



GrowSphere™ **MAX**

Irrigation & Fertigation Controller

Quick Start Guide

Thank you for purchasing the **GrowSphere™ MAX** Controller, an intuitive and simple-to-use device designed to speak the language of growers.

GrowSphere™ MAX regulates water and fertilizer delivery in a precision irrigation system, activating local and remote devices such as pumps, valves, filters, dosing pumps and other hydraulic components. This ensures that crops receive the optimal amount of water and nutrients at all times.

This **GrowSphere™ MAX** quick guide contains basic setup instructions and wiring diagrams for your convenience.

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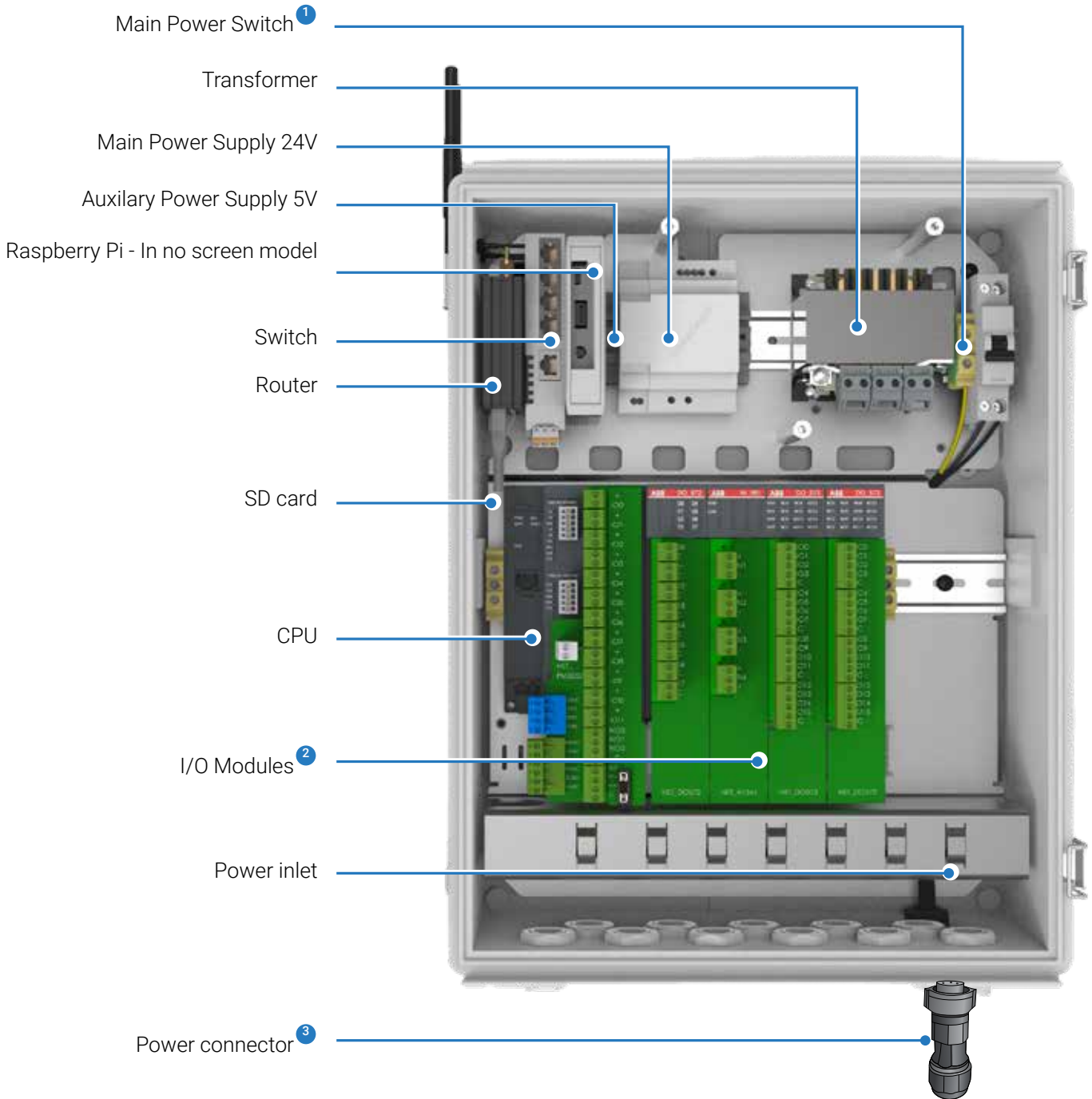
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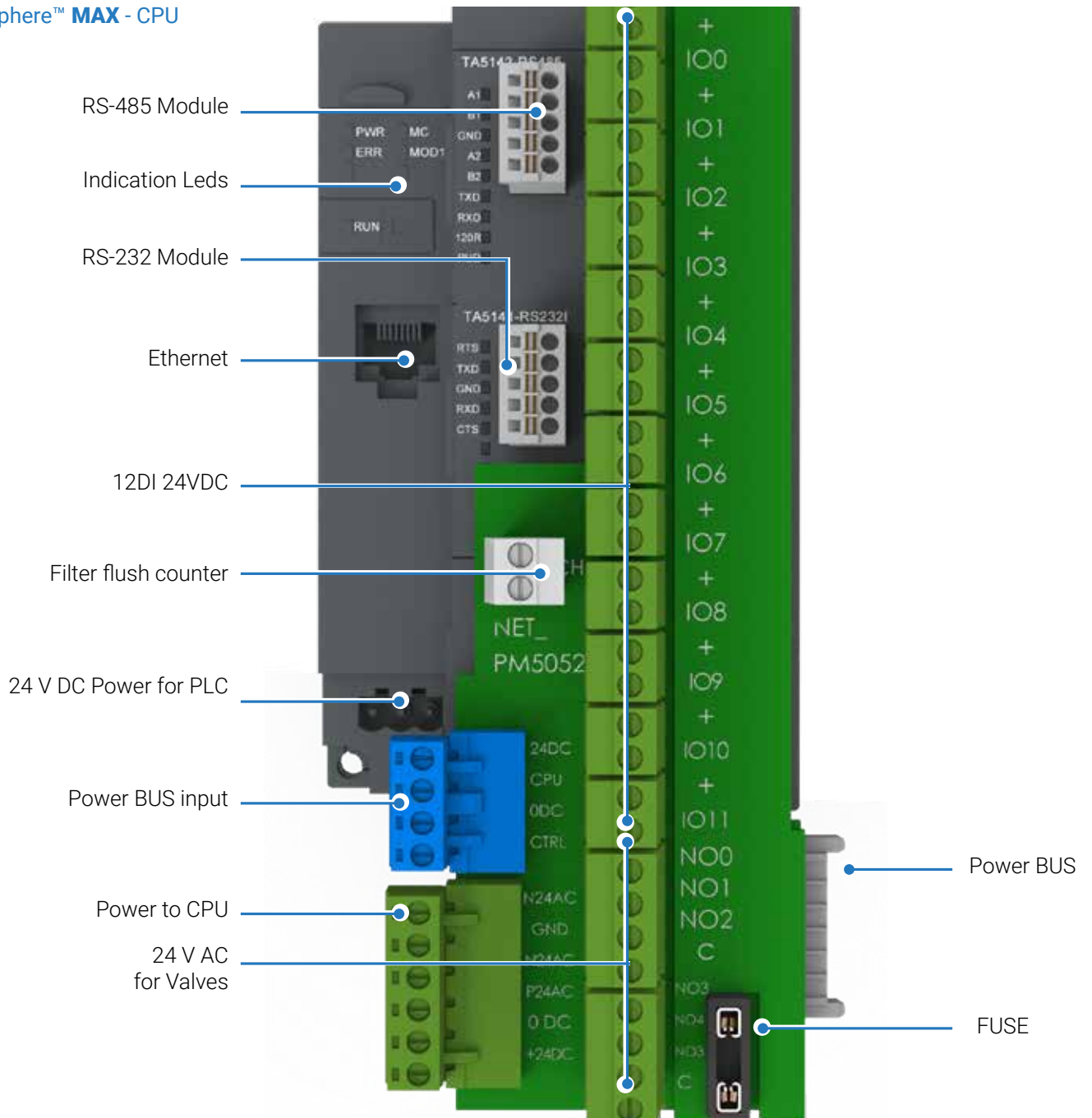


/GrowSphere™ MAX - Internal Design



- ¹ Switches the main power on and off
- ² Enable connecting the peripheral components
- ³ You can find the connector in the accessories box

* Subject to product configuration

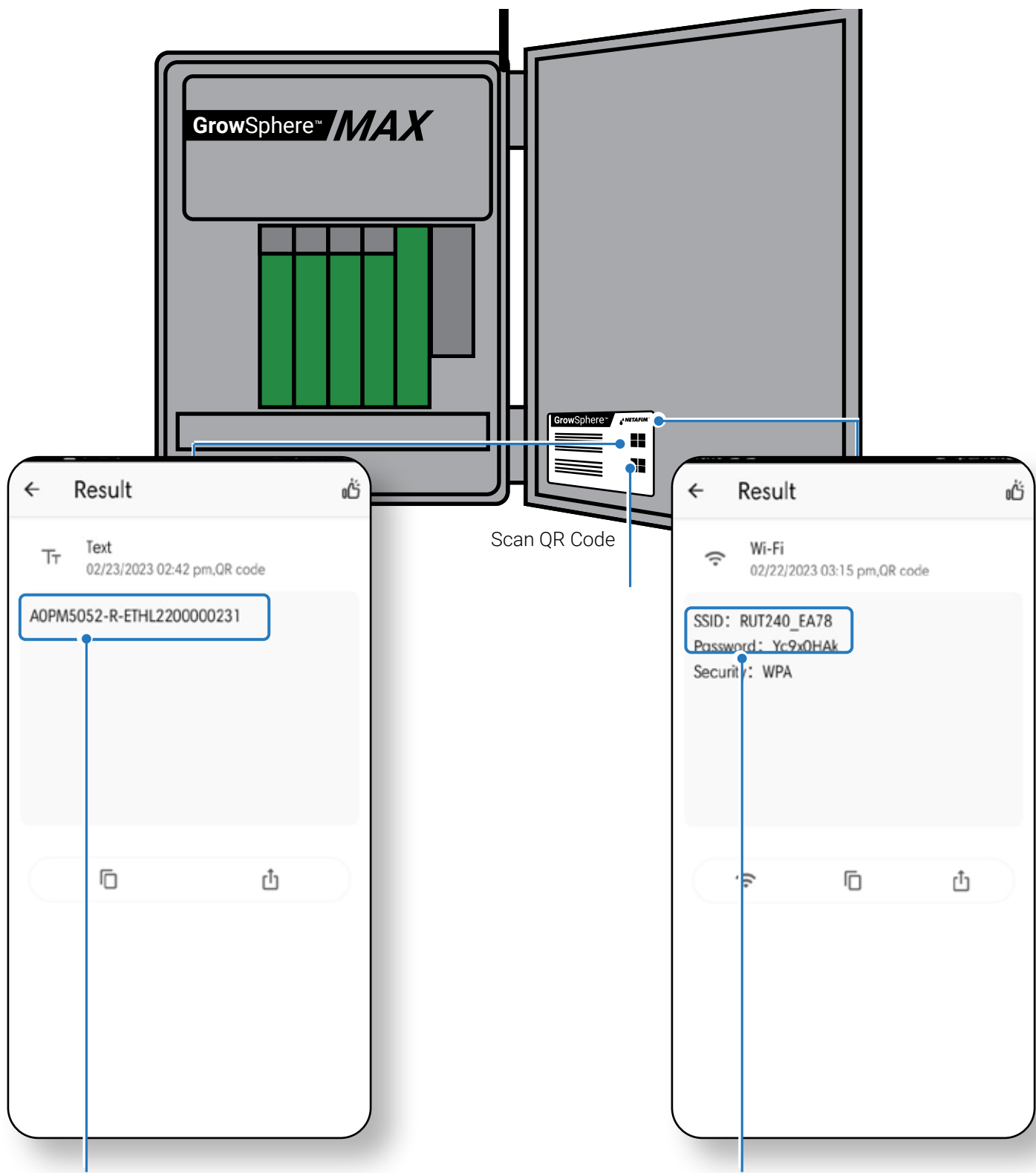


Adaptor features

- AC protection Fuse
- CPU Remote reset
- Controlled by Modem remotely
- Easy visual Indication
- 24AC LED
- 24DC LED
- CPU Reset

Custom ABB controller

- Memory 80MB

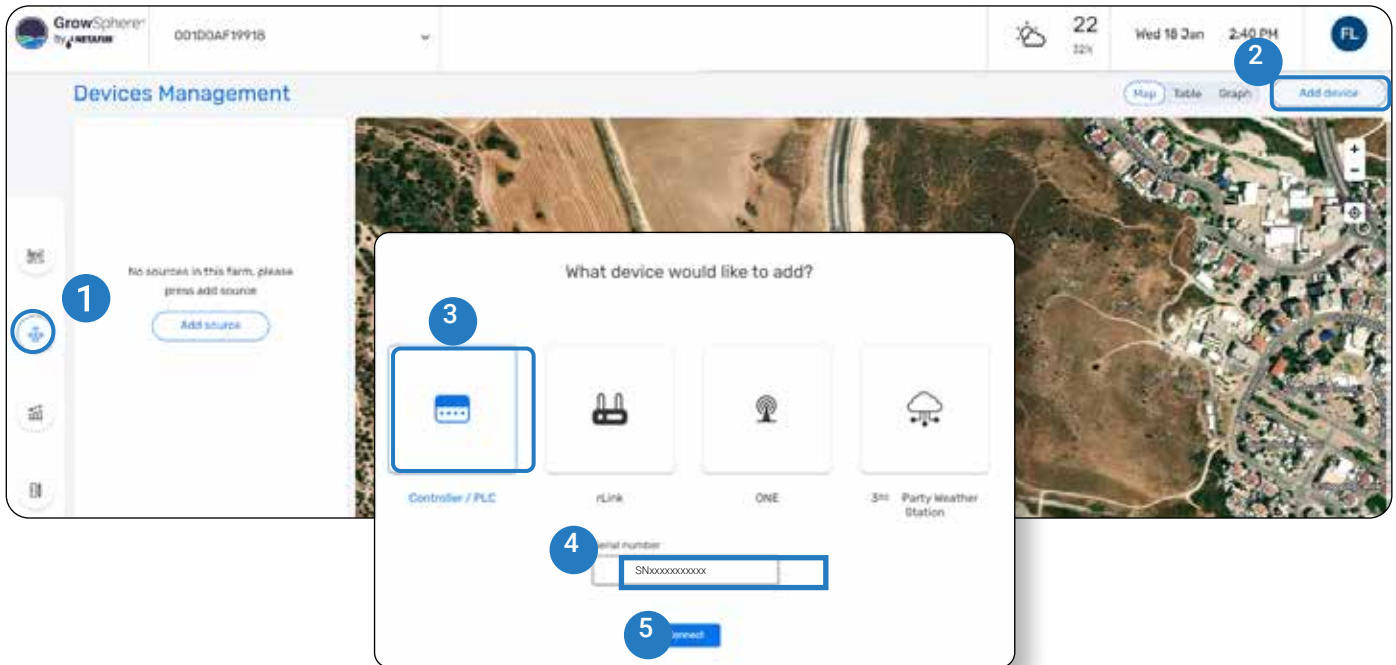


The Device Serial number is used when adding the MAX controller to your cloud account.

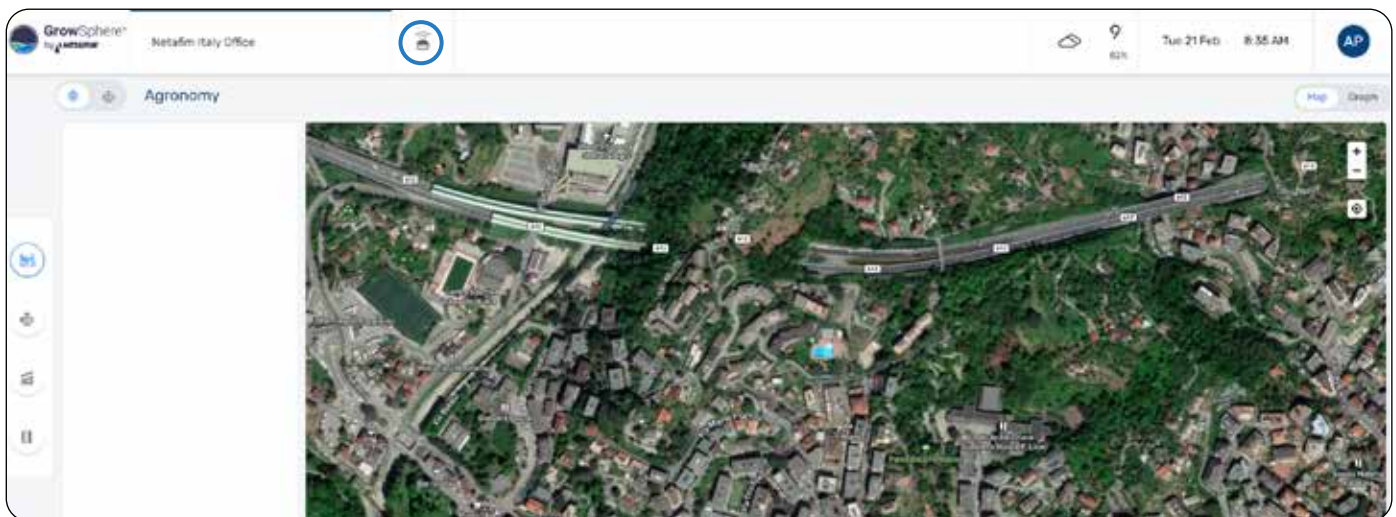
Select the router's SSID on your device's wireless connections and enter the password. Then enter the URL: 192.168.0.10 in your browser

/Adding a device to **GrowSphere™** Workspace

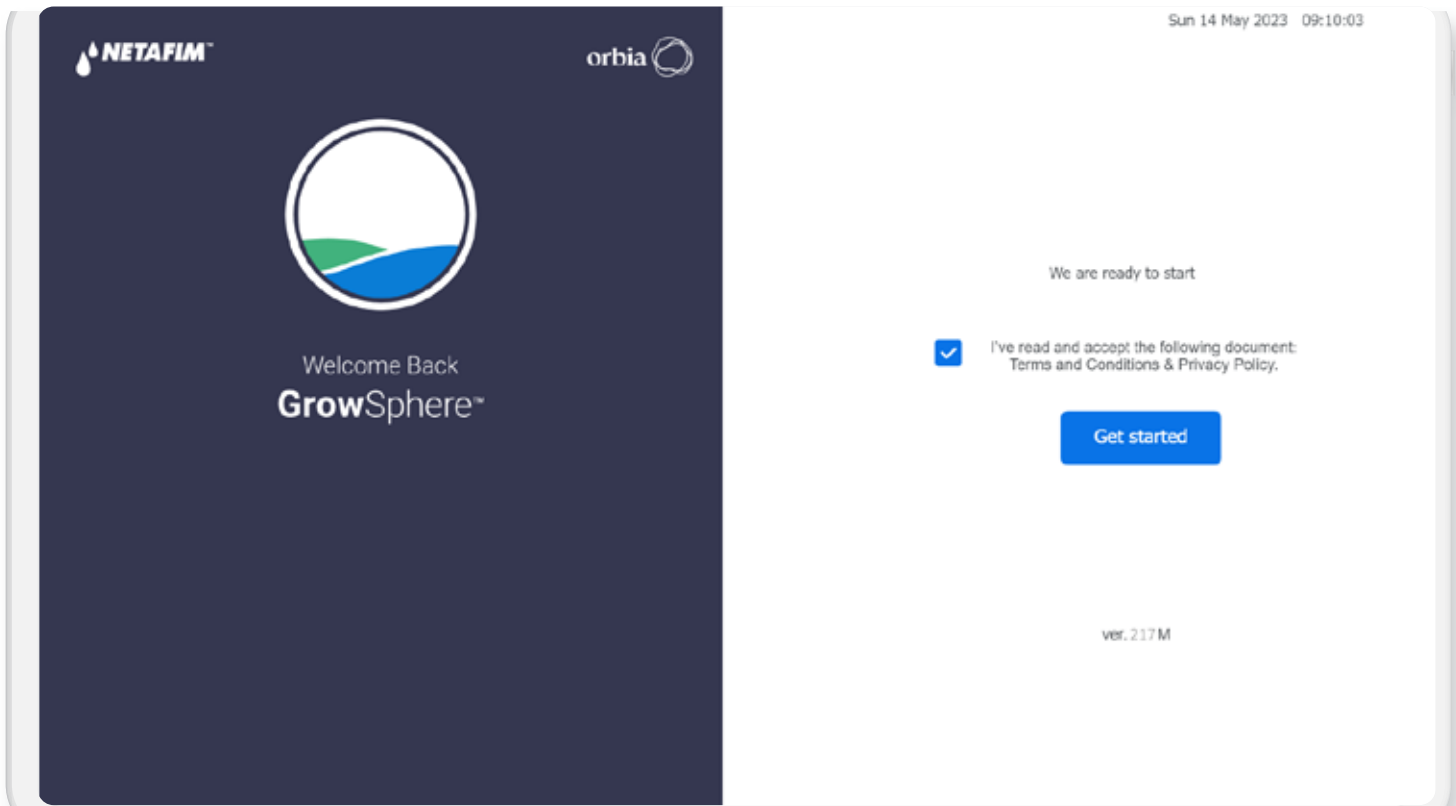
- 1) navigate to device management
- 2) click on add device
- 3) click on controller / PLC
- 4) enter the PLC serial number
- 5) click connect



