Aqua-X Plus (NFS-3) User Manual

NFS-3 for Aqua-X Plus Control System

OVERVIEW

The NFS-3 / Aqua-X Plus controller is an upgraded version of the Aqua-X controller. It' s a professional-grade multi-zone irrigation control system. It has an 800x480 7" LCD touch-screen monitor, features multiple advanced pump and solenoid control functions and has greatly expanded device control capacity.

As with all of the main controllers from TrolMaster, the NFS-3 / Aqua-X Plus works with TrolMaster' s free app and can be connected to your internet directly using a standard CAT5 network cable. Along with controlling 240 total devices, the NFS-3 can also monitor up to 25 individual sensors including pH, EC, Temp, WC%, Grow Medium Temp and Grow Medium EC. You can view the recorded historical data directly on the NFS-3 or on your smartphone, and also receive warning messages / notifications if the growing environment exceeds your selected alarm setpoints within the NFS-3.

The optional WCS-1 or WCS-2 Water Content Sensor will monitor the water content and EC of the growing medium. The WCS-1/2 will help to visualize the dry-down time and to make adjustments to irrigation timers or irrigation settings. You can even choose to allow the WCS-1/2 Water Content Sensors to actively control irrigation cycles for automated Crop Steering based on the Water Content of your grow medium. Finally, a truly automated crop-steering controller, with the flexibility to satisfy even the most demanding applications.

The NFS-3 also features Multiple Pump Link functions. Multiple Pump Links provides choices for users to connect / link different pumps with different valves to accomplish various irrigation functions. The NFS-3 offers an amazing amount of flexibility to suit all growers.

PRODUCT CAPACITY / CONTENTS

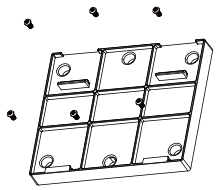
Sensor Board (AMP-3)	5
Water pH Sensor (PPH-1/2/3)	5
Water EC & Temp Sensor (PCT-1/2/3)	5
Water Detectors (WD-1/2)	20
Water Content Sensors (WCS-1/2)	20
Control Modules in Combination (OA6-24/110, DSV-1,DSP-1/2, DSD-1, OAT-24)	20

***The NFS-3 controller comes with our AMP-3 Sensor Board, RJ12 Cable Set and Mounting Plate.**

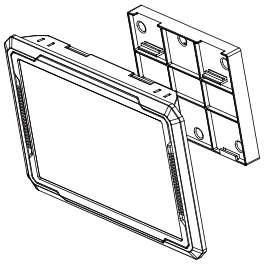
PLEASE READ BEFORE USE

All of the connections between the NFS-3 and the device modules and sensors use standard RJ12 cables. A maximum cable length of 1000ft / 300m between the NFS-3 Aqua-X Plus Control System and the device modules, or to the sensors is allowed.

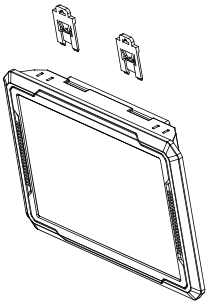
You should first determine where to locate the main controller. It is always recommended to install the NFS-3 controller in a location that is dry and clean. You might also want to choose to install the NFS-3 inside our specially designed IP56 / Nema 4X pre-wired electrical cabinet called the SCC-3. The SCC-3 comes pre-wired, ready to install the NFS-3, and all of your Device modules inside of a sealed, powder-coated steel enclosure. Features of the SCC-3 include pre-configured DIN rails, 120 volt power outlets and 3 built-in RJ12 splitter hubs to make installation quick and efficient.



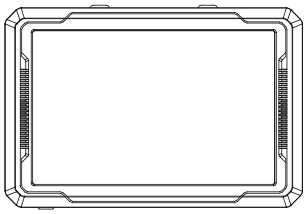
1. Mount the base panel on the wall with screws



