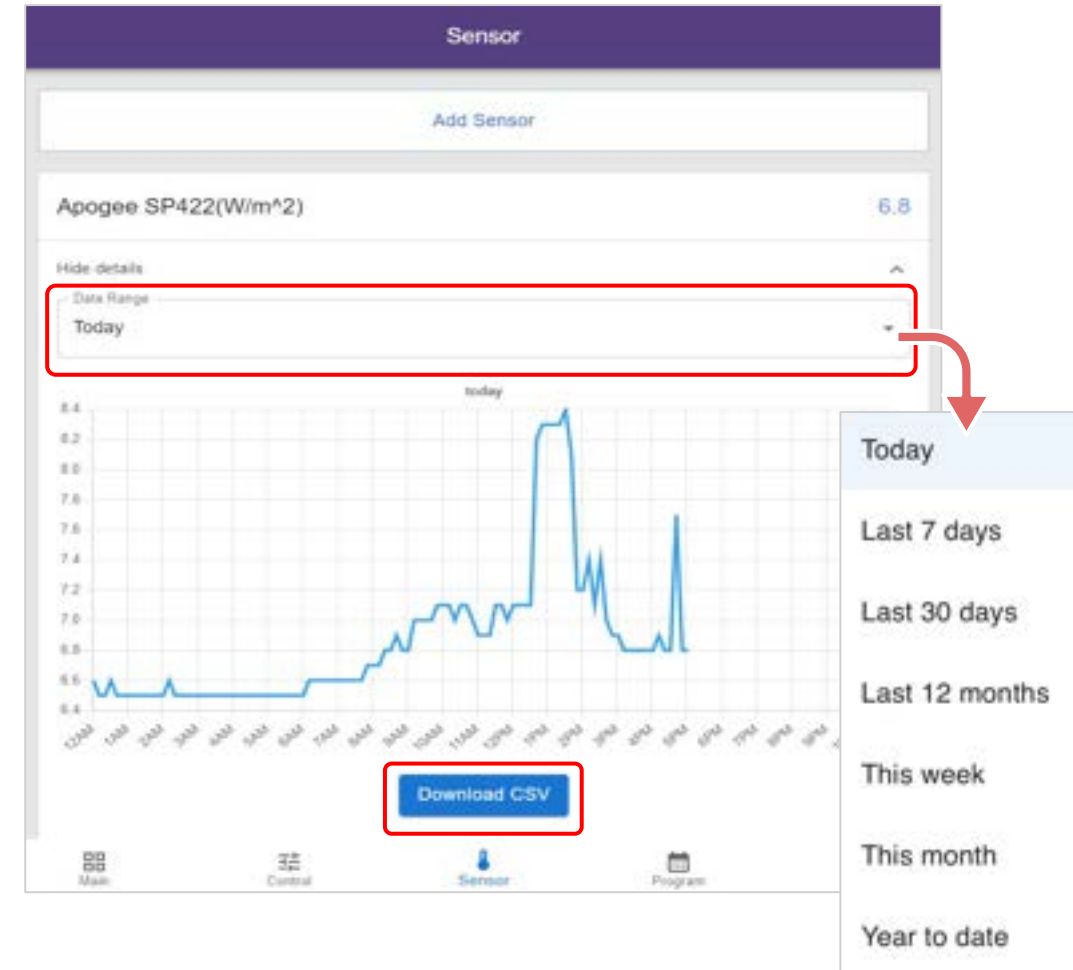# Sensor Data Download (Controller Connected to the Internet)

1. The data stored in the sensor can be downloaded only through a computer's web browser (the computer needs to be connected to the internet).
2. Please open your computer's web browser and enter the following URL in the address bar:
   https://remote.aeonmatrix.com/(YID on the device)/
3. Navigate to the sensor page, locate the sensor whose data you want to download, and click on "Download Data" below to download the CSV file containing the recorded data for that sensor.

Note：

1. Open Excel and import the CSV file:
2. Go to Data -> Get Data -> From Text/CSV.
3. Choose the downloaded CSV file.
4. Select "65001: Unicode (UTF-8)" as the original file format.
5. Double-click on "Delimiter" to choose "Comma" as the delimiter.