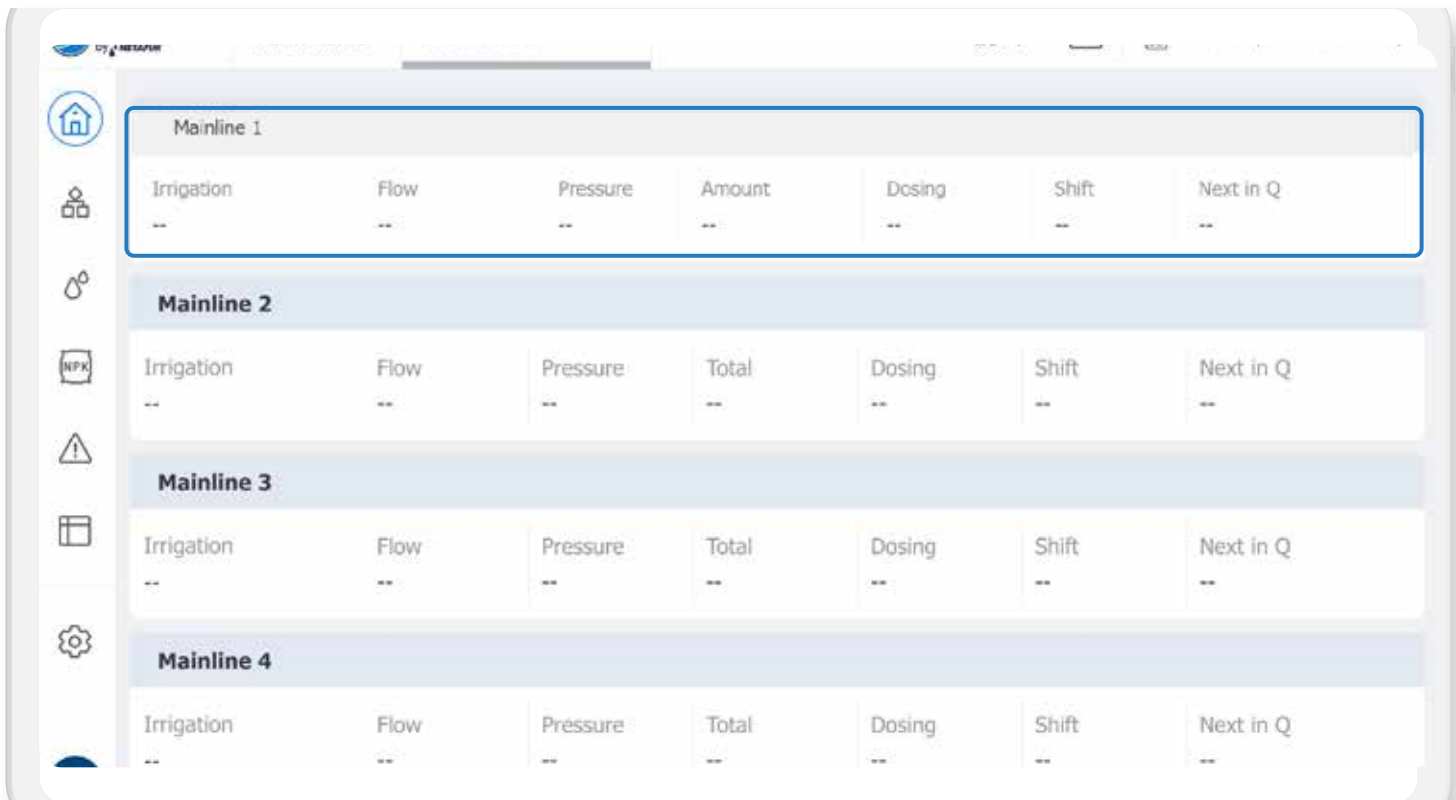
/To access your MAX controller locally, please click on this Icon



/ **GrowSphere™ MAX** - Basic Settings
click Get started

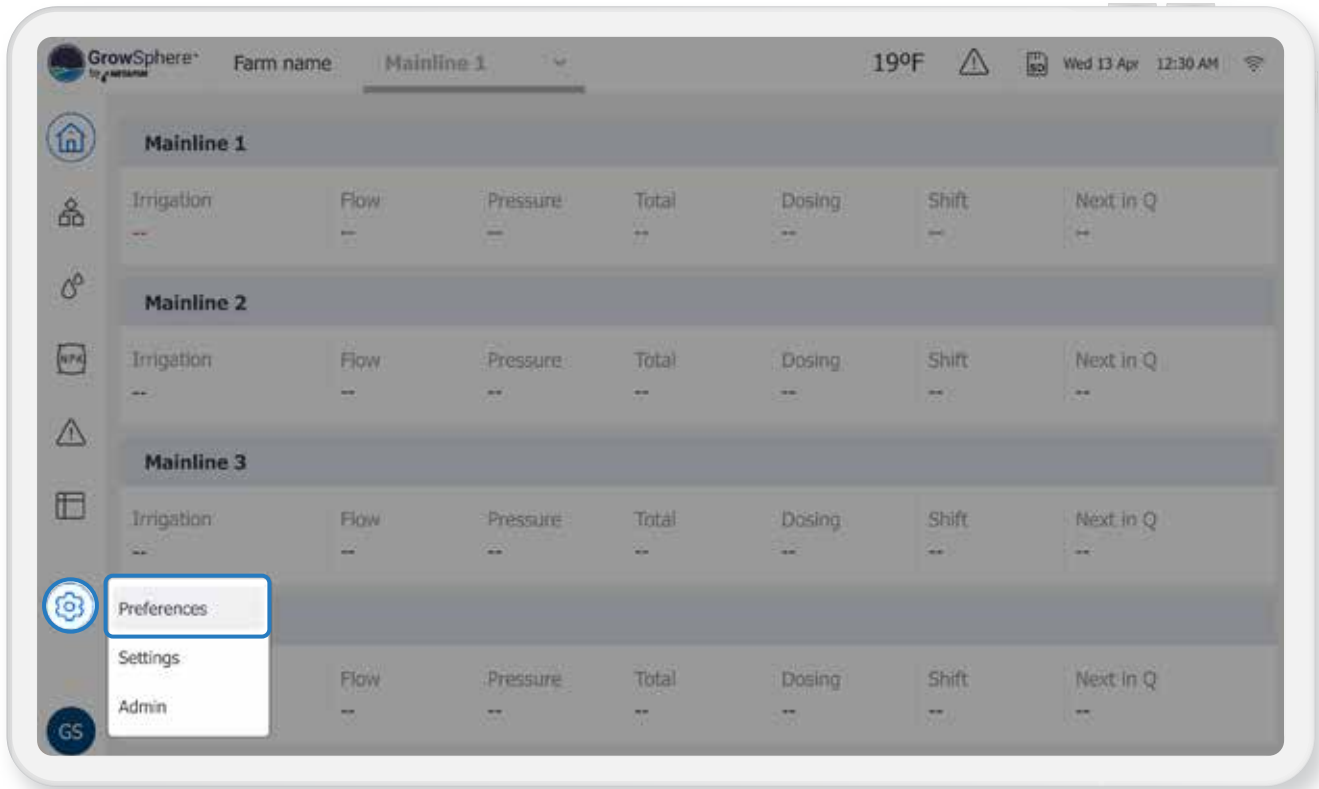


/ The controller's Home Screen provides a snapshot of current irrigation activity



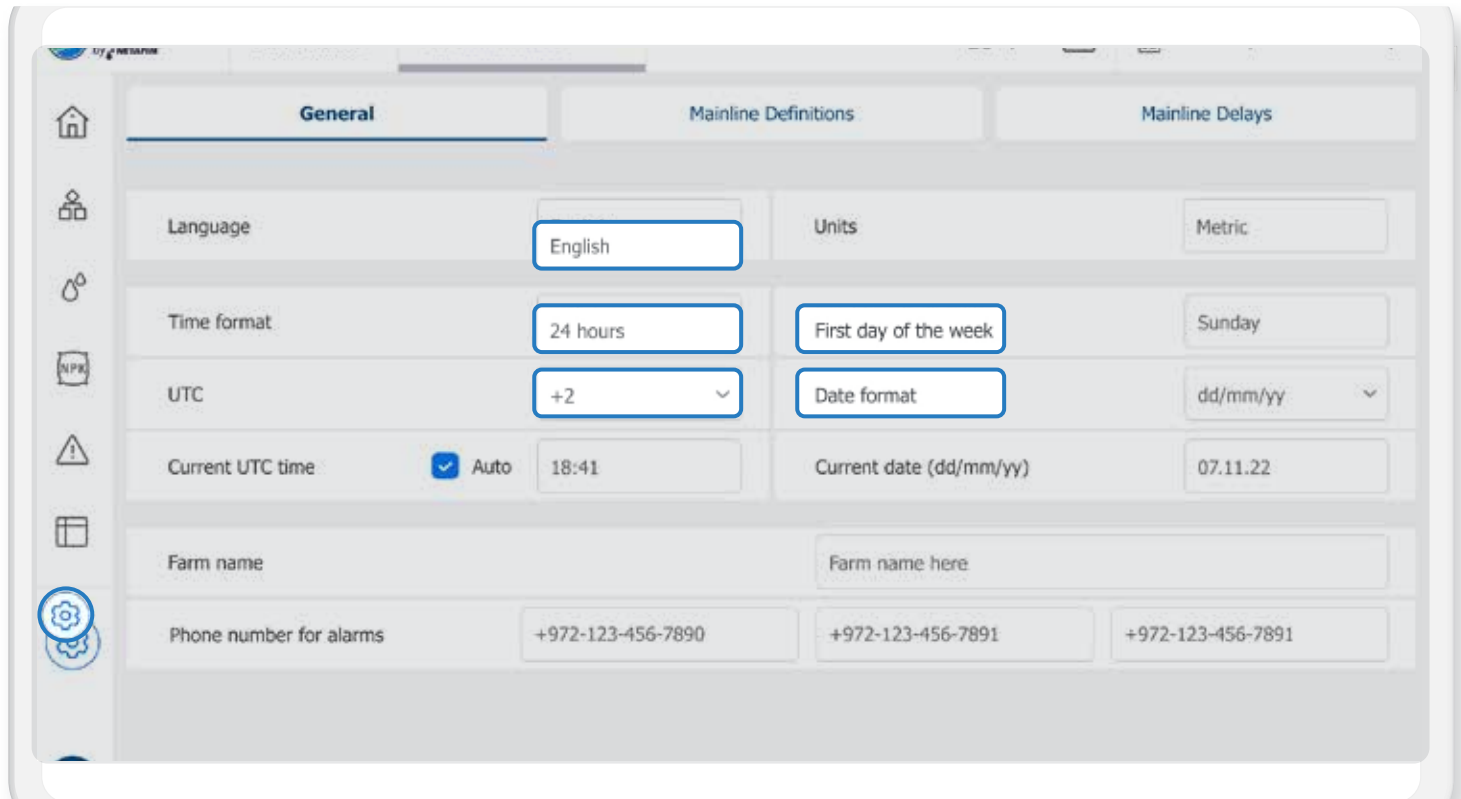
Navigate to preferences

Click the Gear Icon then Select Preferences

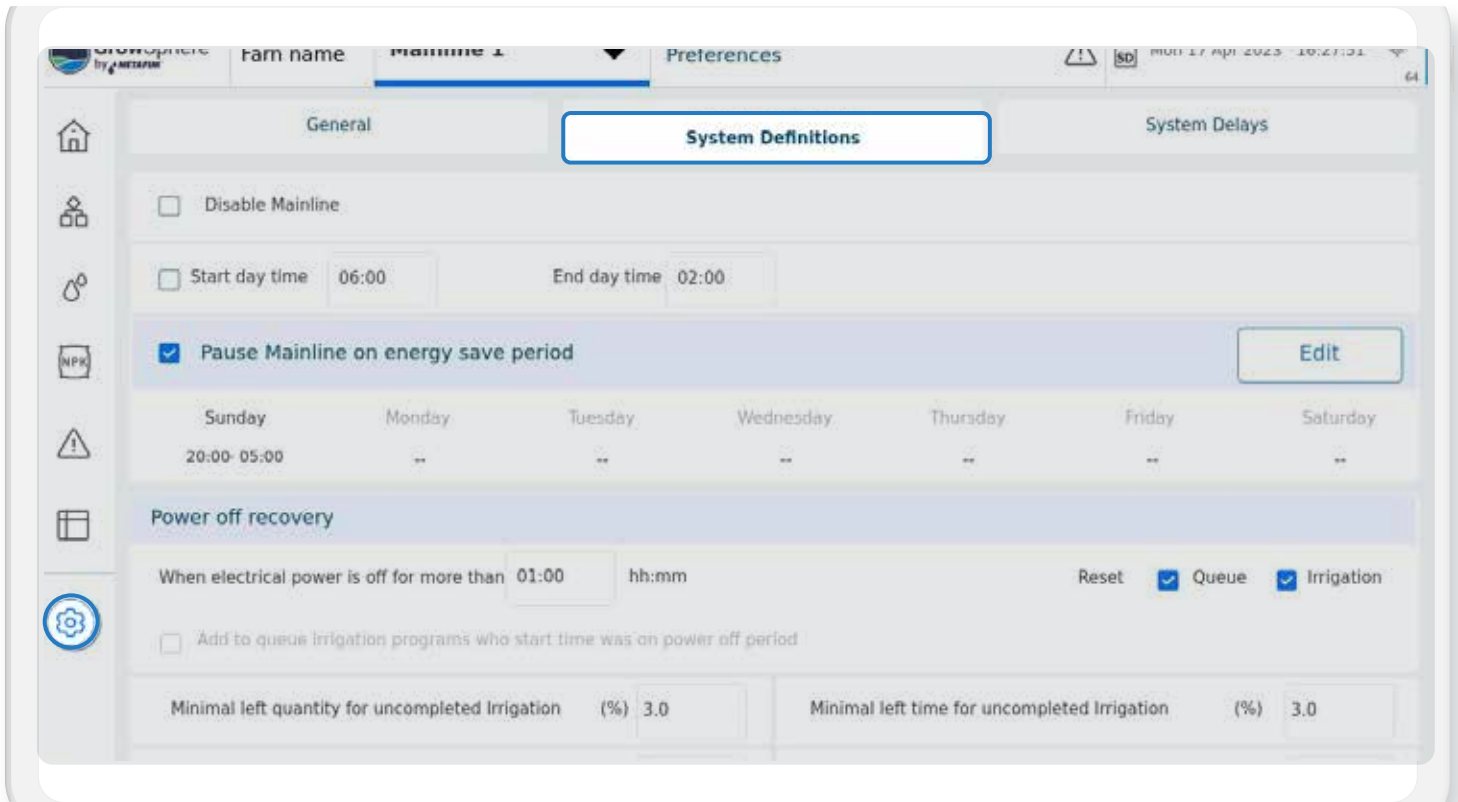


Preferences settings

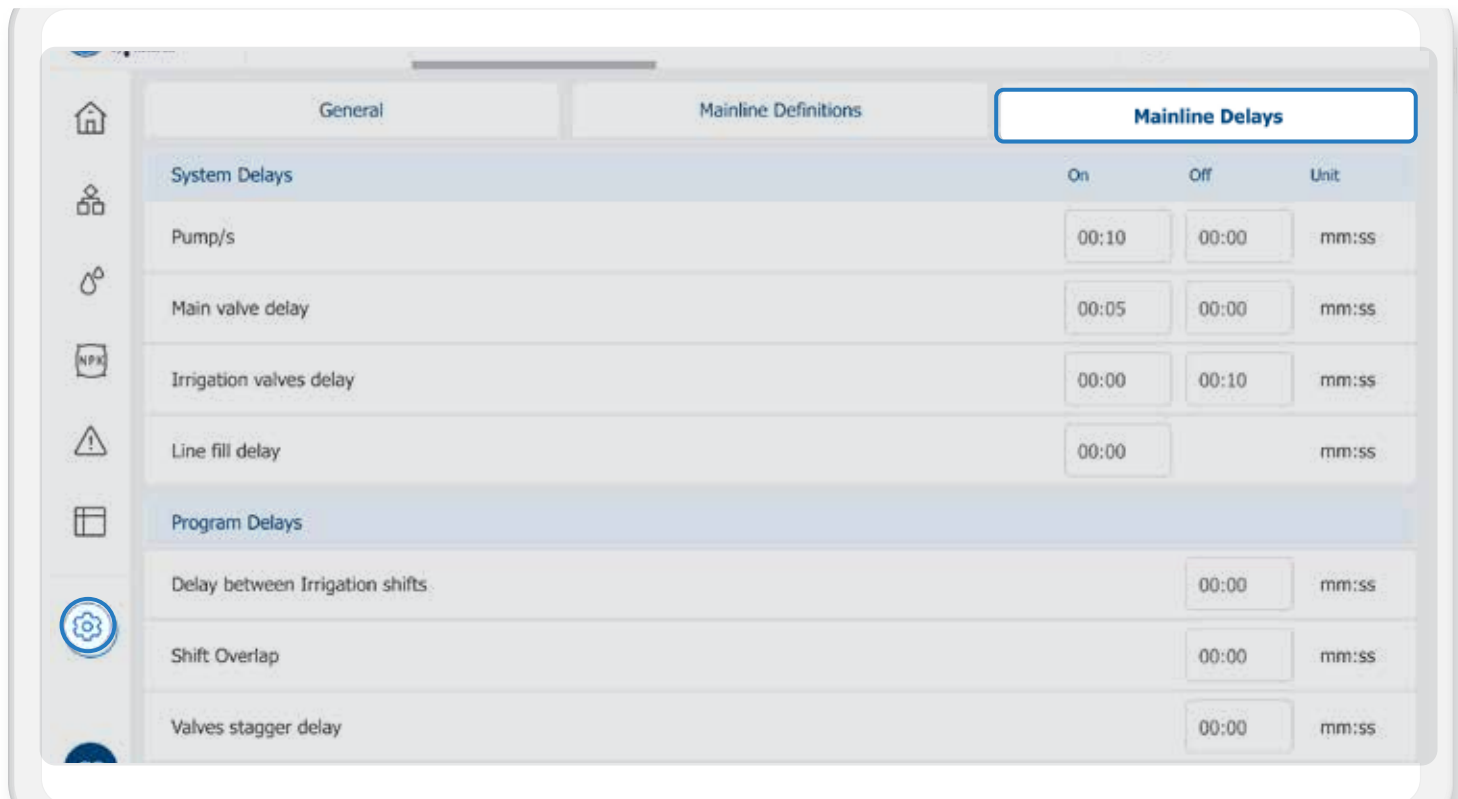
Chose your General Settings and continue to the next step, your selections will be saved automatically