2. Attach the controller onto the base panel



3. Lock the controller with the spring clips

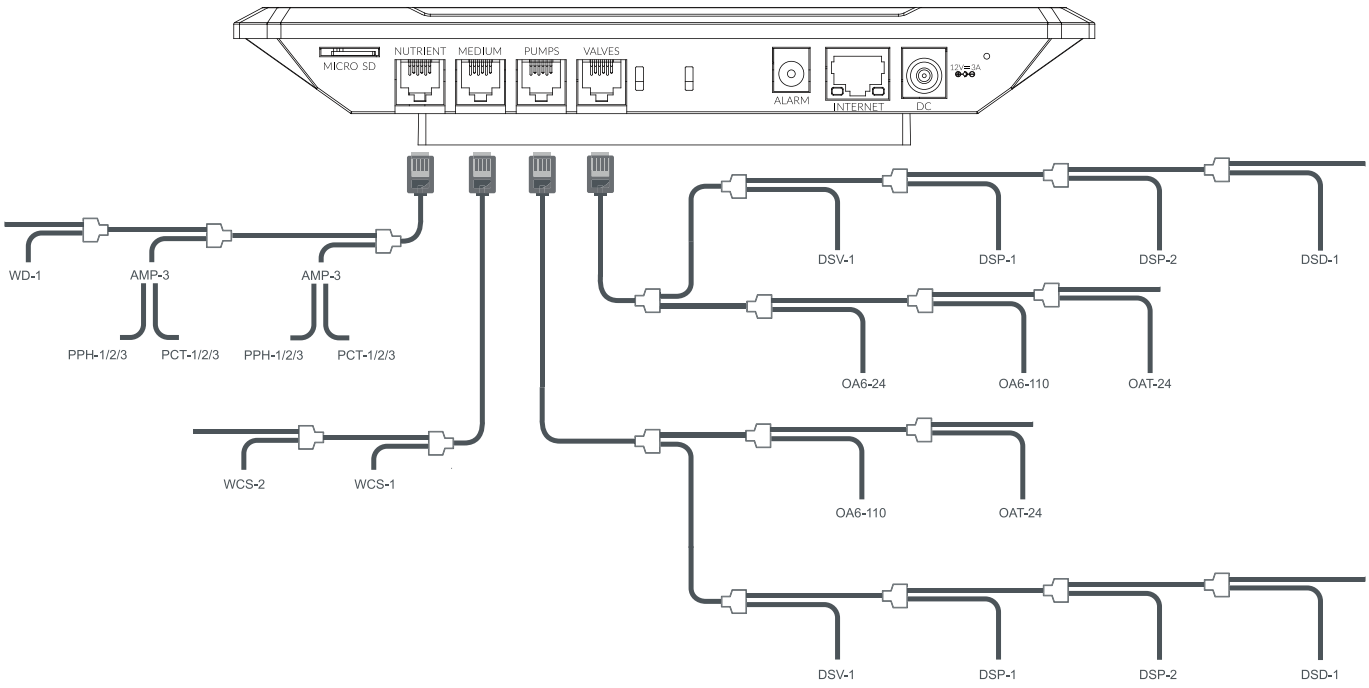


4. Finished

The controller comes with a simple-to-use DIN-type mounting bracket. Pull the 4 tabs outward to release the bracket from the unit and then mount the bracket to a wall or surface. Place the unit back on the bracket and press the 4 tabs back in to lock the unit in place.

***Note:** Mount the unit where it will be protected from high moisture levels as it is not waterproof. For best results, you can install the NFS-3 in our optional pre-wired Nema 4X electrical cabinet, the SCC-3.

CONNECTIONS



*****THE SPH-1 SPLITTER CAN BE USED TO REPLACE Y-SPLITTERS**

The NFS-3 operates using a low-voltage power supply connected to the DC power jack. Do not use other power supplies to power the NFS-3.

On the bottom of the controller, there are 4 main RJ12 ports to connect to, and a single RJ45 Ethernet connection. The connection example above shows how you can use the supplied RJ12 Y-splitters to daisy-chain each device module to the next module, and each sensor to the next sensor. The 4 RJ12 ports are:

Nutrient to connect to your pH and EC sensors using the AMP-3 modules.

Medium to connect your WCS-1 or WCS-2 sensors.

Pumps to connect your pump control device modules.

Valves to connect your 24vac irrigation solenoid device modules.

There is also a low-voltage (12vdc) jack on the bottom of the controller that allows the TrolMaster AS-1 Alarm station to be connected. When connected, if the controller detects any alarm condition, the alarm station will activate an audio-visual alarm. The user can then “silence” the alarm by acknowledging the error displayed on the front of the NFS-3.