Sensor Data Download (Controller Not Connected to the Internet)

1. Sensor data can only be downloaded via a web browser on a computer or mobile device

2. The computer, mobile device, and controller must be on the same network (using the same router)

3. Please enter 10.88.88.1 in the browser's address bar to access the control panel

Note：

1. Open Excel and import the CSV file:
2. Go to Data -> Get Data -> From Text/CSV.
3. Choose the downloaded CSV file.
4. Select "65001: Unicode (UTF-8)" as the original file format.
5. Double-click on "Delimiter" to choose "Comma" as the delimiter.
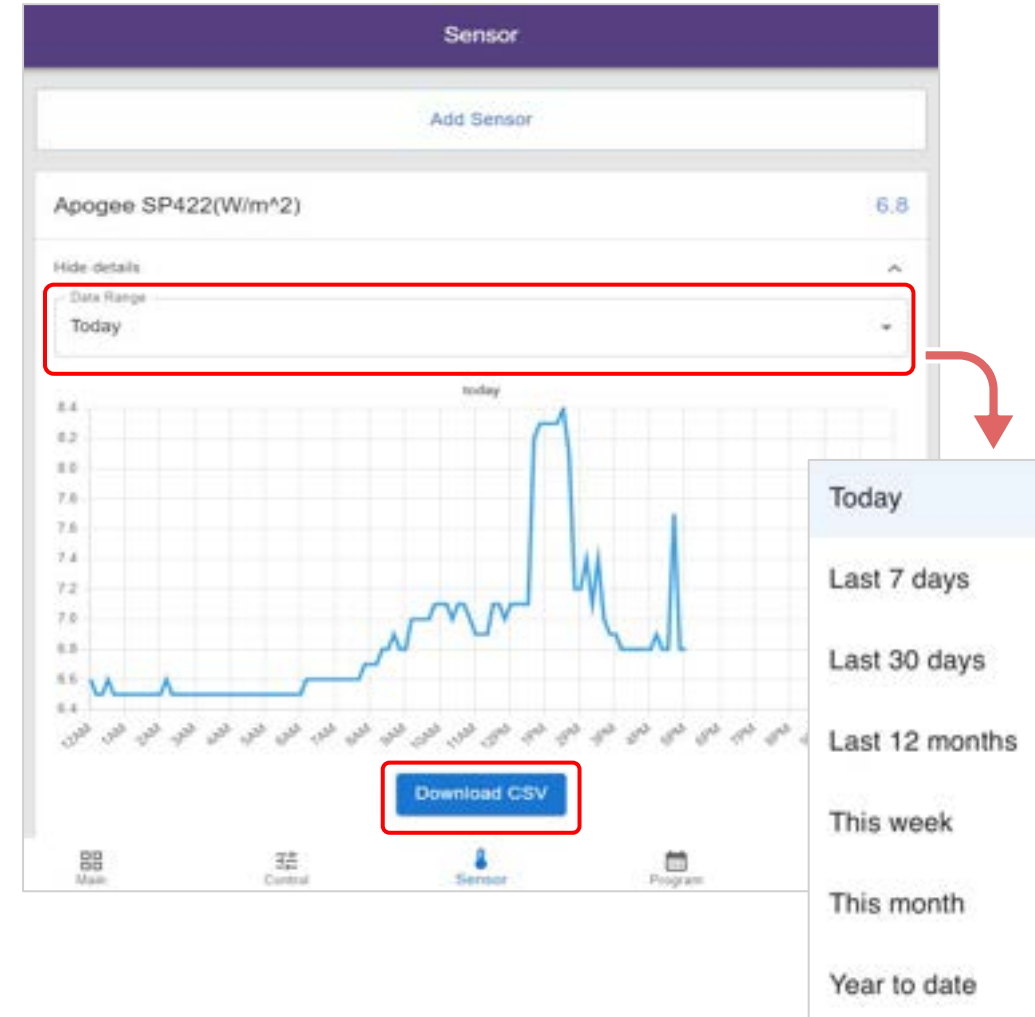
Rain sensor installation