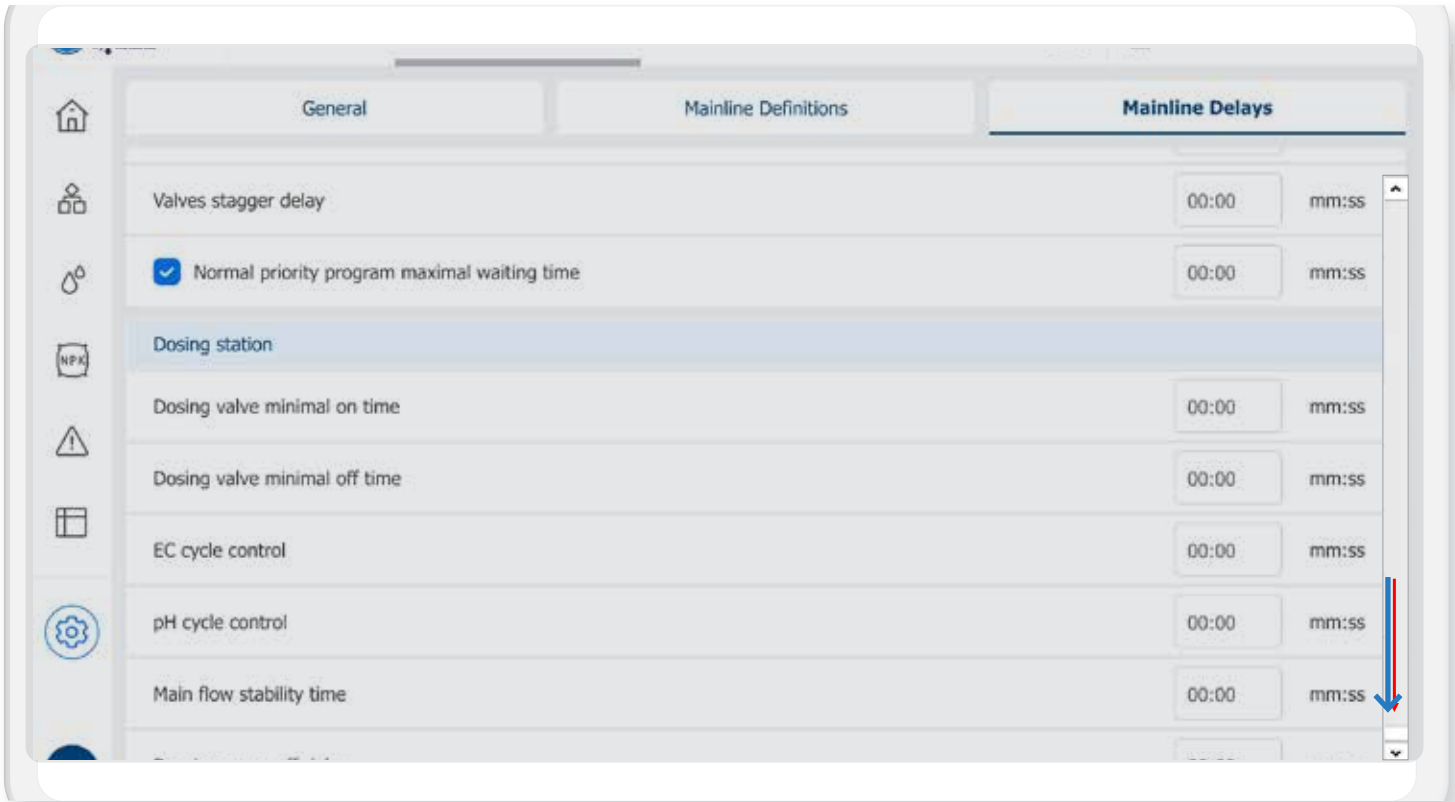
/ Select Mainline Definitions and enter definitions for each mainline



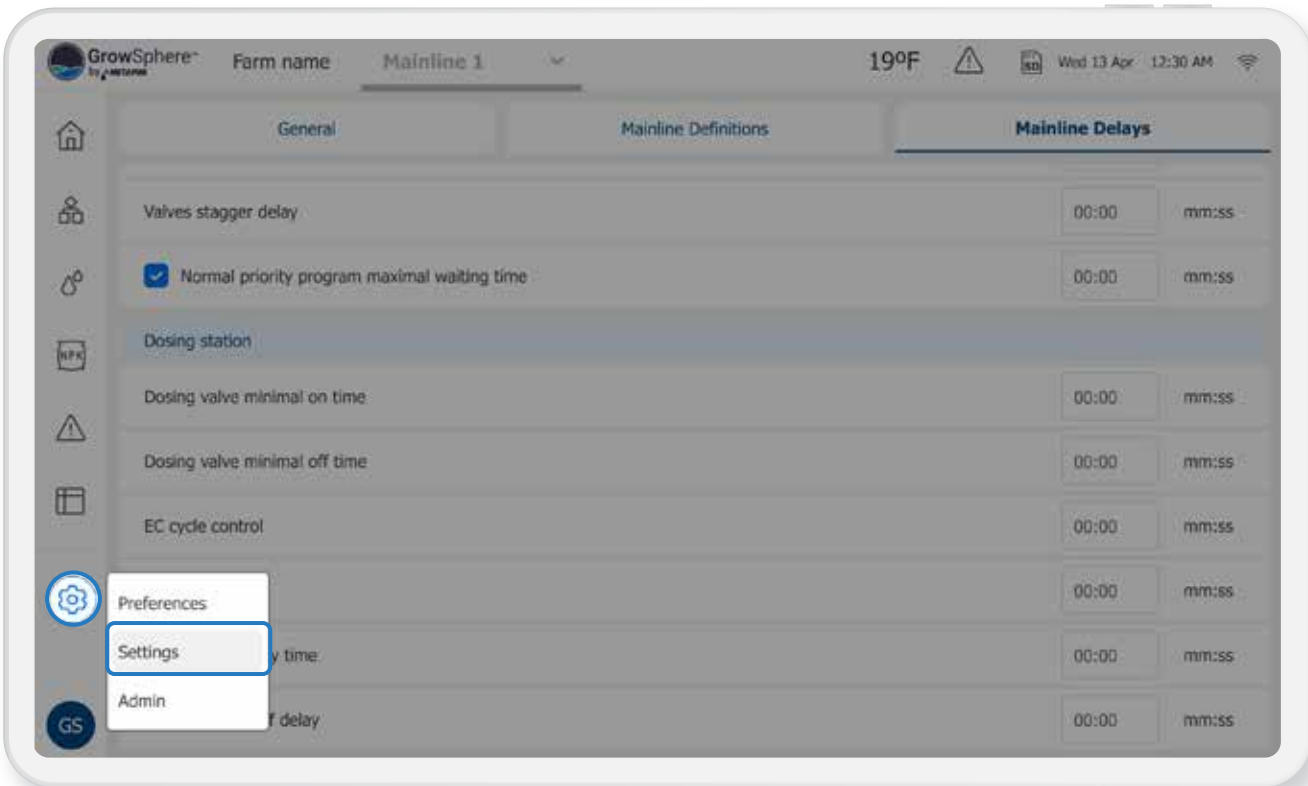
/ Select Mainline Delays and set the desired delays for your system



/ Scroll down to see all Mainline Delays

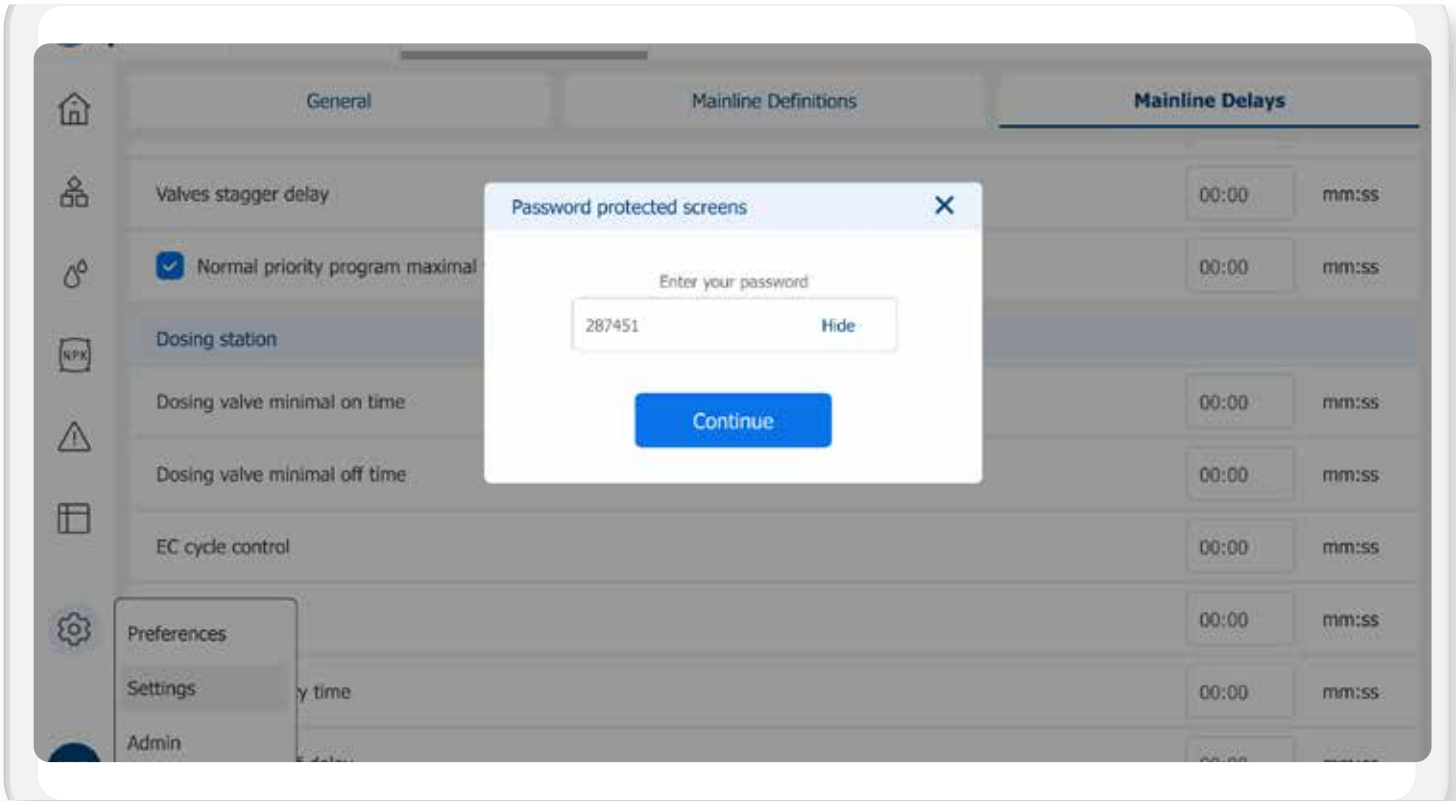


/ Click the Gear icon and select Settings



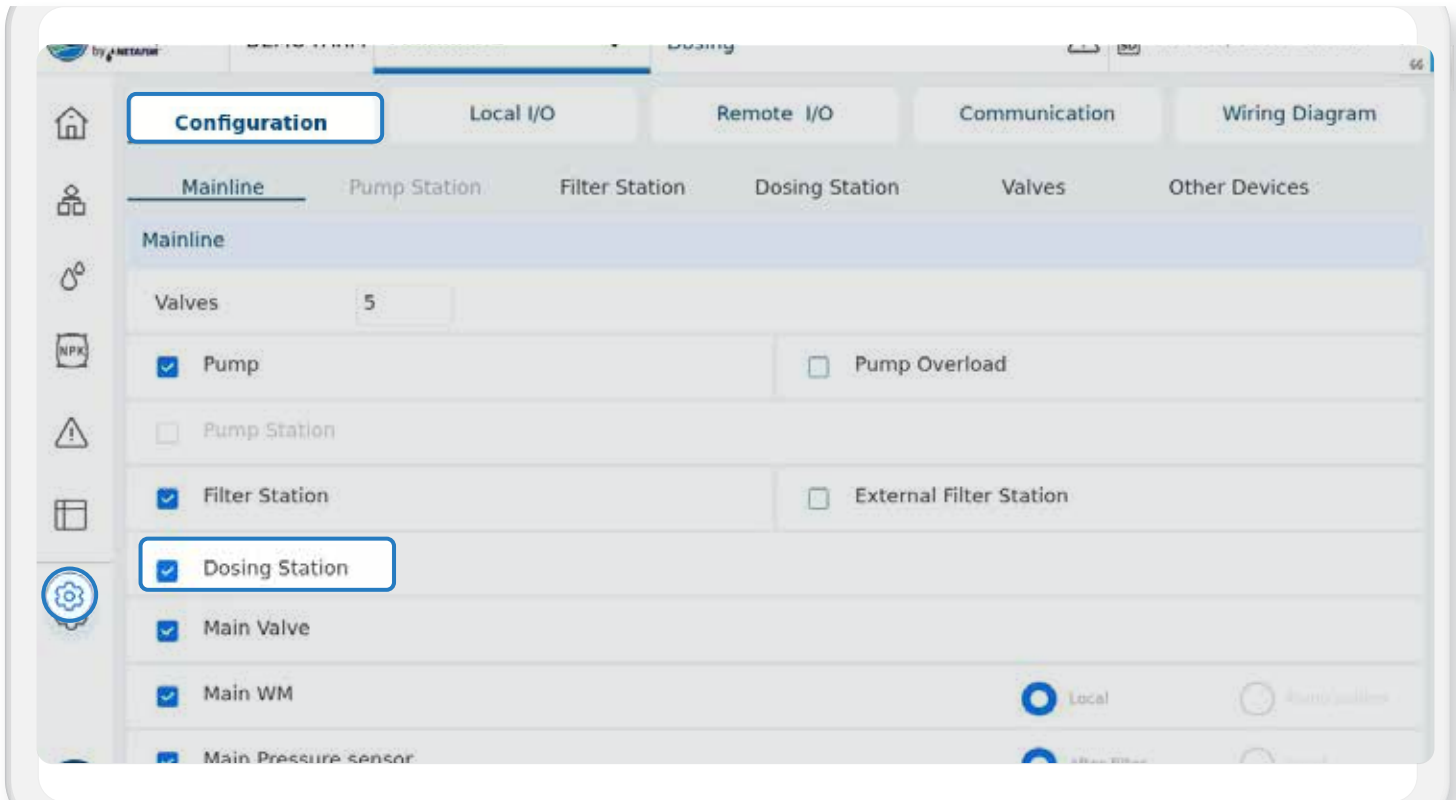
/ Navigate to settings

Enter the default password: 287451, then select "Continue"



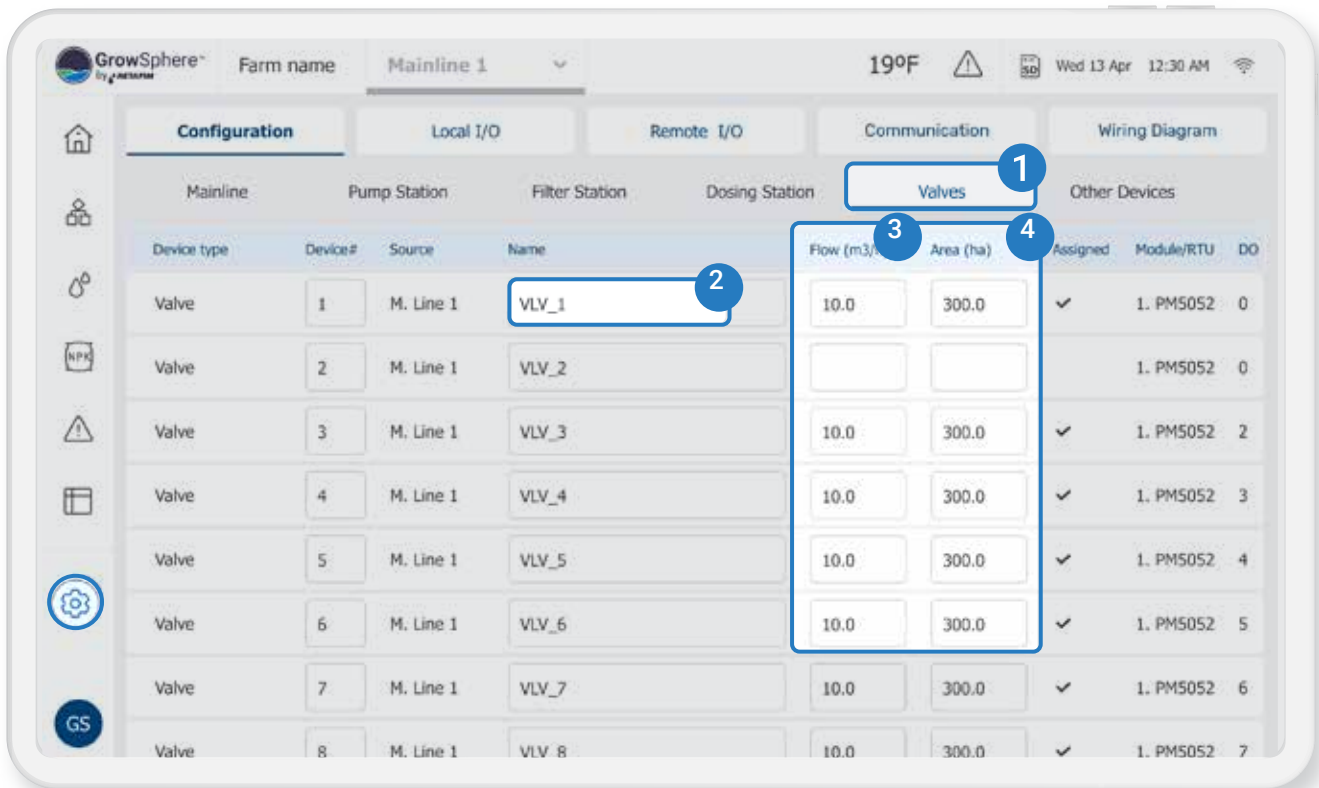
/ Mainlines settings

Select the Configuration Tab to define the system elements for each Mainline
For example- Select Dosing station when there is a Dosing station connected



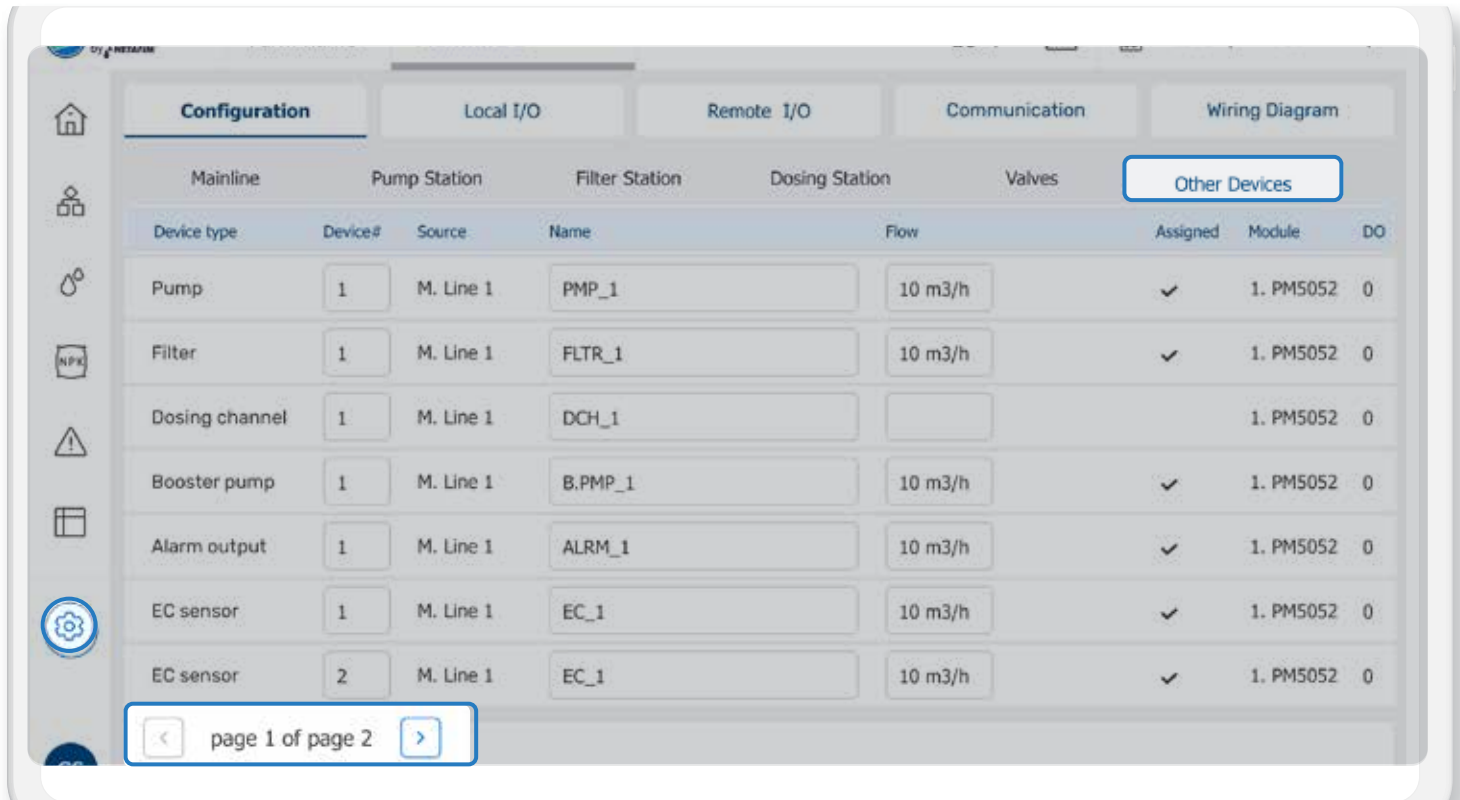
Valves settings

Select the Valves Tab and enter the name, flow rate and irrigated area



Other devices settings

Select the Other Devices tab to enter the name and characteristics of other devices