RJ12 CABLE OPTIONS

There are other options we provide to make your installation professional and reliable including replacing the provided RJ12 Y-splitters, with our 8-port RJ12 splitter hub, the SPH-1. The SPH-1 splitters make it easy to connect up to 8 Device modules or 8 sensors to the NFS-3 and eliminates the need to use the Y-splitters.

To make the installation professional and ensure long-term reliability, you can install the NFS-3 in our optional pre-wired Nema 4X electrical cabinet, the SCC-3. The SCC-3 comes with a pre-cut opening to insert the NFS-3 into the front door, 3 pre-wired RJ12 splitter hubs, 2 din rails, and plenty of pre-wired 120 volt Nema 5-15 receptacles for your DS modules. To mount the OA6-24 and OAT-24 modules, users simply remove the DIN rails to expose two pre-drilled mounting holes and use the screws on the DIN rails to secure the OA6-24 or OAT-24. If users want to install multiple OA6-24 or OAT-24, extra screws are needed.

*Image of the SCC-3 pre-wired NFS-3 cabinet

***Note:** The NFS-3 Aqua-X Plus Control System uses RJ12 6-wire cable. To make installation neat and professional, TrolMaster also offers a 500 ft roll of RJ12 cable that comes with 100 RJ12 crimp ends called the ECS-500.

Internet Connections

The NFS-3 controller can be connected to the internet in order to provide remote monitoring, send notifications, perform firmware updates and to be able to change settings remotely. To connect the controller to your internet, TrolMaster recommends using a hard-wired Cat 5/6 cable plugged into the Ethernet port on the bottom of the NFS-3, and then connected to your router or an internet switch.

***Note:** There is no built-in Wifi on the NFS-3. Most range extenders (with Ethernet ports) are NOT compatible with TrolMaster controllers. Contact TrolMaster Tech Support for options related to using Wifi.

Nutrient Sensor Connections

Some of the sensors used with the NFS-3 will be connected to the NUTRIENT RJ12 port located at the bottom of the unit using an RJ12 cable. To connect multiple sensors, use a Y-splitter or an 8-Port Splitter Hub (SPH-1). To connect the sensors, plug the AMP-3 Sensor Board to the Y-splitter or SPH-1, and then connect the PCT-1, 2 or 3 EC & Temp Sensor and PPH-1, 2 or 3 pH Sensor to the AMP-3 Sensor Board. If you are using the WD-1 water leak detectors, those will also be connected to the Nutrient Sensor port. Once all the sensors are connected to the NUTRIENT port on the NFS-3, press the button on each AMP-3 and WD-1 to link or "address" it to the NFS-3 controller. The Aqua-X Plus controller will then automatically assign an address to the connected sensors sequentially. After the sensor has been addressed, you can also choose a unique name for each sensor using the Edit tab in the upper right corner of the sensor page.

***Note:** After the sensors are addressed, the addresses will be saved unless the user completes a factory or sensor reset within the system reset menu.

***Note:** For a neater installation, you have the option to use one or more SPH-1 instead of Y-splitters. The SPH-1 allows for a centralized point where all or your RJ12 cables can be connected, eliminating the need for Y-splitters in your setup.

Grow Medium Sensor Connections

All moisture monitoring sensors (WCS-1/2) used with the NFS-3 will be connected to the RJ12 port on the bottom of the unit labeled MEDIUM. Begin by connecting an RJ12 cable to the MEDIUM port and then connect the other end of the cable to a Y-splitter or an 8-port splitter hub (SPH-1). Next, plug in the Water Content Sensors (WCS-1) or 3-in-1 Water Content Sensors (WCS-2) to the Y-splitter or SPH-1. Once all the sensors are connected to the MEDIUM port on the NFS-3, press the small button on each LCD sensor module on the WCS-1/2 to link or "address" it to the NFS-3 controller. The Aqua-X Plus controller will automatically assign an address to the sensors sequentially. After the sensor has been addressed, you can also choose a unique name for each sensor using the Edit tab in the upper right corner of the sensor page.

***Note:** After the sensors are addressed, the addresses will be saved unless the user completes a factory or sensor reset within the system reset menu.