Rain sensor installation

S2 S1

Connect the rain sensor's two signal wires to the S1 or S2 ports on the controller
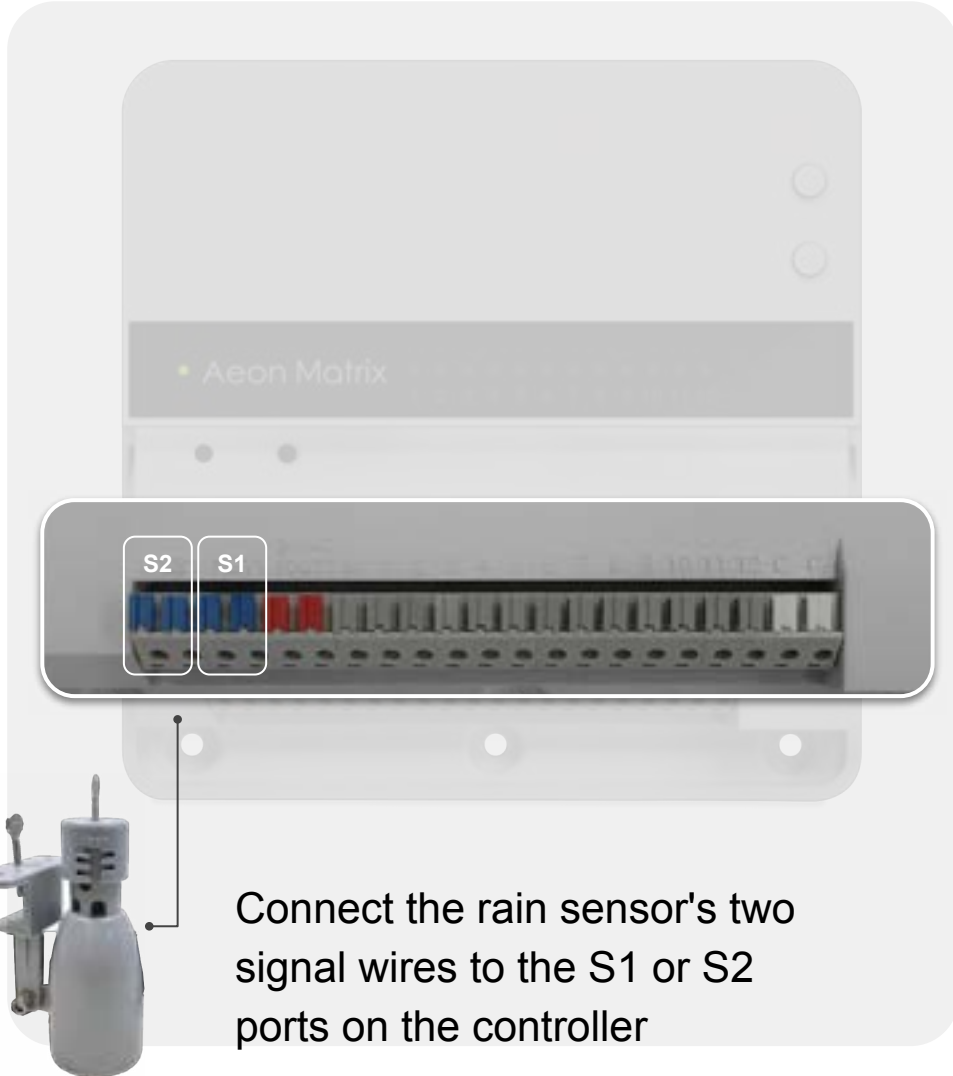
Sensor → Add Sensor

Sensor Category：
Binary Sensors

Sensor Type：
Normally Closed

Sensor Port：
S1 or S2

Enable Notification：
Set as needed

#If the station should activate when triggered, select "General Sensor" for the sensor type

Firmware update

Firmware update

If your controller has activated cloud services and is connected to the internet, you can contact the Aeon Matrix support team to check for the latest firmware. They will perform the over-the-air update for you

If your controller isn't connected to the internet, you can still contact the Aeon Matrix support team to get the latest firmware and update it manually.

Manual Firmware Update

Prepare USB drive - FAT32 format is required. The size should be less than or equal to 8GB
1. Please download or get the zip file from Aeon Matrix support team
2. Unzip the downloaded zip file and save the firmware file(s) in a USB drive. DO NOT put them in any folder.

Update firmware

1. Insert the USB drive, then press the **reboot button**.

2. Press and hold both the **select button** and **run/stop button** immediately when the LED turns **red**.
   Release the buttons when you see the LED turn **blue**. The LED will continue to change colors **(red -> blue -> green)** while installing the firmware.

   Please DO NOT turn off the power during this process.

3. The system will be rebooted automatically when the update is completed. You can remove the USB drive when the **LED is not in red**.

Thank you

www.aeonmatrix.com

support@aeonmatrix.com