Local I/O settings

Select the I/O tab to define Inputs and Outputs. Double tap to copy device from above I/O

Configuration **Local I/O** Remote I/O Communication Wiring Diagram

Digital output **Digital output** Digital input Analog input

	Module	DO#	Device type	Device#	Source	Name	Flow	Area (ha)	Assigned
1.	1.PM5052	0	Valve	1	M. line 1	VLV_1	10.0 m3/h	300.0	Unassign
2.	1.PM5052	1	Valve	2	M. line 1	VLV_2	10.0 m3/h	300.0	Unassign
3.	1.PM5052	2	pump	1	M. line 1	PMP_1	-	300.0	Unassign
4.	1.PM5052	3	Assign	-	-	-	-	-	Unassign
5.	1.PM5052	4	Assign	-	-	-	-	-	Unassign
6.	1.PM5052	5	Assign	-	-	-	-	-	Unassign
7.	1.PM5052	6	Assign	-	-	-	-	-	Unassign

Select the Digital Input tab to assign and define local Digital Inputs that are connected by wire to the controller

GrowSphere™ Farm name All mainlines 19°F Wed 13 Apr 12:30 AM

Configuration **Local I/O** Remote I/O Communication Wiring Diagram

Digital output **Digital input** Analog input

	Module	DO#	Device type	Device#	Source	Name	Type	Rate	Assigned
1.	1.PM5052	0	AC Fault	1	System	AC Fault	NC	300.0	Unassign
2.	1.PM5052	1	Water meter	2	M. line 1	WMTR1.1	LPP	10.00	Unassign
3.	1.PM5052	2	Assign	-	-	-	-	-	Unassign
4.	1.PM5052	4	Assign	-	-	-	-	-	Unassign
5.	1.PM5052	5	Assign	-	-	-	-	-	Unassign
6.	1.PM5052	6	Assign	-	-	-	-	-	Unassign
7.	1.PM5052	7	Assign	-	-	-	-	-	Unassign

/Wiring Diagram

Will display the modules and the location of each defined devices

The screenshot displays the GrowSphere Farm settings interface. The top navigation bar includes the GrowSphere logo, 'Farm', 'All Mainlines', and 'Settings'. The date and time are shown as 'Sun 05 Mar 2023 14:51:43'. The interface is divided into four main sections: Configuration, Local I/O, Remote I/O, and Communication. A 'Wiring Diagram' tab is highlighted with a blue circle and the number '1'. The Configuration section shows 'PM-5052 - CPU' with a list of IO0 through IO9. The Local I/O section shows 'DO-572 - Output' with a list of channels 0 through 7, each with a 'Common' label. The Remote I/O section shows 'AI-561 - Analog Input' with a list of channels A0 through A3, with A0 labeled 'EC1.1' and A1 labeled 'PH1.1'. The Communication section shows 'DO-573 - Output' with a list of channels 0 through 15, with channels 0-4 labeled 'VLV1.1' through 'VLV1.5' and channels 6-11 labeled 'Common'. A vertical scrollbar is visible on the right side of the Communication section.

The Scada screen will show the running program when it is running

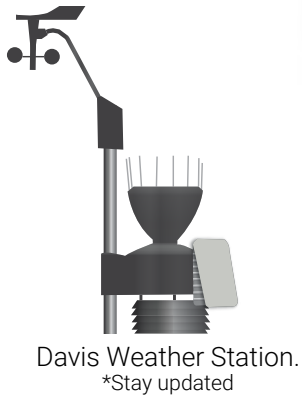
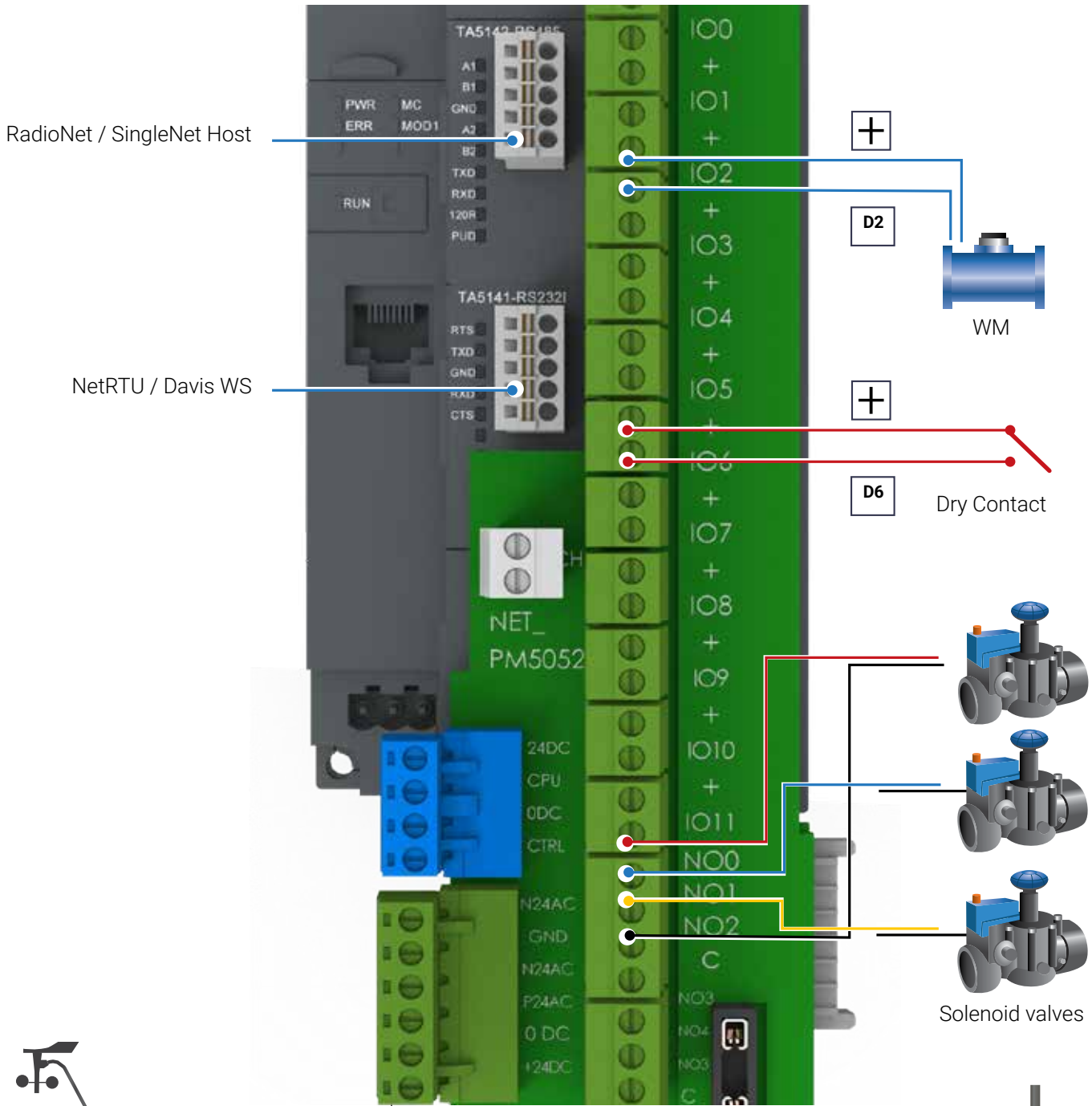
The screenshot displays the GrowSphere Scada interface for 'Mainline 1'. The top navigation bar includes 'General', 'Shifts', 'Valves', 'Analytics', 'Queue', and 'Sensors'. A 'Program 2' button is highlighted in blue. On the right, there are 'Skip Options' and 'Pause Mainline' buttons. The main area is split into two panels. The left panel, titled 'Main Line 1', shows a schematic of the irrigation line with three pressure sensors (4.1 Bar, 3.9 Bar, and 18.0 m3/h) and a flow rate of 18.0 m3/h. Below this is a 'Current' progress bar and a table with the following data:

program	shift	Time & Date Started
Avocado Hass - summer	2/3	13.08.21 12:00 AM

The right panel, titled 'Dosing recipes - NPK1', shows a 'Less info' toggle and water quality data: EC Actual 1.3, Target 1.3, and PH Actual 6.5, Target 6.5. Below this is a schematic of three dosing points (1, 2, 3) and a table with the following data:

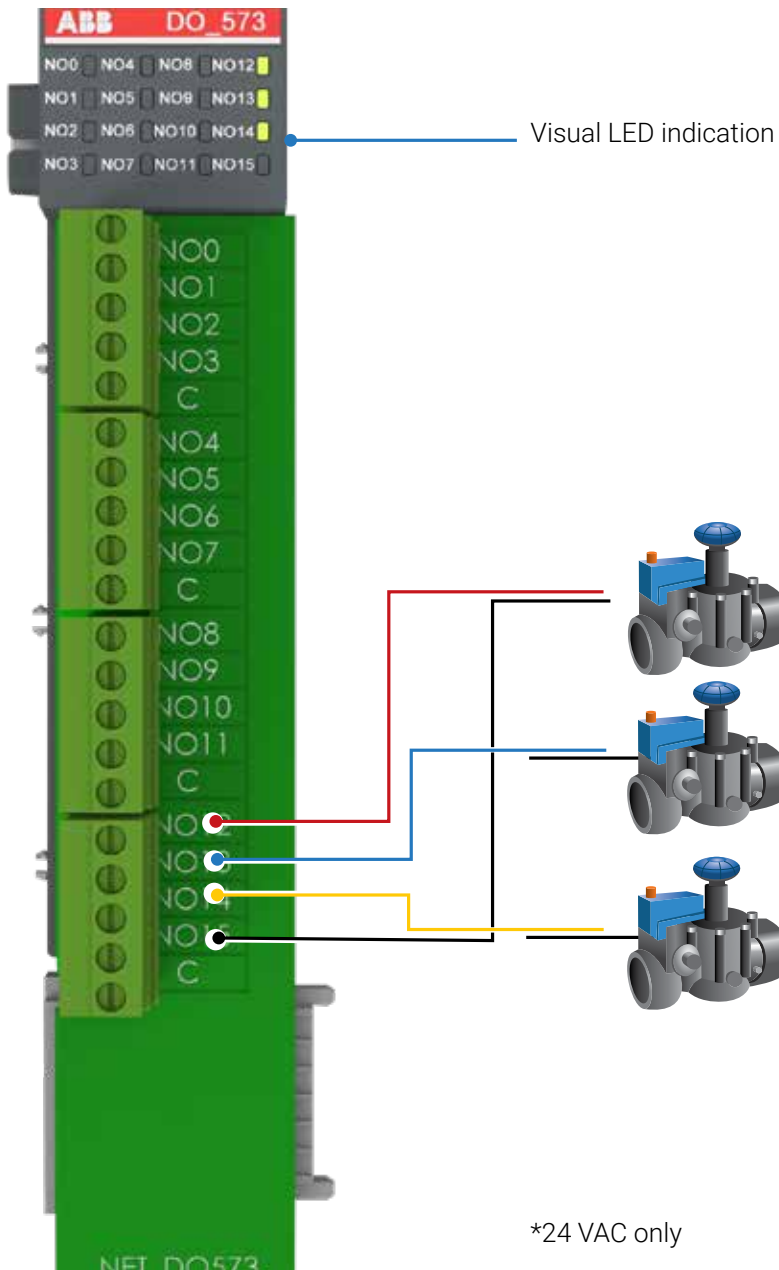
	1	2	3
Planned	11.0	8.0	3.0
Flow (L/h)	494.1	381.5	150.0
Delivered (L)	7.5	5.5	2.0
Delivered (hh:mm)	00:00	00:00	00:00

Wiring Instructions
GrowSphere™ MAX - CPU



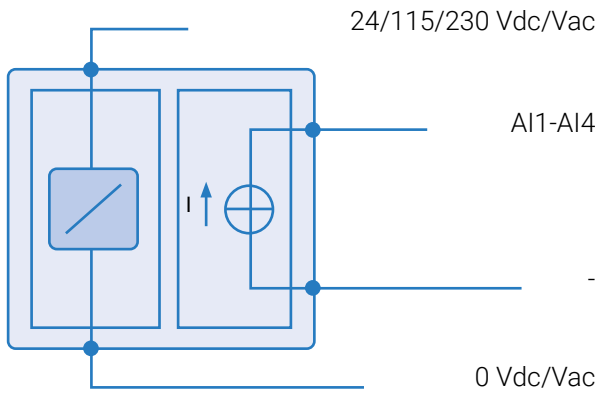
/GrowSphere™ MAX - DO573 Module

- 16 normally open relay outputs
- Isolation Groups = 2 (8 channels per group)
- Output current per channel = 2 A
- Indication of output signals – 1 yellow LED per ch.

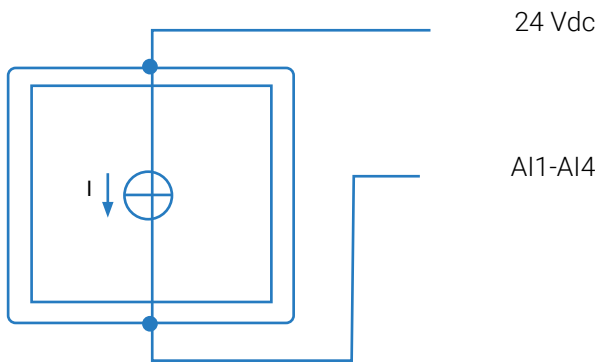


/ **GrowSphere™ MAX** - AI561 Module

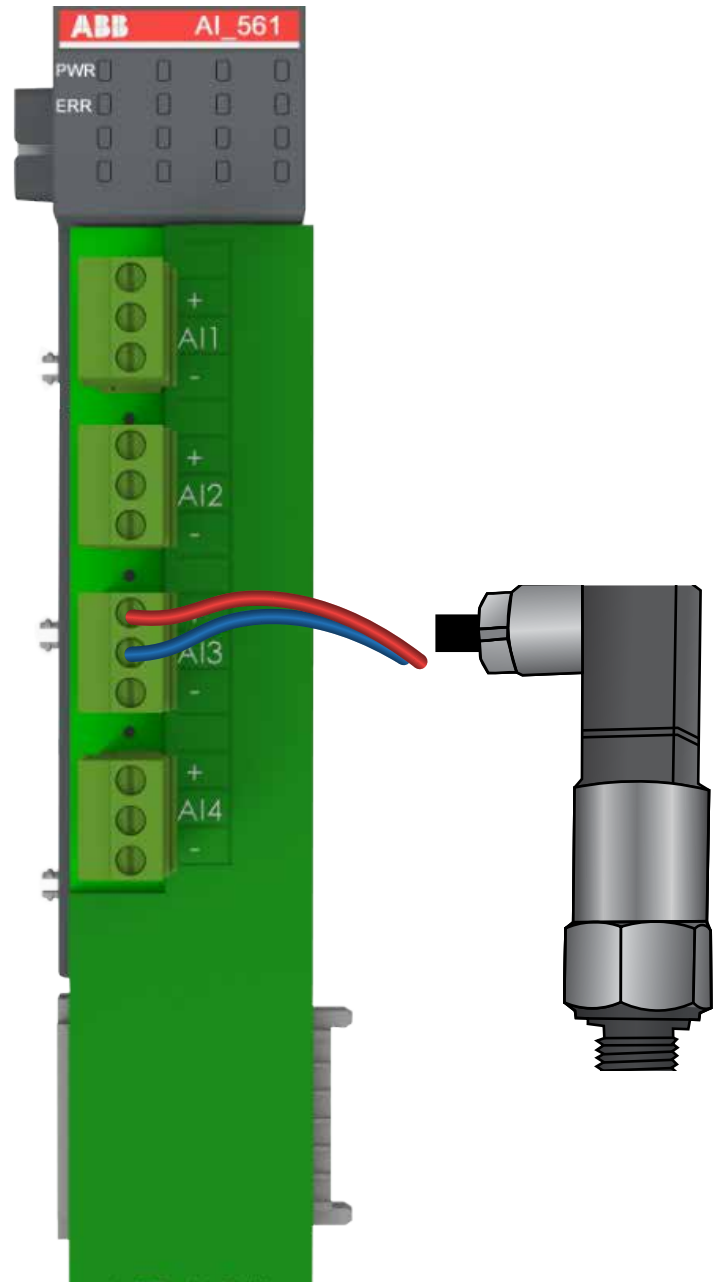
- 4 Analog Inputs
- Feed (Sourcing) voltage – 24 VDC
- Resolution – 0-20mA; 4 -20mA; 12 bit
- Channel input resistance – 250 ohm



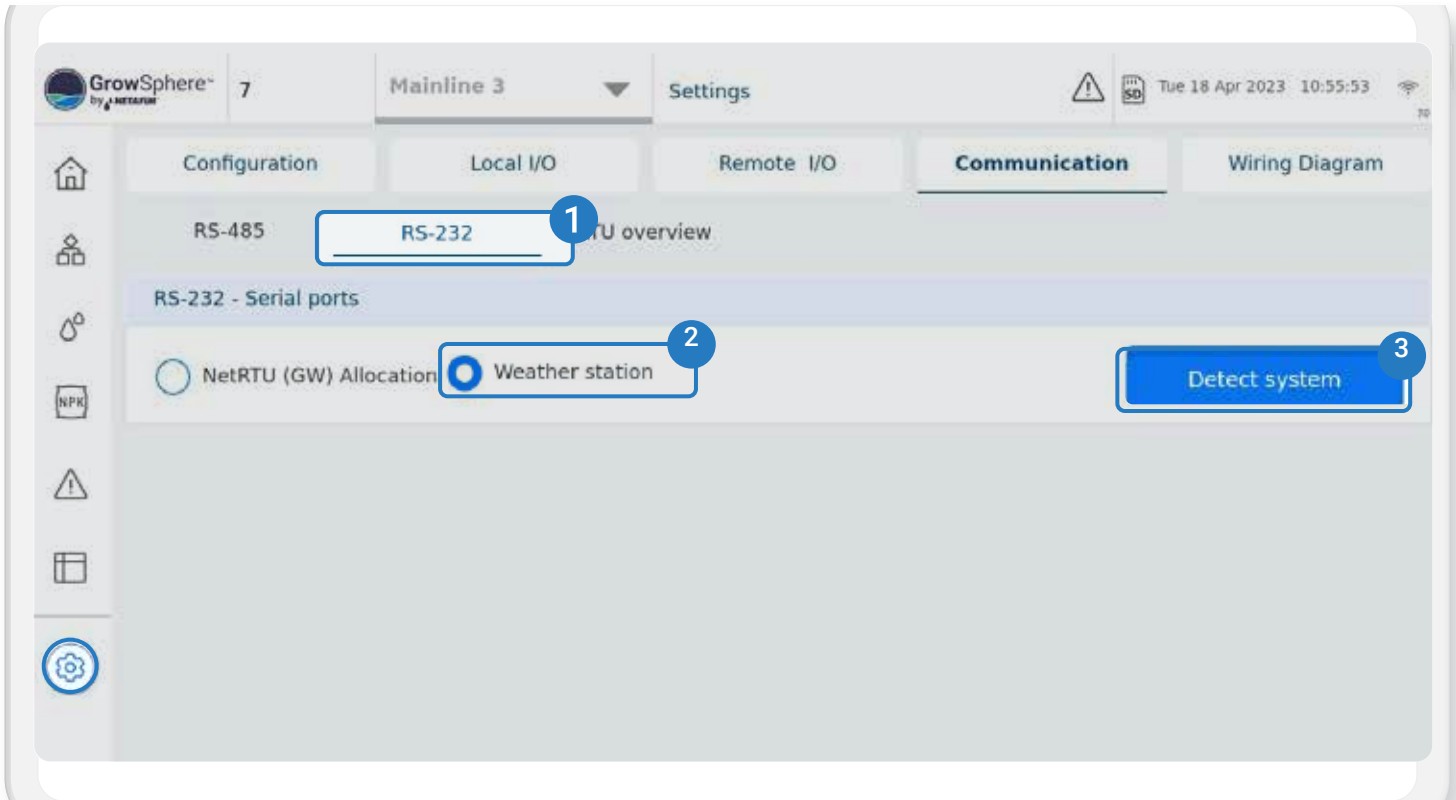
Connecting isolated sensor with current output