***Note:** For a neater installation, you have the option to use one or more SPH-1 instead of Y-splitters. The SPH-1 allows for a centralized point where all or your RJ12 cables can be connected, eliminating the need for Y-splitters in your setup.

Pumps & Valves Connections

The NFS-3 can control pumps and solenoid valves using the 'PUMP' and 'VALVE' RJ12 control ports on the bottom of the NFS-3. Trolmaster offers many different Device control modules to control your Pumps and Valves. Within the NFS-3 settings, each pump and valve can be set up to have its own timer and program setting. Up to 10 Device control modules can be connected to the Pumps RJ12 port, and another 10 modules can be connected to the Valves RJ12 port. In most cases, you will use our 24-volt control modules to control your low-voltage valves. To control pumps, you first need to determine the voltage and amperage of the pump being connected. Here is a list of compatible Device control modules for the NFS-3. OAT-24, OA6-24, OA6-110 , DSP-1/2, DSD-1 and the DSV-1.

Once the device control modules are all connected back to the 'PUMP' or 'VALVE' port on the NFS-3, you will now press the small button on the Device control modules to link or "address" each module to the NFS-3 controller. The Aqua-X Plus controller then automatically assigns an address to the device control modules sequentially. After the module has been addressed, you can also choose a unique name for each module using the Edit tab in the upper right corner of the page.

***Note:** After the device modules are addressed, the addresses will be saved unless the user completes a factory or Device reset within the system reset menu.

***Note:** Before installation, it is up to the installer / user of the NFS-3 to determine if their pump or valves will be electrically compatible with the available Device control modules. Consult TrolMaster Technical Support for assistance.

***Note:** For a neater installation, you have the option to use one or more SPH-1 instead of Y-splitters. The SPH-1 allows for a centralized point where all or your RJ12 cables can be connected, eliminating the need for Y-splitters in your setup.

INSTRUCTIONS

Main / Home Page

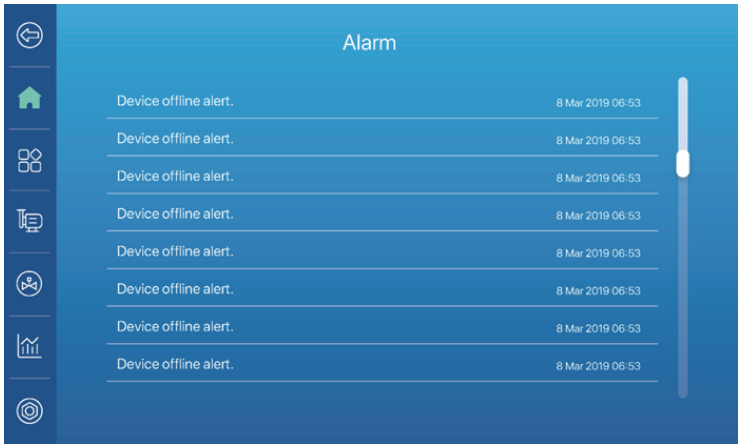
The NFS-3 is an advanced irrigation controller, but advanced does not have to also mean complicated to use. We eliminated difficult or confusing setting menus that other controllers require and focused on creating a clear and easy to understand interface utilizing a large 7" touchscreen. All of the NFS-3 features and functions are all accessed by touching one of the five settings ICONS on the left-hand side of the main page. Each ICON will bring you to a specific page that contains all of the settings for the Pump and Valve timer and control functions, the Device Control page, the Historical Data page and the System settings page.

We will start by taking a look at the Main / Home page. The Home Page shown below displays all of the current conditions of the Nutrient / Reservoir sensors connected to the NFS-3 controller. The Home page will also show the current date and time, alarm status and the internet connection status.

Touching the Right arrow will then show the current conditions of the Water Content sensors connected to the NFS-3 controller as shown below.