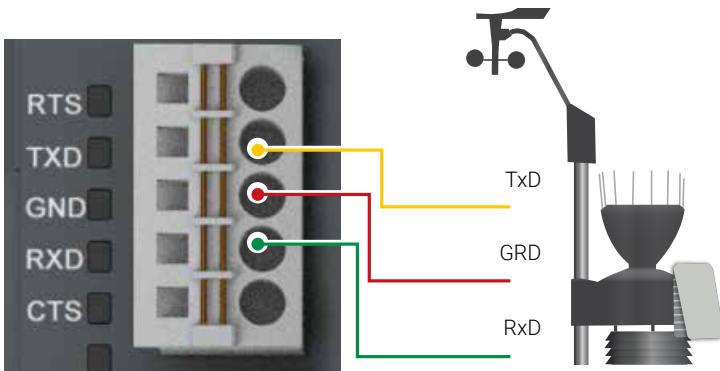
Connecting current transmitter



/Connection of Weather Station – RS232



/RS232 Module

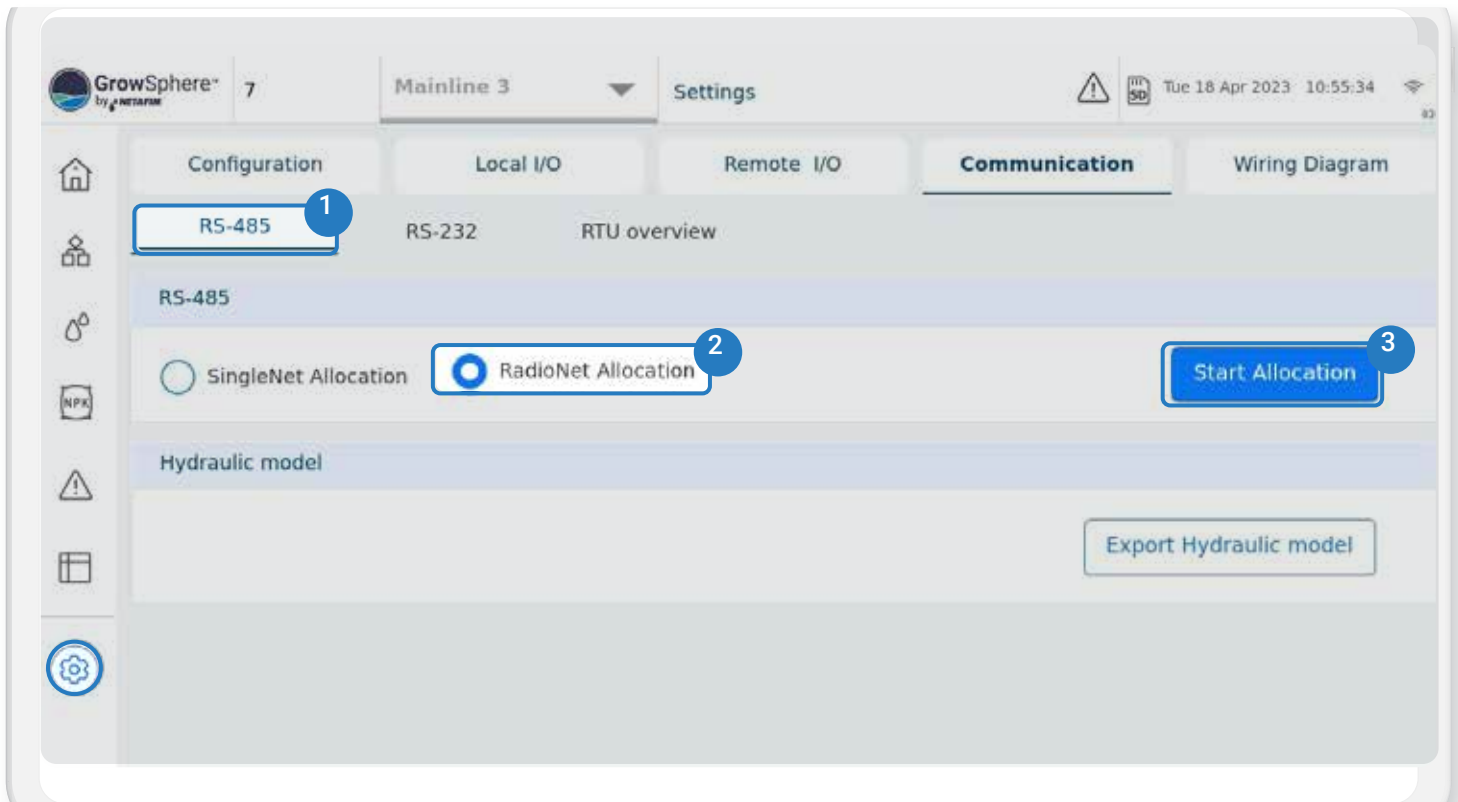


Signal	Description
RTS	Request To Send DCE is ready to accept data from the DTE
TxD	Transmit Data (output)
GRD	Common Ground
RxD	Receive Data (input)
CTS	Clear To Send (input) DCE is ready to accept data from the DTE

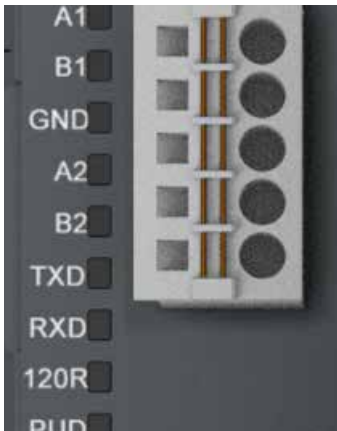
State LEDs

Signal	Color	State	Description
TxD	Yellow	ON (blinking)	Transmitting
RxD	Yellow	ON (blinking)	Receiving

/ Connection of RadioNet / SingleNet – RS485



/ RS485 Module



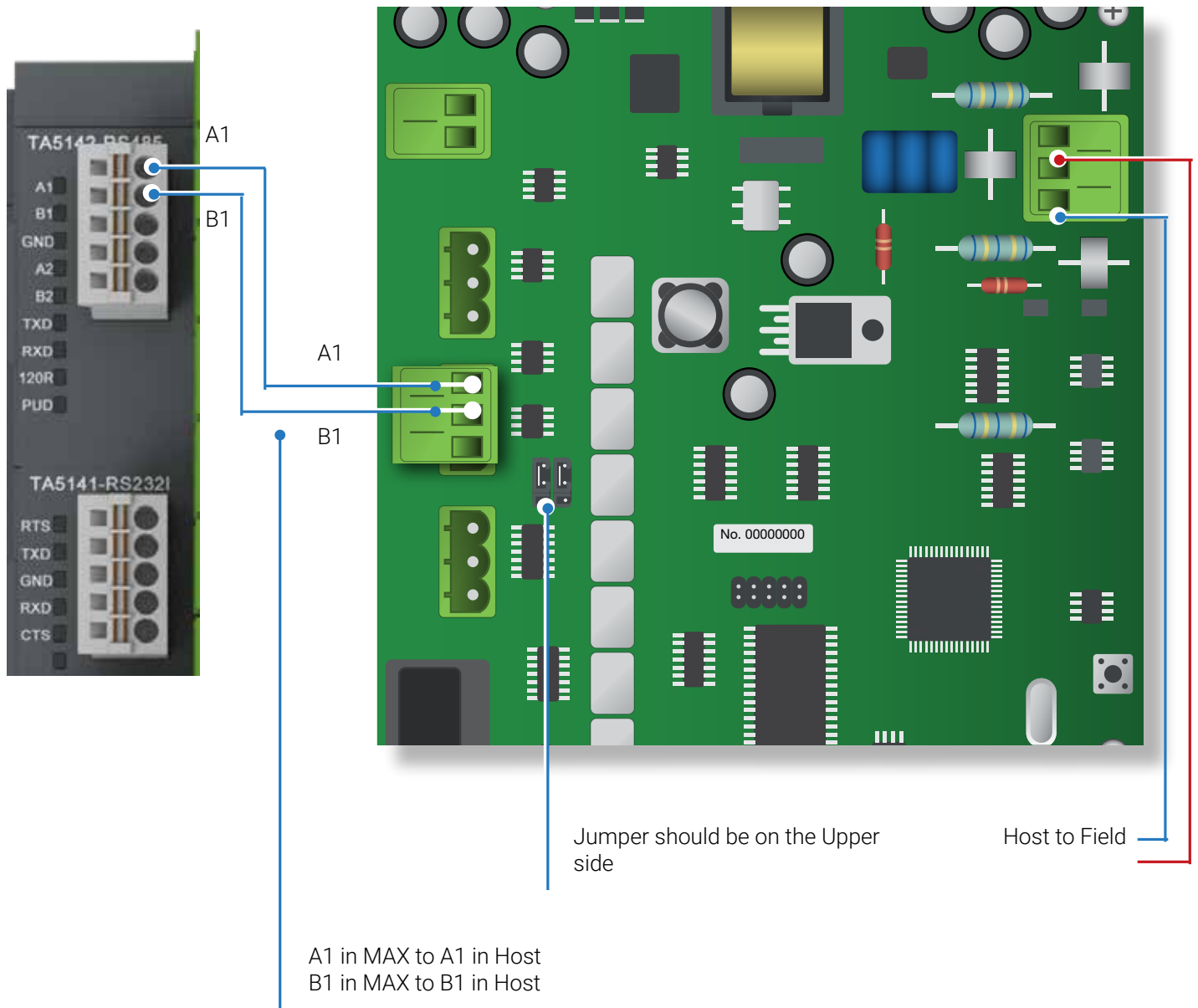
State LEDs

Signal	Color	State	Description
TxD	Yellow	ON (blinking)	Transmitting
RxD	Yellow	ON (blinking)	Receiving
120R	Yellow	ON	Bus termination
PUD	Yellow	ON	Pull-up / Pull-down



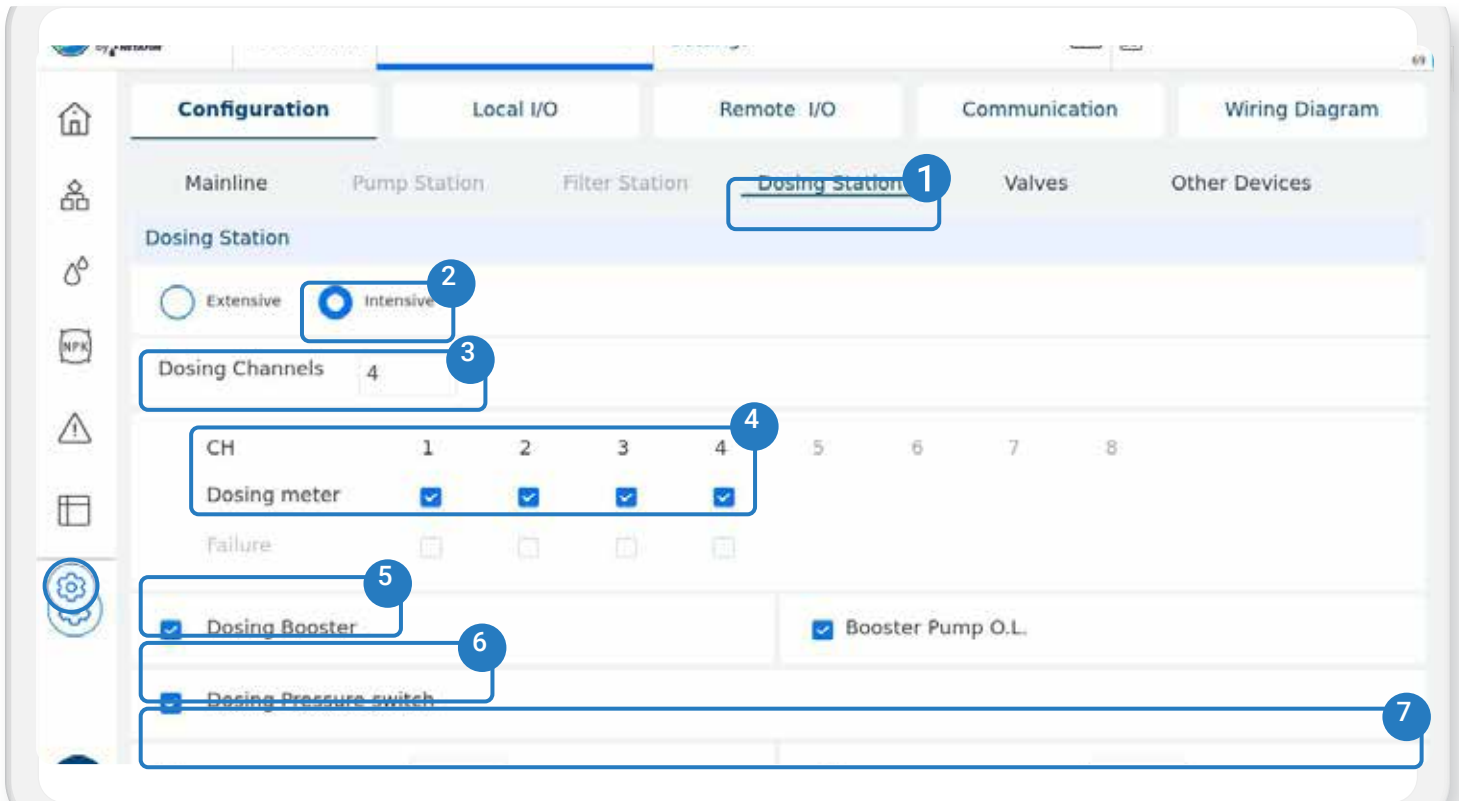
GrowSphere™ Max

SingleNet Host

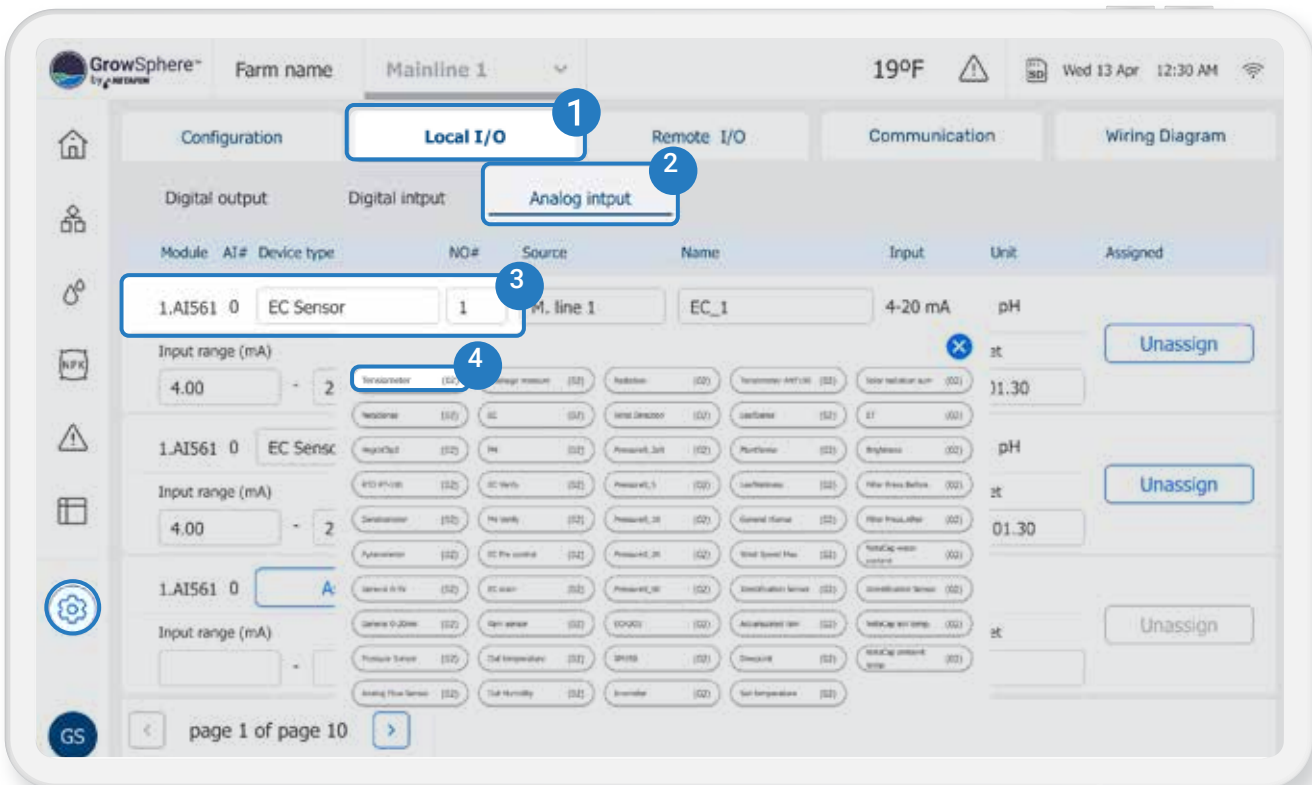


/ Dosing Setting

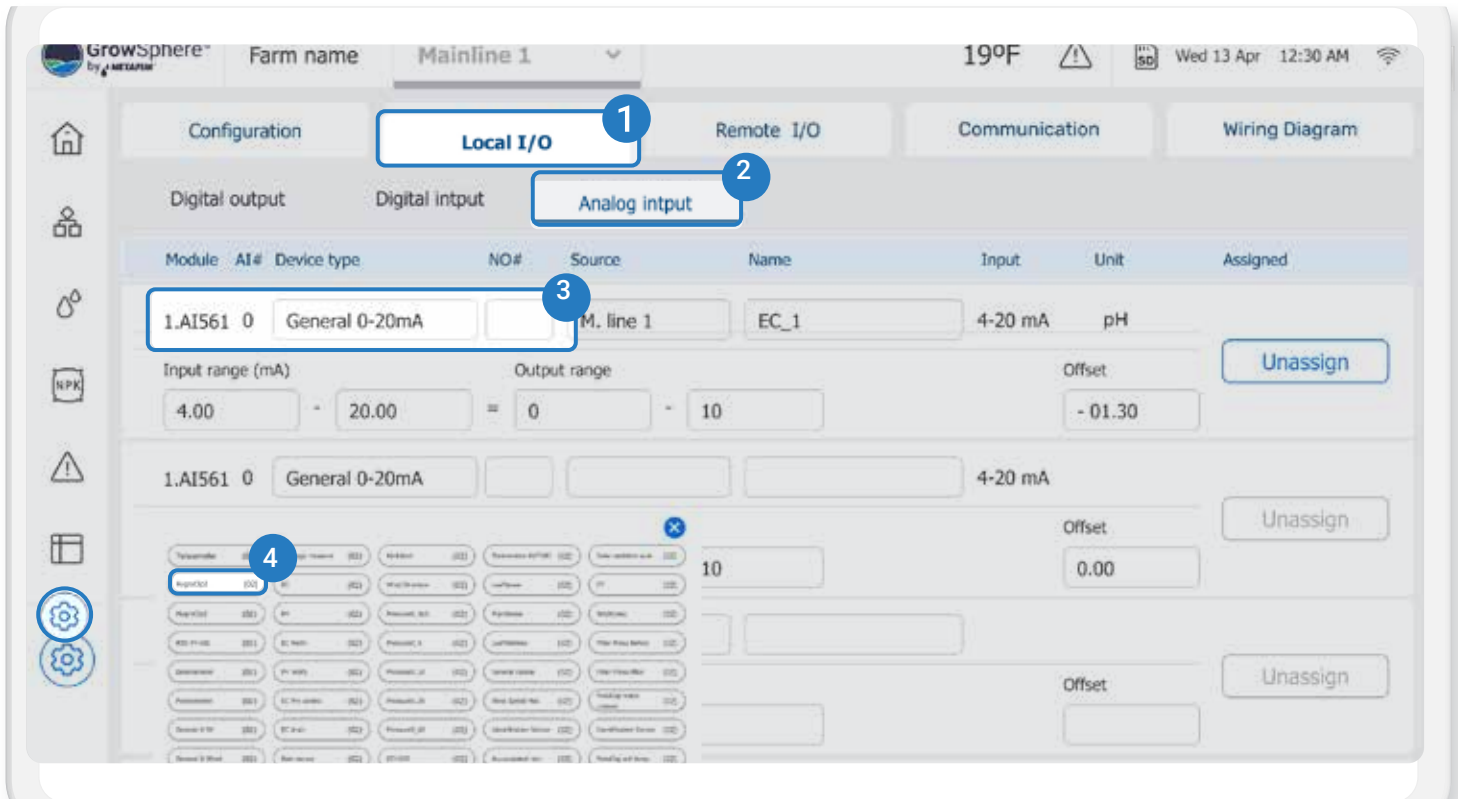
Select the Dosing Station Tab and define the elements of the Dosing Station for each Mainline



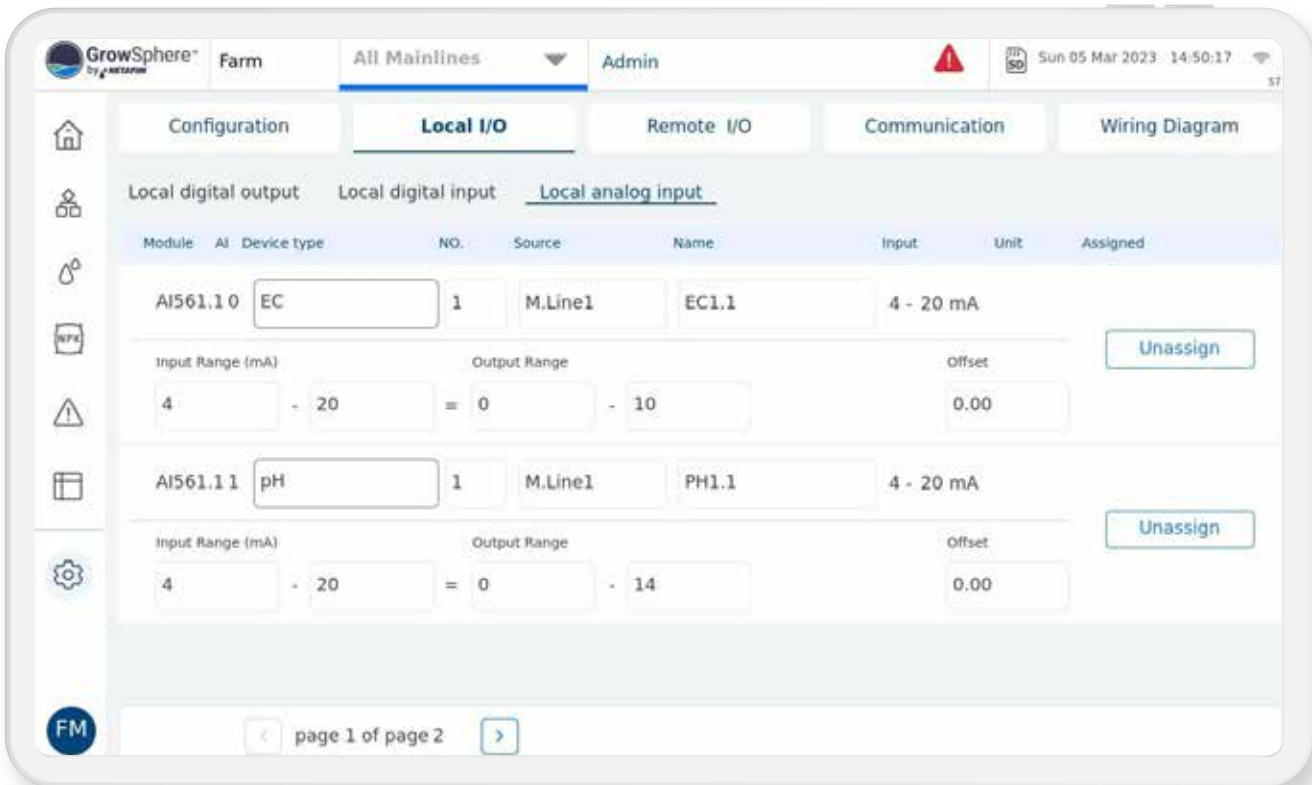
/ Select the Analog Input tab to assign and define local Analog Inputs that are connected by wire to the controller



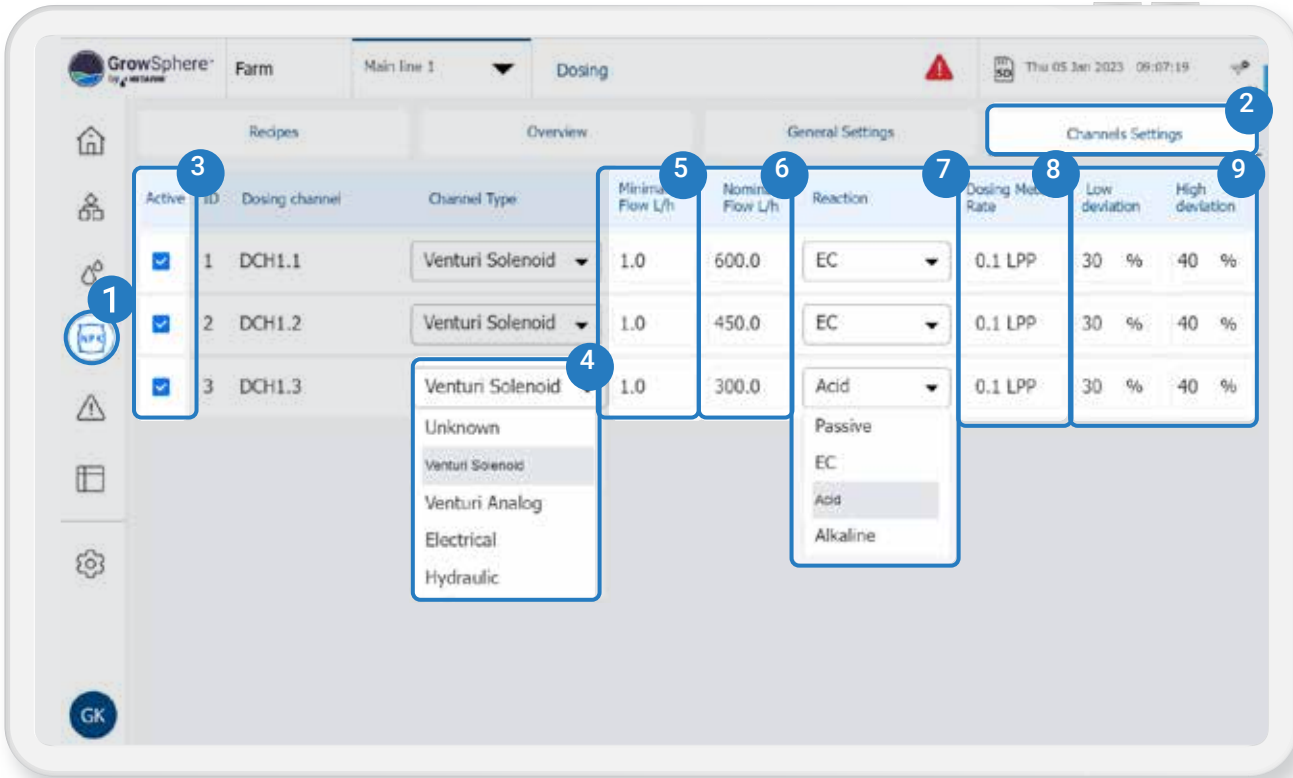
/Select the Local I/O tab and then Local analog Inputs
Assign an analog input to the pH sensors



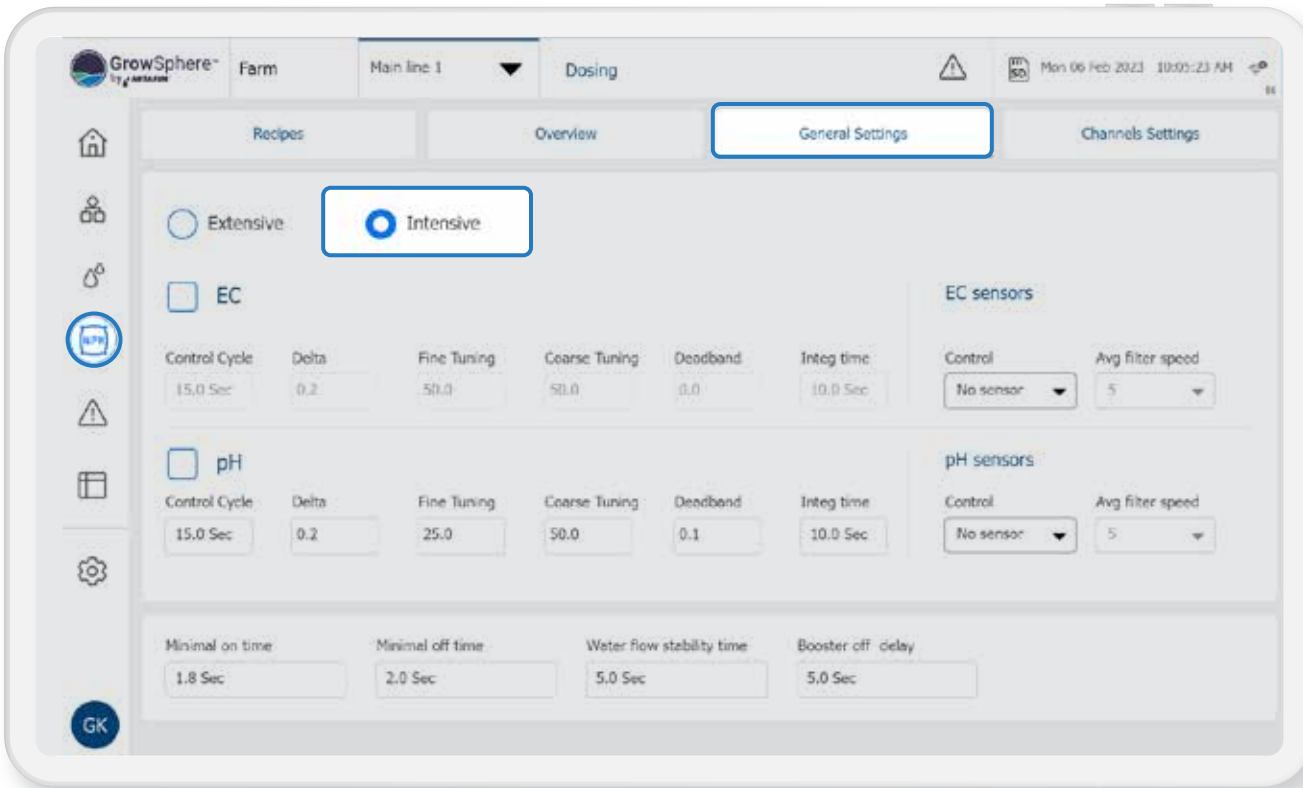
/EC and pH settings



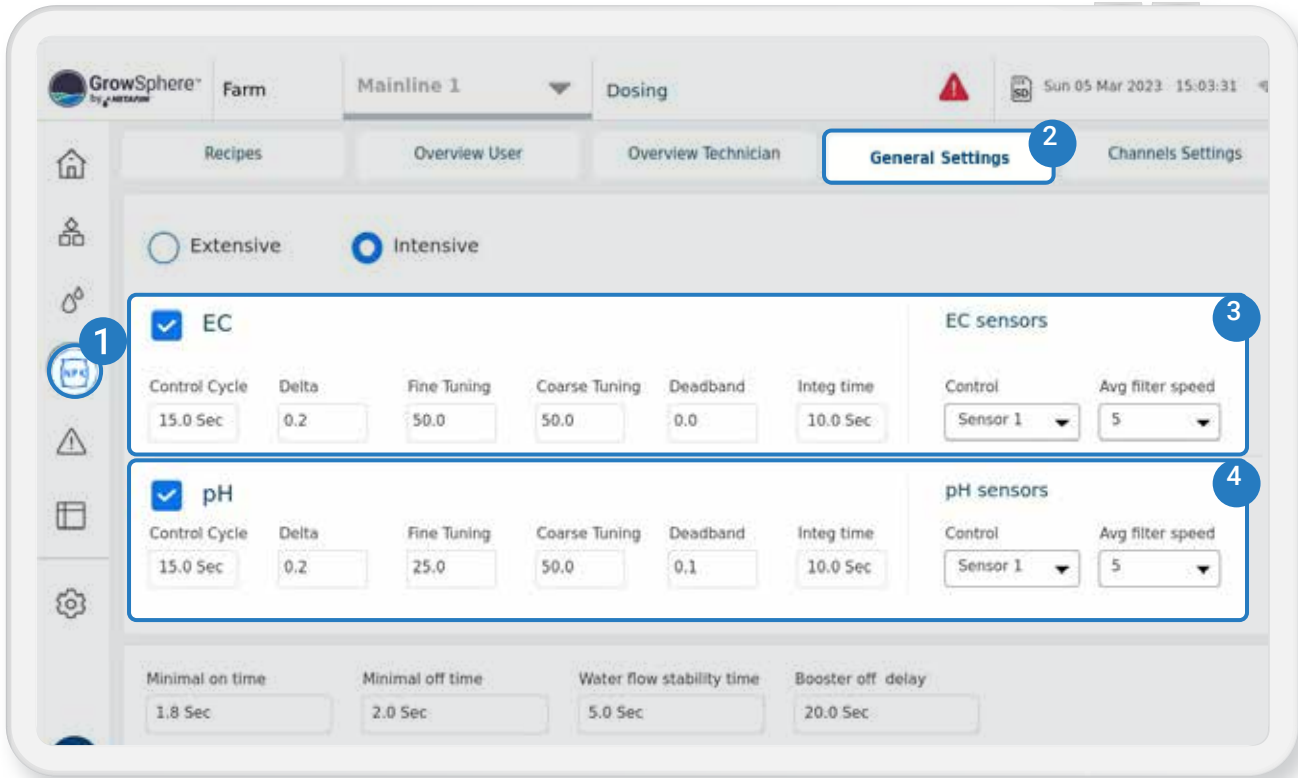
/ Select the dosing icon and then select the Tab Channels Settings
 Active the dosing channels and set the dosing channels parameters



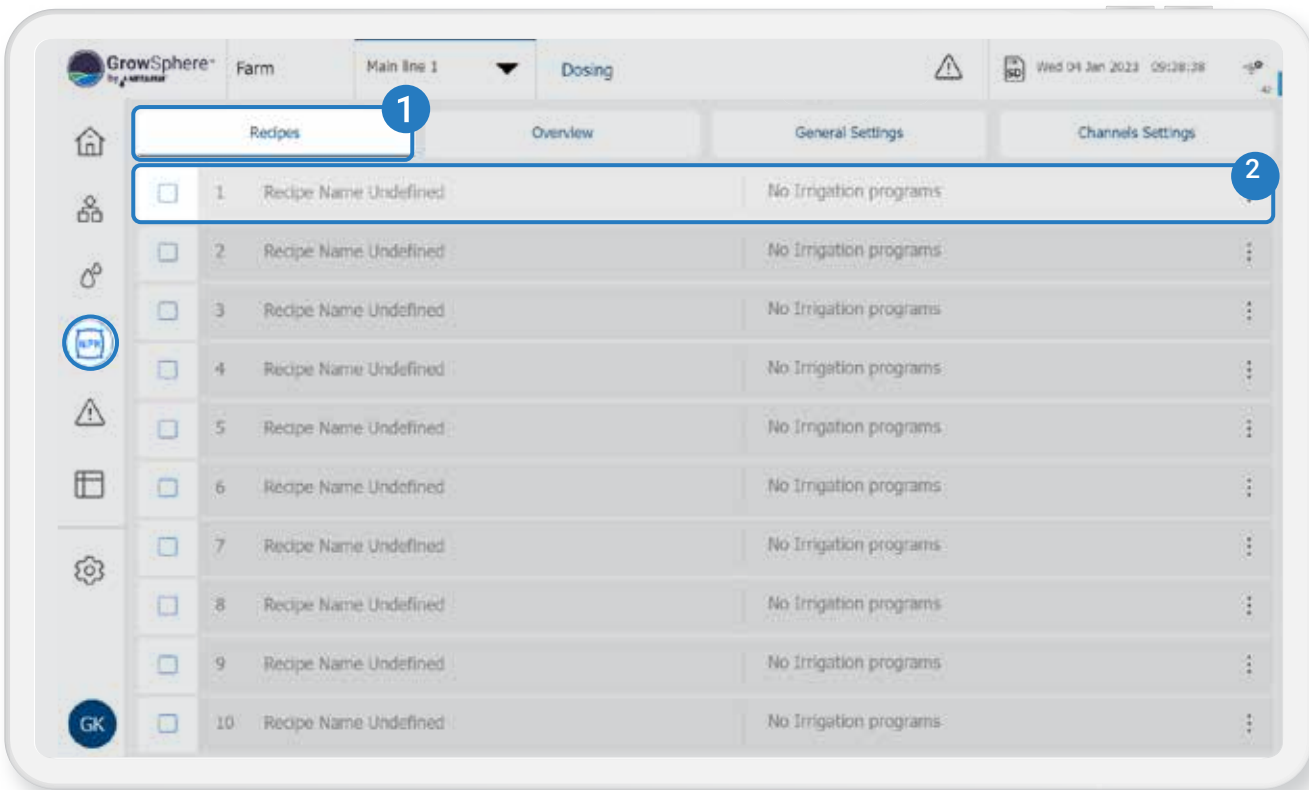
/ Select the General Settings Tab
 Select the dosing method to Intensive / Select the require delays



/ Activate the EC and pH control
and change the default settings according to your system