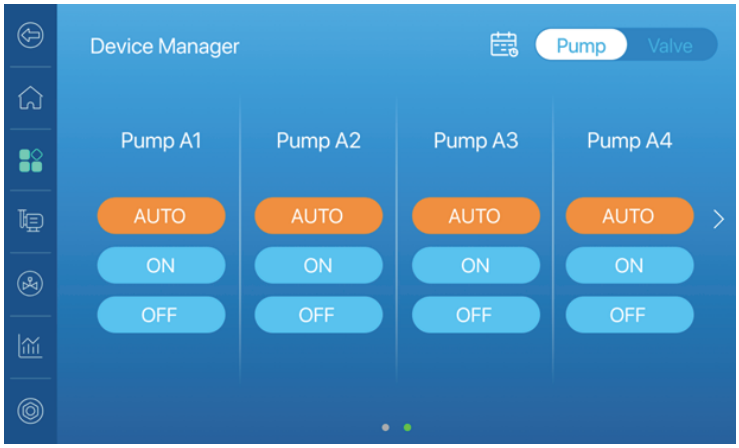
***Note:** On both pages that show the sensor information, you can "rename" each sensor by touching the Edit tab in the upper right corner of the page.

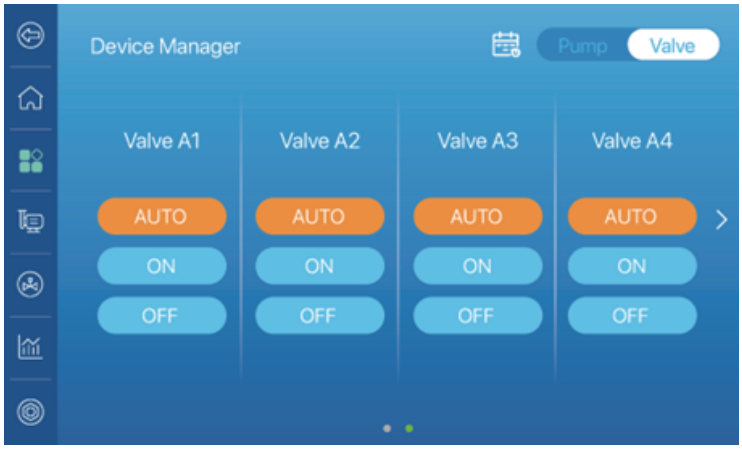
Touching the Left arrow will bring you to the most recent alarm conditions recorded by the NFS-3 as shown below.



Device Status Page

When you touch the Device Status icon, you will be able to view the current status of all of the pumps and solenoid valves connected to the NFS-3. At the top right of the page, you can select to view the pumps or valves. The right and left arrow buttons allow you to scroll right or left to see all connected pumps and valves.





Normally, all of the pumps and valves will be set to Auto Mode during normal operation. In Auto mode the controller will control each pump and valve based on the user' s settings for each device. On these pages you can also choose to manually override each pump to be On or Off. Activating the Off mode results in that device remaining off until switched back to Auto. Activating the On mode allows the user to select to test that device. They can select a preset time to allow the device to operate for, and then after the manual override timer times out, that device will return to Auto mode.

In order to quickly verify which pump or valve is currently activated, we placed a bi-color indicator in the upper left corner of each pump / valve icon. It acts as the status indicator light for each pump and valve that is connected to the NFS-3 controller. If that specific pump or valve is currently turned off, that light will show Red. If that indicator shows Green, that means that the pump or valve is currently turned on.

We also provide a quick reference to verify all of the current settings by clicking on the Schedule Overview Icon next to the Pump / Valve icons. When you touch the Schedule Icon, you will be able to visually see a representation of the current timer settings for your pumps and valves.

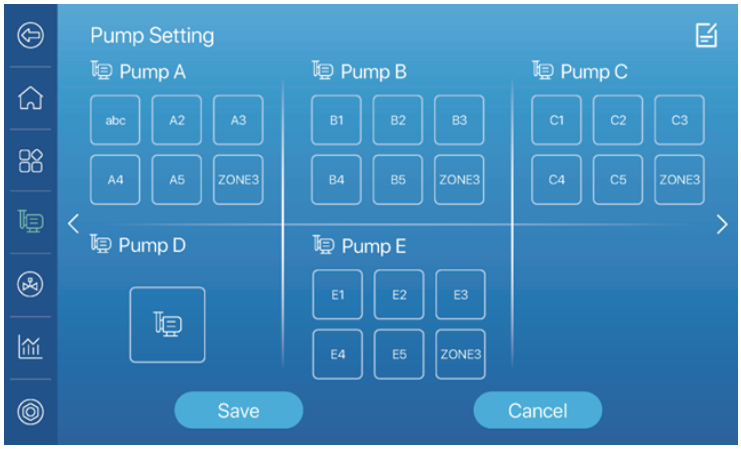
Pump Control

The NFS-3 can control both irrigation valves (solenoids) and pumps. As we discussed previously, to control pumps, you will simply choose which Device control module you want to use to control your pumps, and connect those Device modules to the 'PUMP' RJ12 port on the bottom of the NFS-3. Each water pump can be controlled separately. The NFS-3 allows users to control any type of water pump, as long as the correct Device control module is selected. Smaller pumps up to about 3/4 HP can be plugged directly into the DSP-1 (120V) or DSP-2 (240V). Larger pumps (over 7.5 amps or over 240 volts) are normally controlled by using a standard relay / contactor. The Relay or contactor will then be activated (turned On / Off) using a low-voltage signal generated by one of the TrolMaster low-voltage modules like the OAT-24 or OA6-24. The OAT-24 and OA6-24 output 24VAC signals that can activate a pump relay or contactor. You can also use the DSD-1 dry-contact module to activate a single pump using a USER-PROVIDED control circuit up to 240 volts @ 6-amps. The final option to control pumps using the NFS-3 is to connect our DSV-1. The DSV-1 can output 12-24 volts, with selectable AC or DC voltage to be able to control a small pump relay or contactor.

***Note:** You can use the OA6-24 and OAT-24 solenoid valve modules on the Pump Device port. When addressed as a "pump" those solenoid valve modules will be treated like a pump, and will be able to use the "pump link" function.

Pump control with the Aqua-X Plus is easy to use and flexible. There are three pages on the NFS-3 to access all available settings for the water pumps.

***Note:** It is the installer / user' s responsibility to confirm the electrical specifications of the pump motor are compatible with the TrolMaster device module they are using to control their pump.



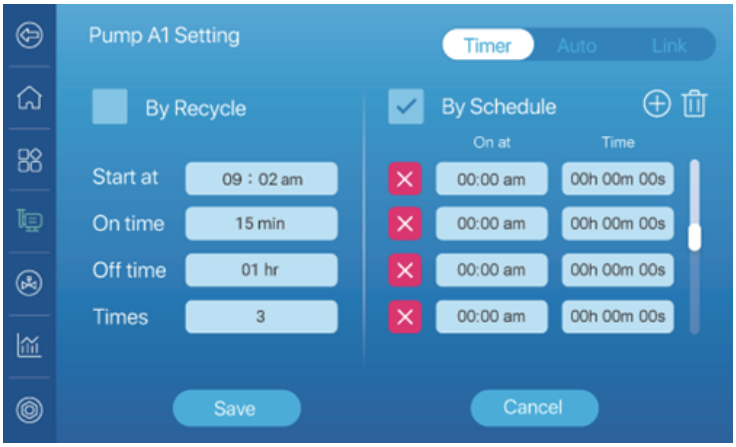
When you first touch the Pumps icon, you will see the page above. Each of the "Pump" Device modules connected to the NFS-3 will be shown on these pages. Use the right and left arrows to move to view other pages. Each of the Device modules shown here can also have a unique name created to identify each module by touching on the "edit" icon in the upper right corner of the screen.

When you are ready to start changing setpoints for each of the pumps, simply touch one of the pump icons to bring up that pump' s settings page. When you bring up each pump setting page, you will notice a small selector in the upper right corner to select Timer, Auto or Link. Next we will explain what each of those settings do, and how to use them.

*Note: The most common method of combining a main / master pump and a solenoid valve or valves does NOT require the pump to have any timer settings. In this example a single master pump can be "linked" to work automatically when one or more solenoids are programmed to operate. The solenoid timer settings or crop steering settings would control the pump. The only time you would need to set a timer to work for a pump is if that pump is working independently and does not have any solenoids linked to it.

*Note: If you are going to be using solenoids linked to a master pump, you can skip to the "Pump Link" page.