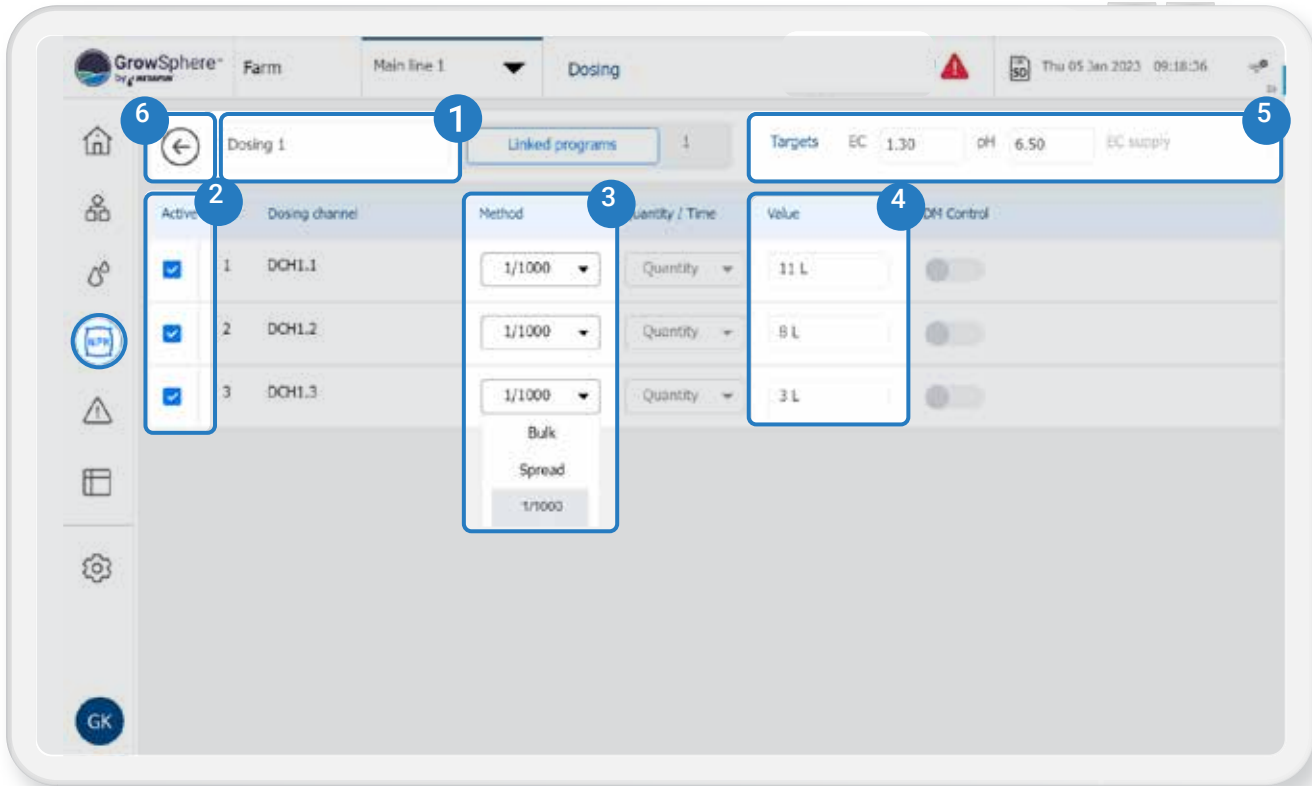


/ Dosing Recipes
Select the Recipes tab to edit a dosing program. Then choose recipe 1



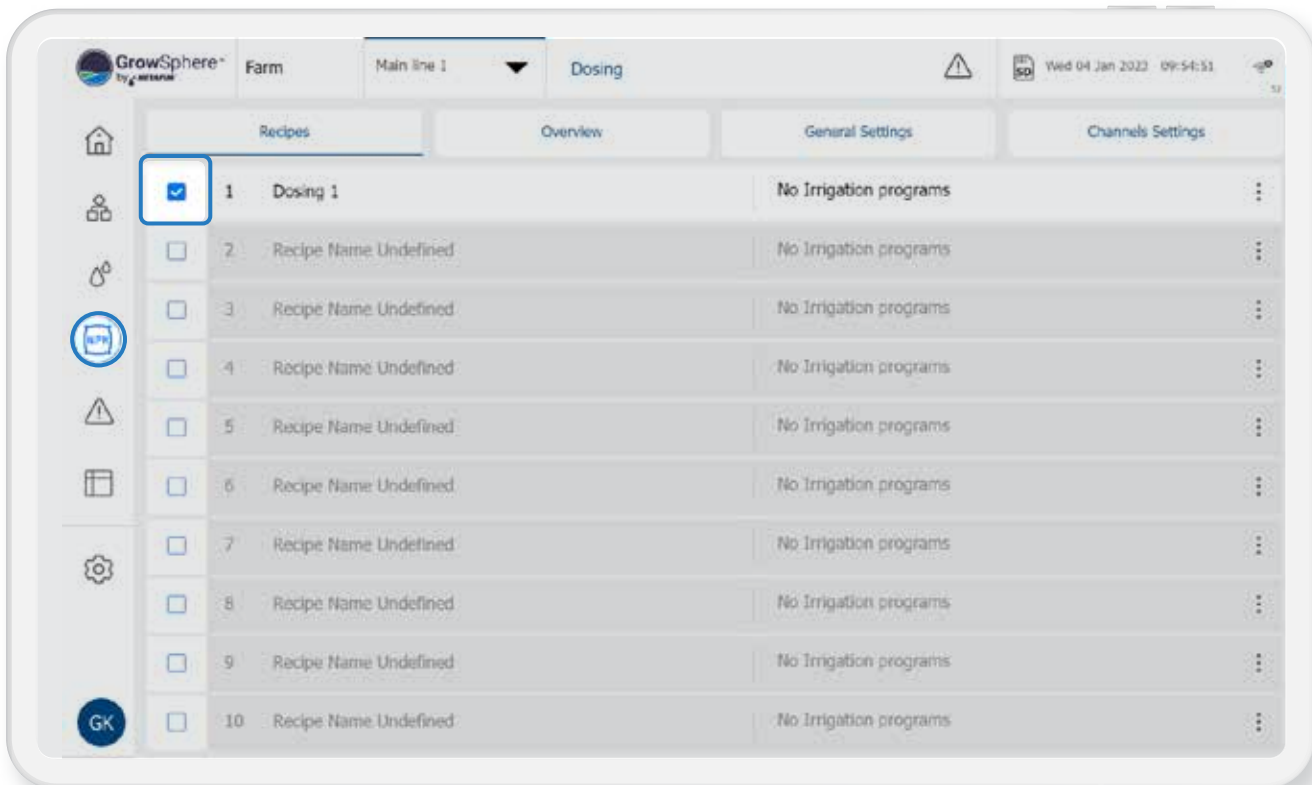
/ Dosing Channels

Activate the recipe's dosing channels. Select the methods and quantities for each channel. Set the target EC and pH. Set DM Control to active if required



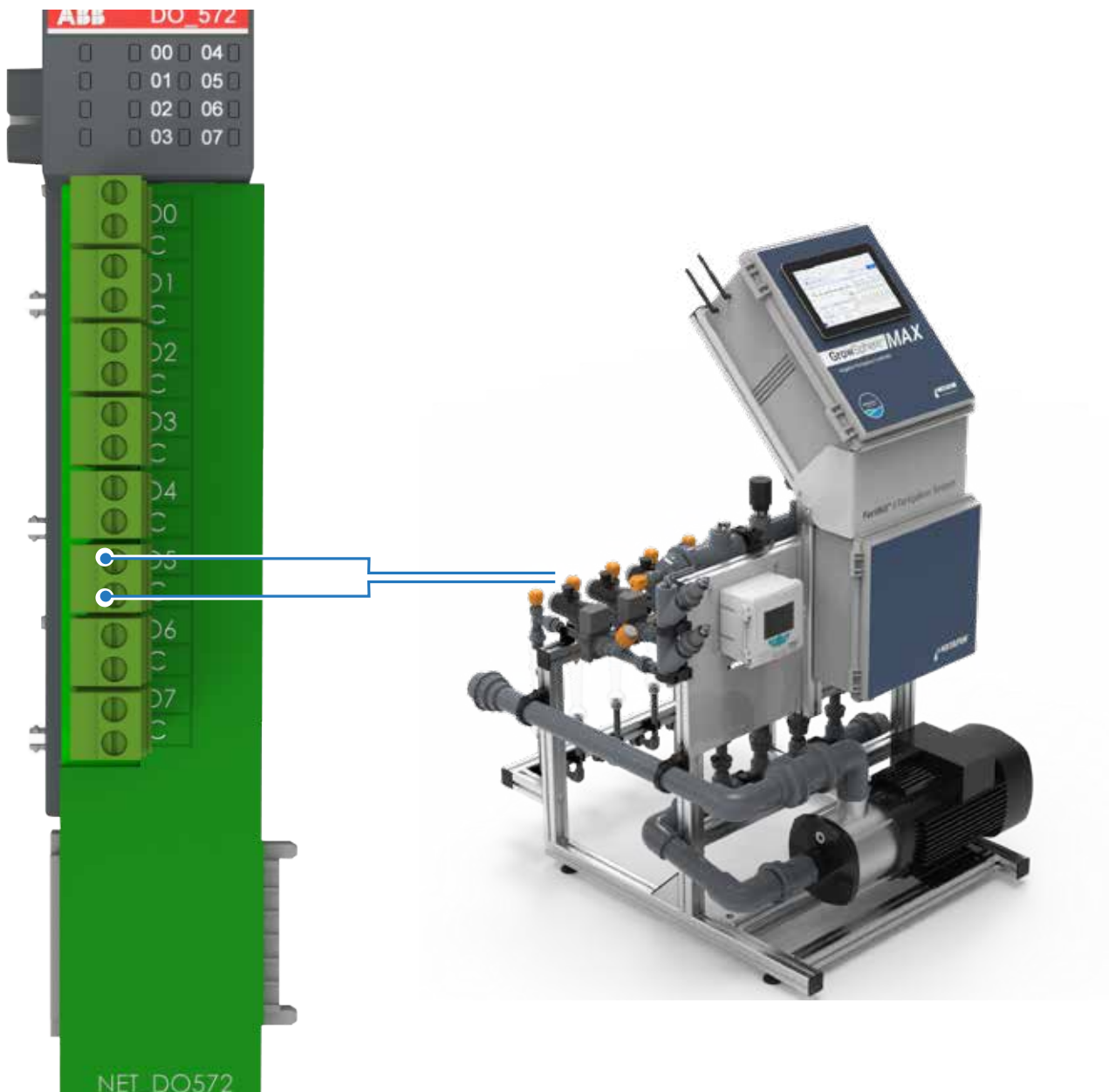
/ Activate the Recipe

Select the dosing recipe to activate the recipe
Repeat this action to other dosing recipes as required

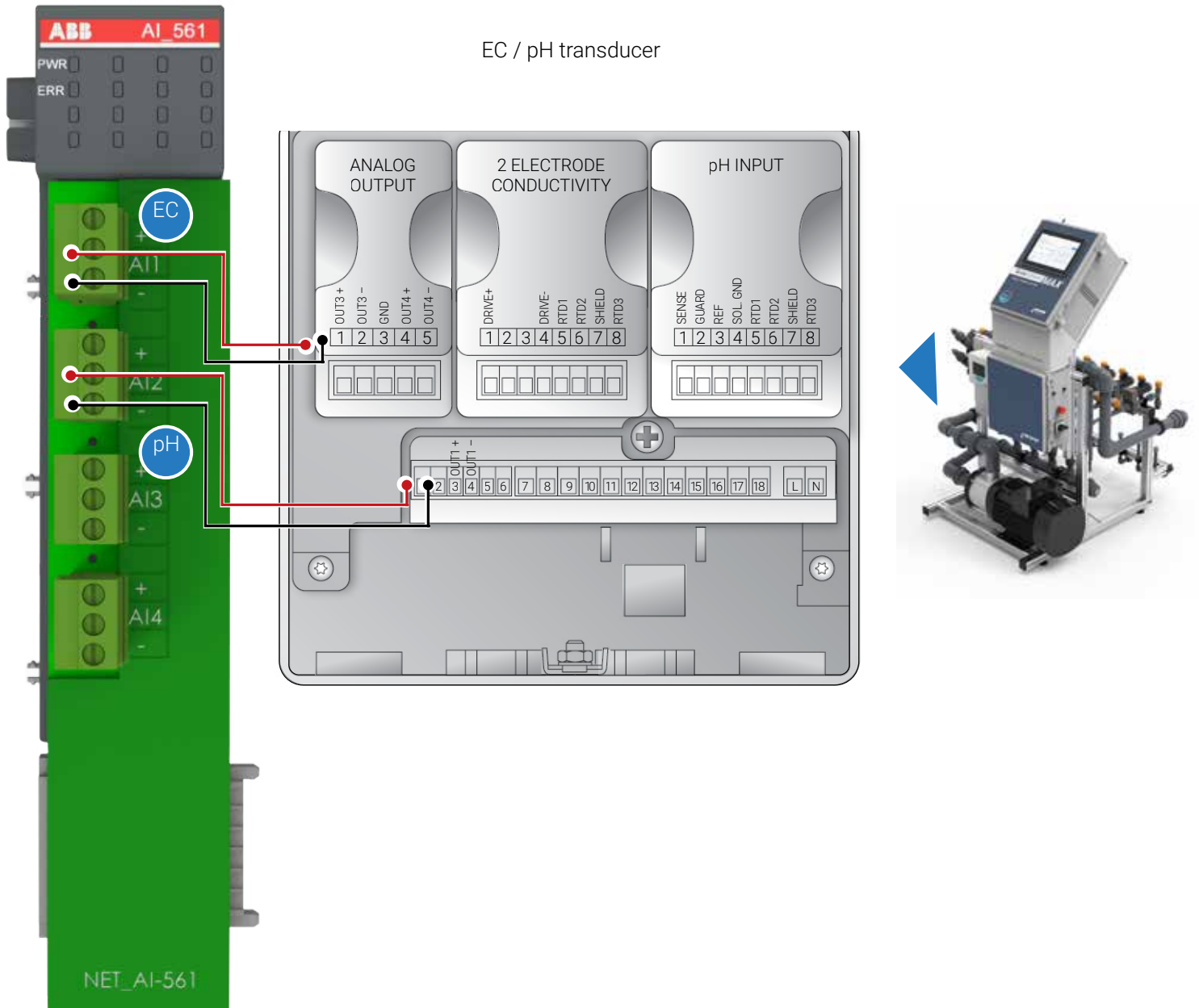


/ Connection of DO572 Module

- 8 triac outputs – 24 VAC
- 'C' – Shared common
- Output current per channel = 2 A
- 2A Fuse on each channel. Not removable
- Indication of output signals – 1 yellow LED per ch.
- The LED is on when output signal is high