Programmable Timer Page

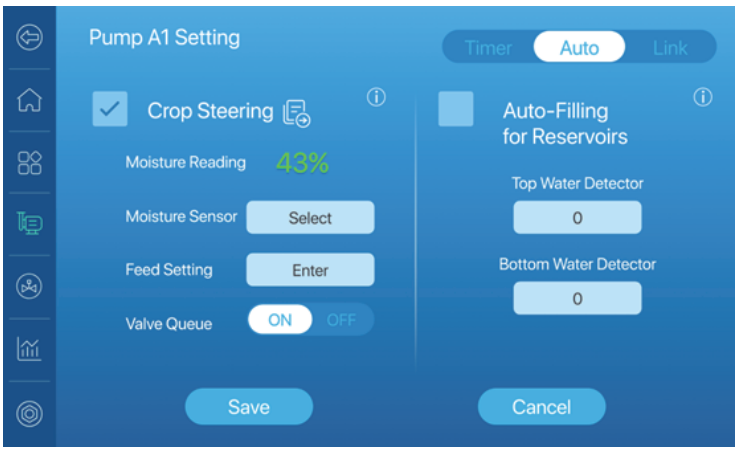


The first of the three pump setting pages we will discuss is the Timer setting page shown above. On this page the user can choose from two different timer control modes, Recycle and Schedule modes.

Recycle mode will repeat a pre-set on / off "cycle" over and over. The user selects the start time, the On time duration, the Off time duration and the number of "cycles" they want to occur. In this mode the device will be activated repeatedly based on the same repeating cycle, and will stop cycling after the user' s preset number of cycles is complete.

Schedule mode allows the user to select up to 50 individual On and Off times for each 24 hour period. Timers can be set from 1 second to 24 hours On time … and from 1 minute to 24 hours Off time.

Pump Auto Page



The second pump setting page is the Auto setting page. On this page the user can choose from two different control modes, Crop Steering and Auto-Filling.

Crop Steering / Pumps

The Aqua-X Plus comes with specific crop steering features that growers can take advantage of. For growers, this feature is the next step in taking FULL control of their crops by customizing their irrigation cycles in order to maximize growth. On this page, growers can select which WCS moisture sensor to link to and whether to add this pump to the valve queue.

*Note: The Valve Queue feature simply ensures that only a single pump that is controlled by the NFS-3 can be operated at one time. If a pump is already in operation, and another pump is scheduled to operate, that 2nd pump will not be allowed to operate until pump #1 has turned off.

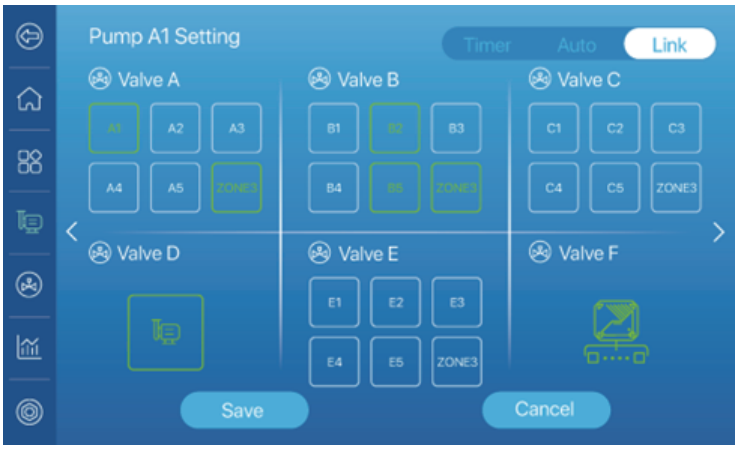
*Note: To set the irrigation crop steering schedule, press "Enter" to enter the setting page, and then refer to the Auto Page (Crop Steering / Auto-Fill) setting section.

Auto-fill / Pumps

The Auto-fill function on the Aqua-X Plus uses two water detectors (WD-1/2) which will be installed in your nutrient tank. One water detector will be positioned at the bottom of the tank and one at the top of the tank. When the liquid level drops below the bottom sensor, the Aqua-X Plus will activate a solenoid, or pump and the tank will fill back up to the sensor at the top.

*Note: To use the Auto-Fill function, you will need two of the WD-1 to act as float switches. Once the WD-1 are connected to the NFS-3' s Nutrient RJ12 port, pressing the "Address" button on the WD-1 will link the WD-1 to the NFS-3. You can then select the correct WD-1 sensor to assign to the "Top" and "Bottom" float switch used for the auto-fill.