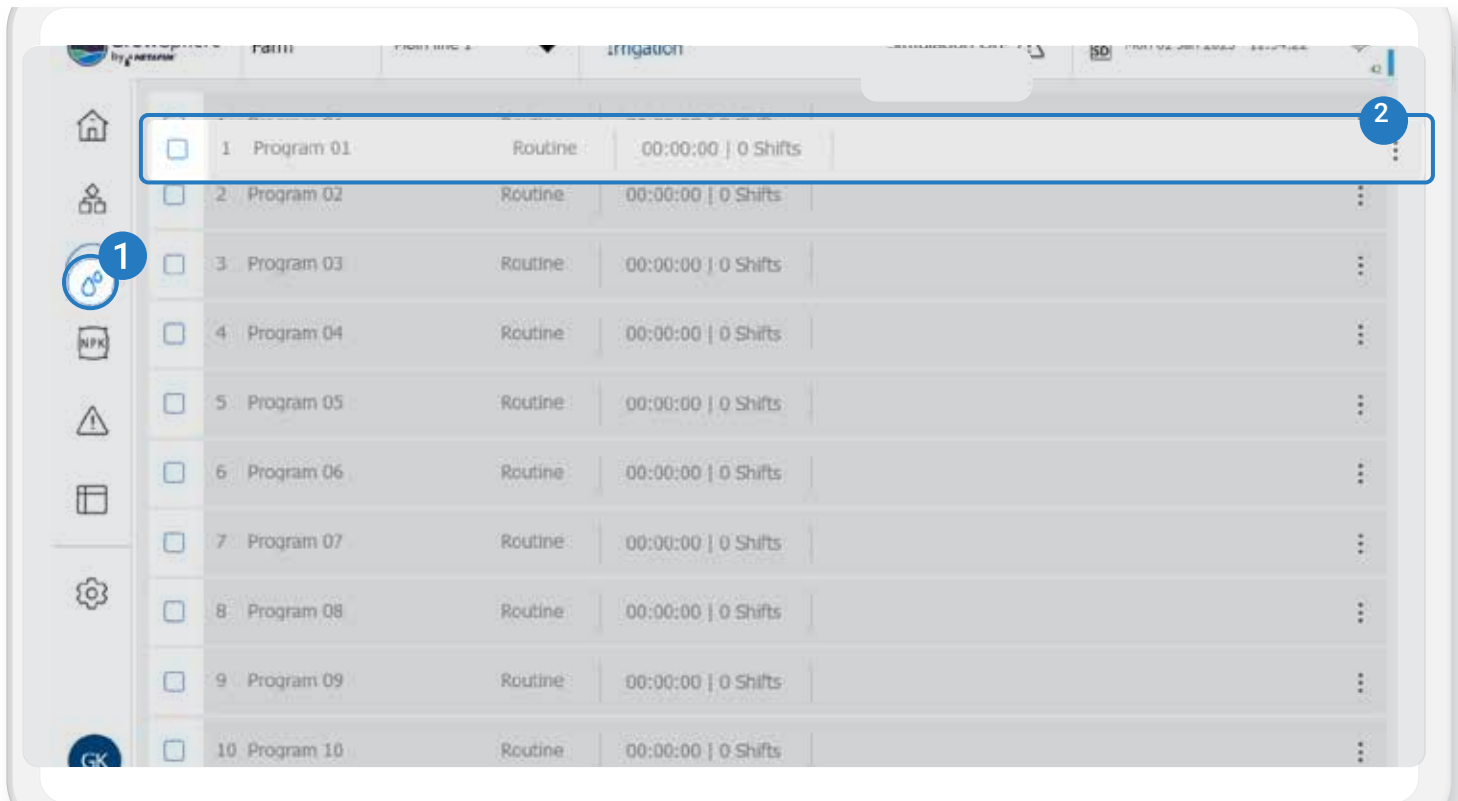
EC / pH transducer



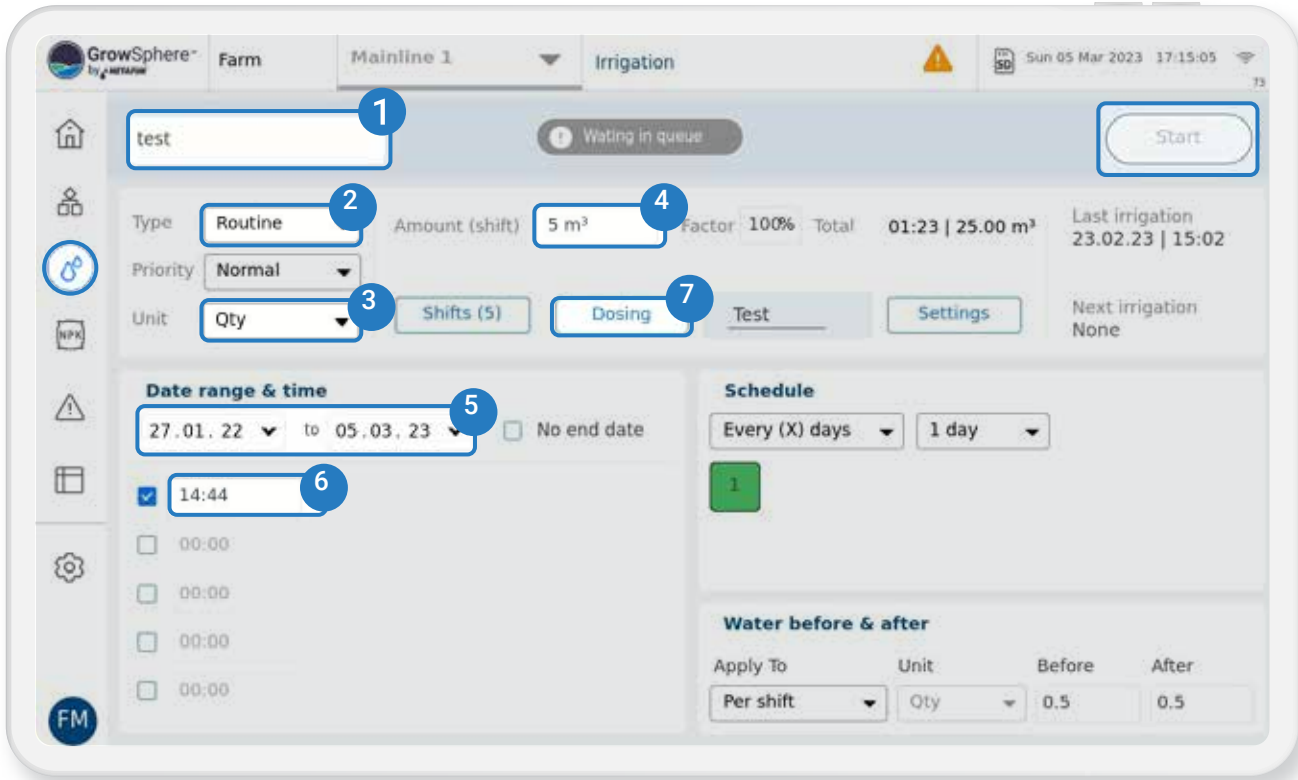
/Irrigation Settings

Select the irrigation program that you want to activate

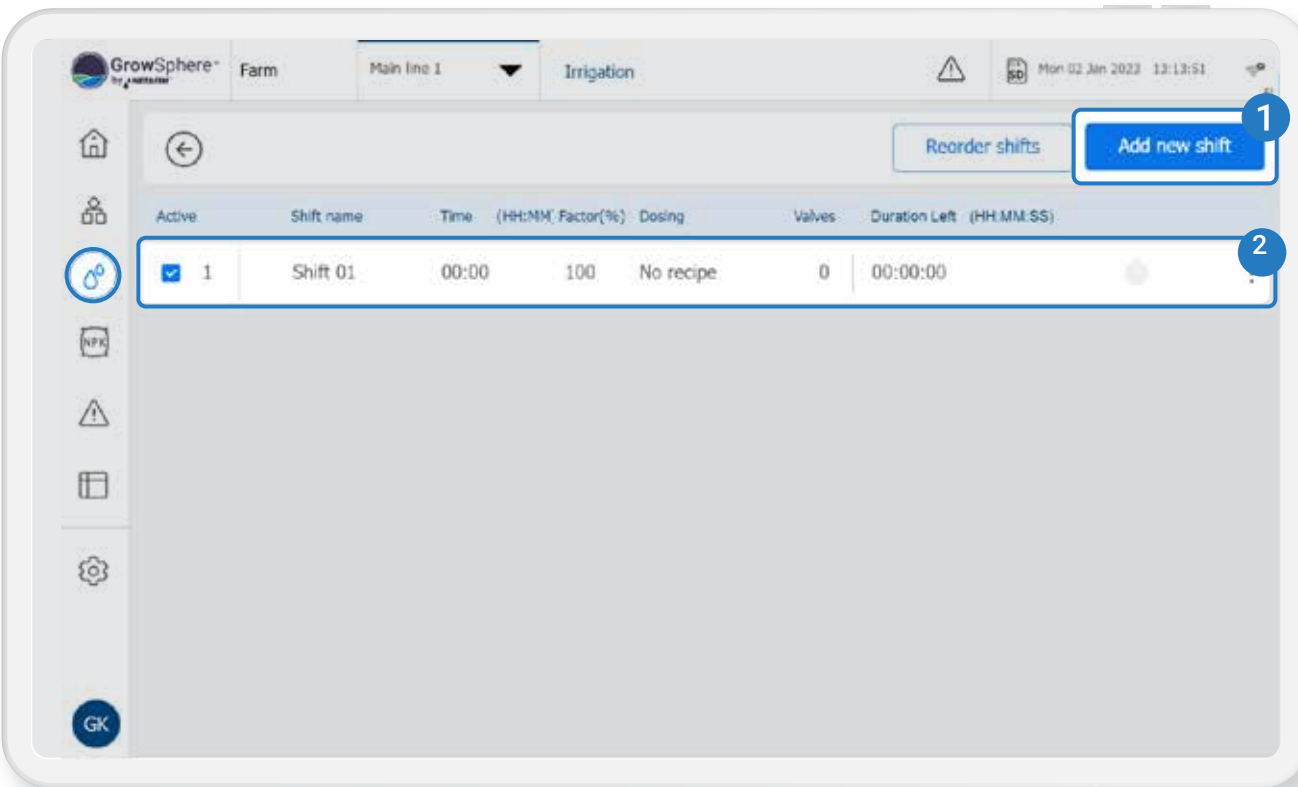
Get started with Irrigation Programs by clicking on the Irrigation icon



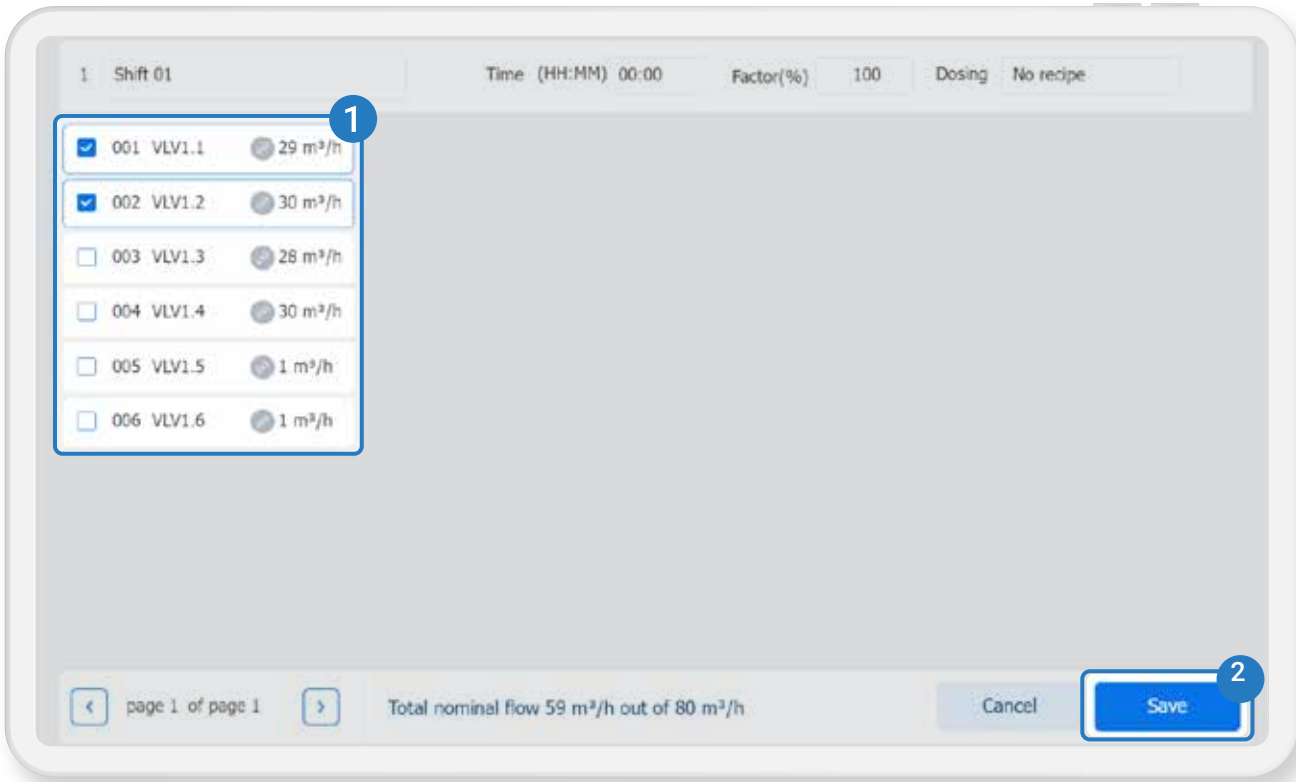
/ Enter your desired program definitions for the following:
Program Name, Type, Unit, Amount, Date Range, Start Time, and Dosing



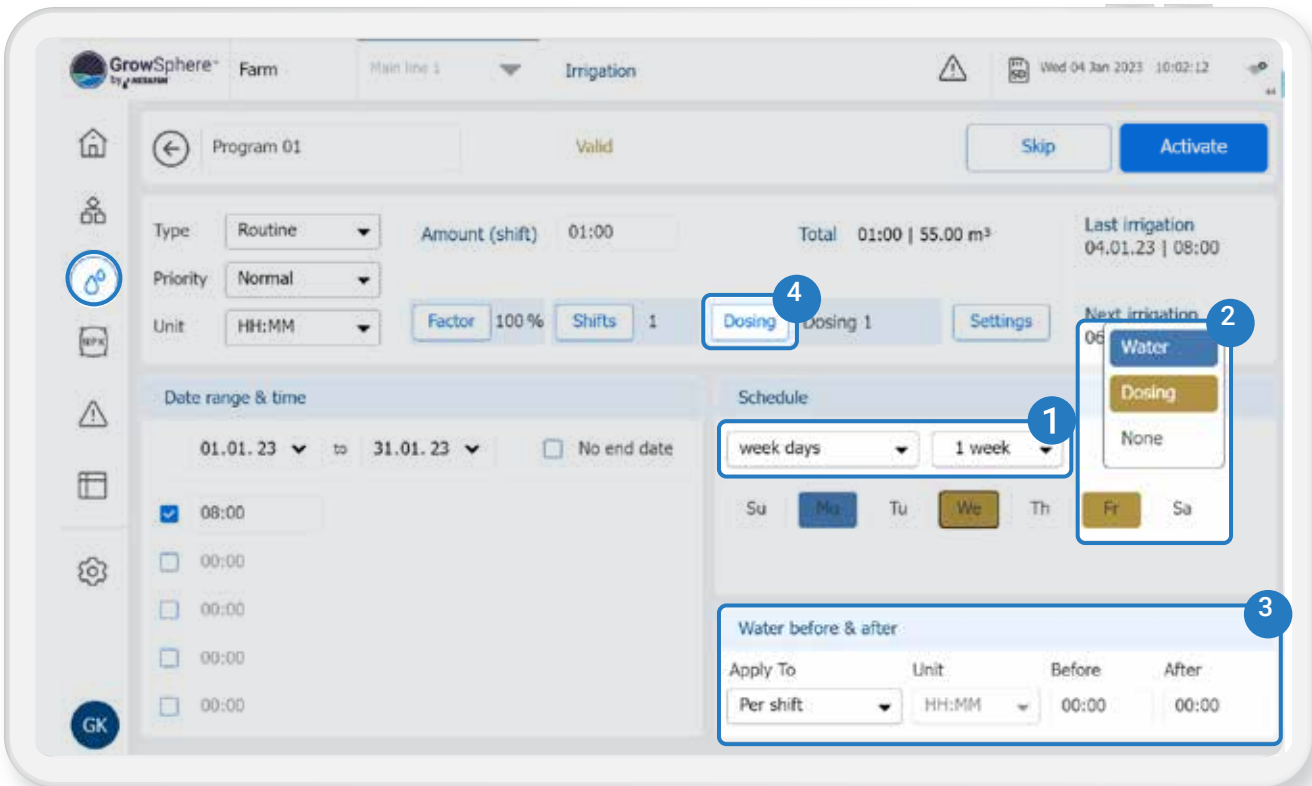
/ Select Add new shift then select Shift 01



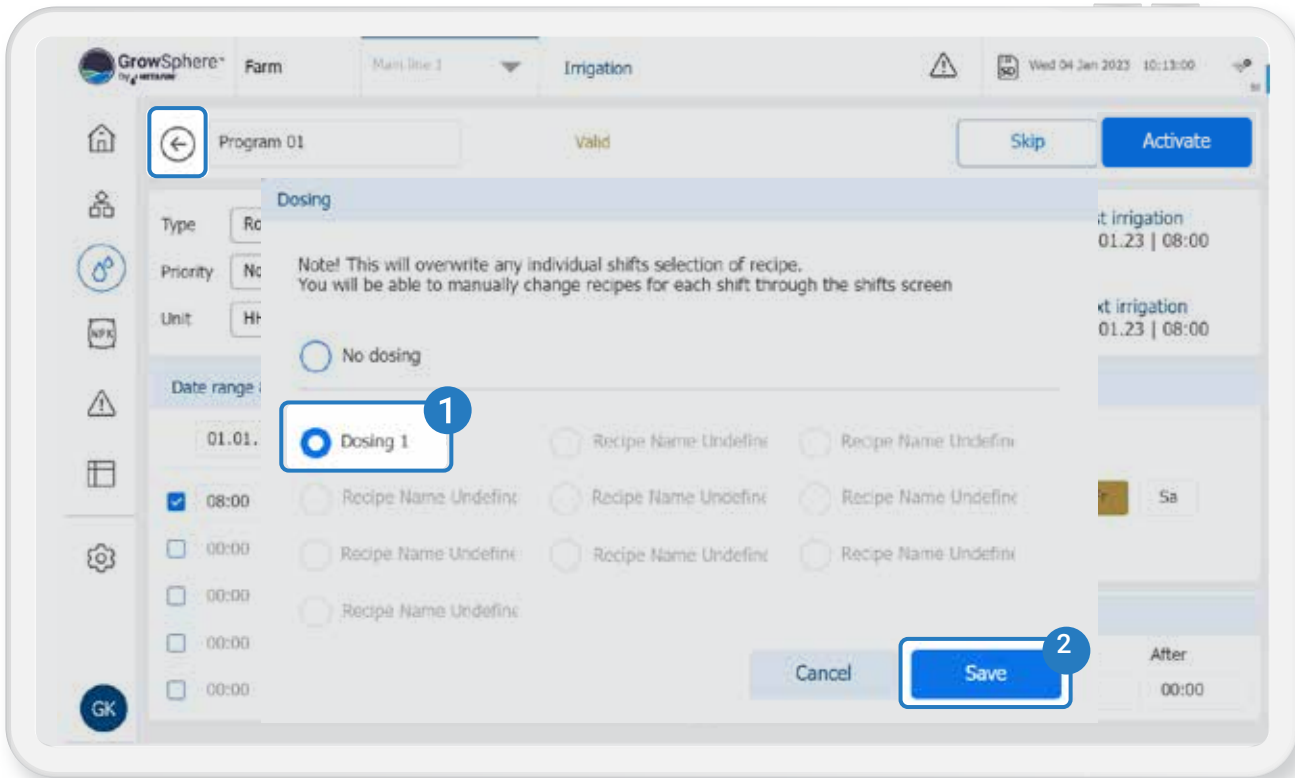
/ Enter Shift Name and select the valves that you want to operate at the same time, for the same duration



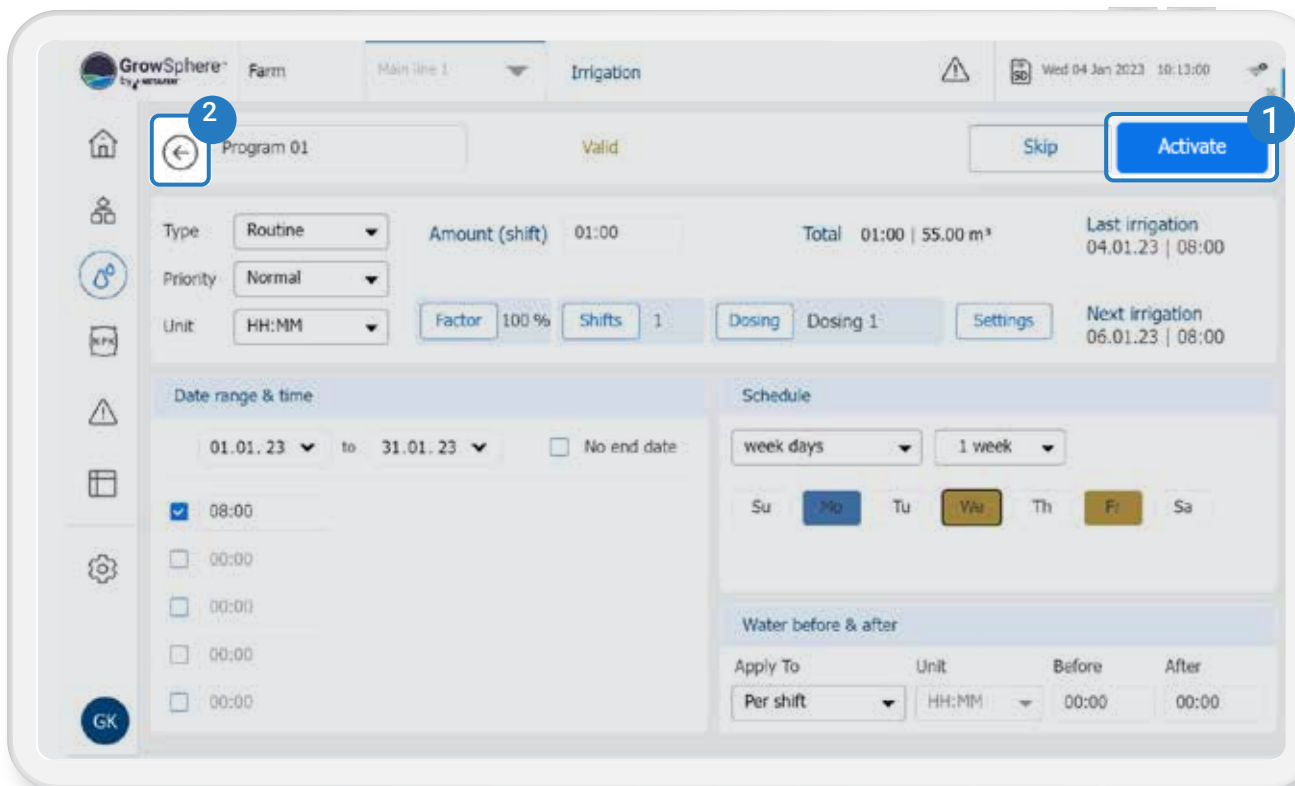
/ Select the dosing and irrigation days (1, 2) / Set Water before & after, if required (3) / Select Dosing (4) to select the dosing recipe



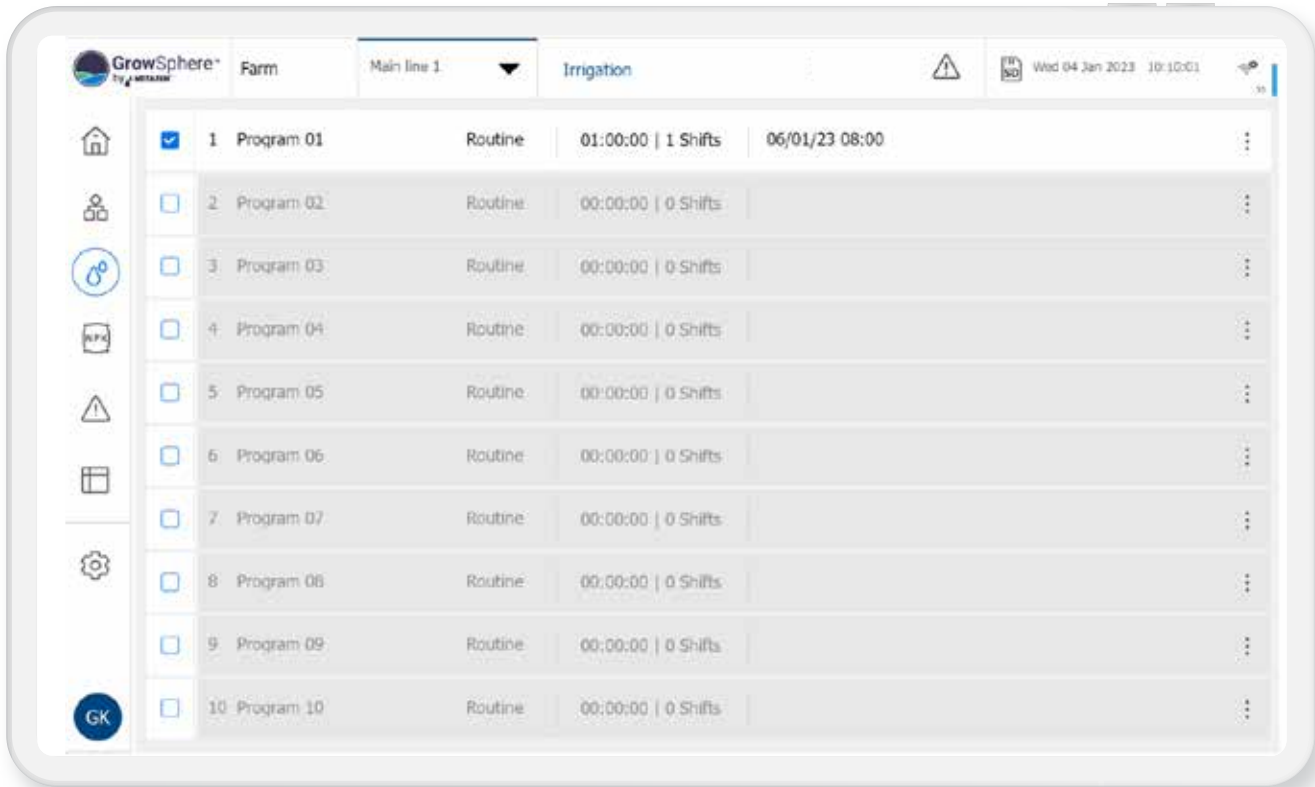
/Choose the dosing recipe for this irrigation program



/To turn this program Active, select Active (1)
Select the go back icon (2)



/ The program will be active and ready to start according to his start time and date



/ When the program is running a green icon indicating that is running will be on the right side