Pump Link Page



On the Pump Link page, users can set up their Multiple Pump Link functions. The Pump Link function is the easiest way to coordinate a pump to operate at the same time that a valve is being operated. Linking a specific pump to a valve allows the user to only have to set a single set of timers or settings, and then both the valve and the pump will be "linked" together. When the valve schedule is calling for the valve to turn on, the pump will automatically operate. Multiple valves can be connected to the same pump, and valves from different Device control modules can be linked to the same pump.

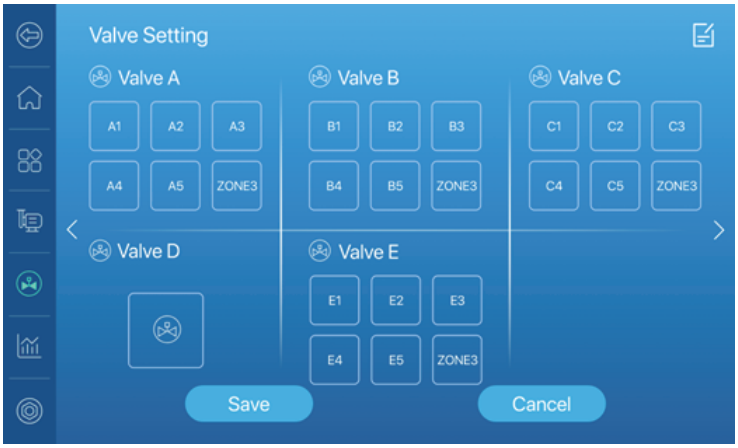
*Note: Having the ability to link any connected pump to any valve provides great flexibility and allows each user to customize their NFS-3 controller for their specific irrigation system.

Valve Control

The NFS-3 can control both irrigation valves (solenoids) and pumps. TrolMaster makes it simple to be able to connect and control standard 24VAC irrigation solenoids by using our OA6-24 or OAT-24 low-voltage Device stations. The OA6-24 can control 6 irrigation solenoids, the OAT-24 can control 12 irrigation solenoids. The OA6-24 and OAT-24 Device modules to the 'VALVES' RJ12 port on the bottom of the NFS-3.

There are multiple ways to control your valves when using the NFS-3. There are two pages on the NFS-3 to access all available settings for your connected valves.

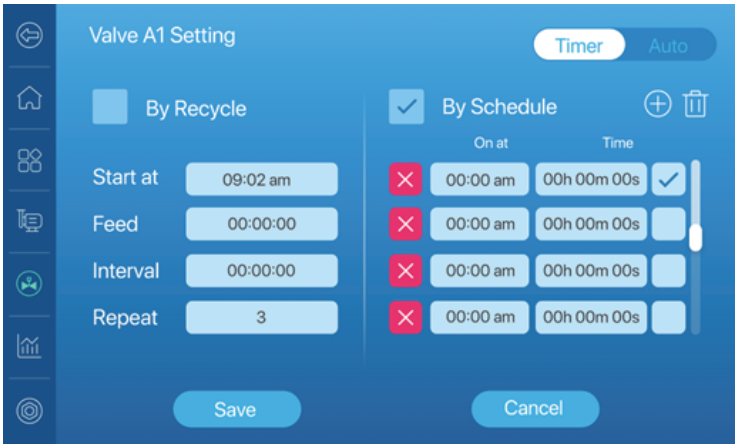
*Note: It is the installer / user's responsibility to confirm the electrical specifications of the valves are compatible with the TrolMaster device module they are using.



When you first touch the Valves icon, you will see the page above. Each of the Device modules connected to the NFS-3 will be shown on these pages. Use the right and left arrows to move to view other pages. Each of the Device modules shown here can also have a unique name created to identify each module by touching on the "edit" icon in the upper right corner of the screen.

When you are ready to start changing setpoints for each of the valves, simply touch one of the valve icons to bring up that valve's settings page. When you bring up each valve setting page, you will notice a small selector in the upper right corner to select Timer, Auto or Link. Next we will explain what each of those settings do, and how to use them.

Programmable Timer Page

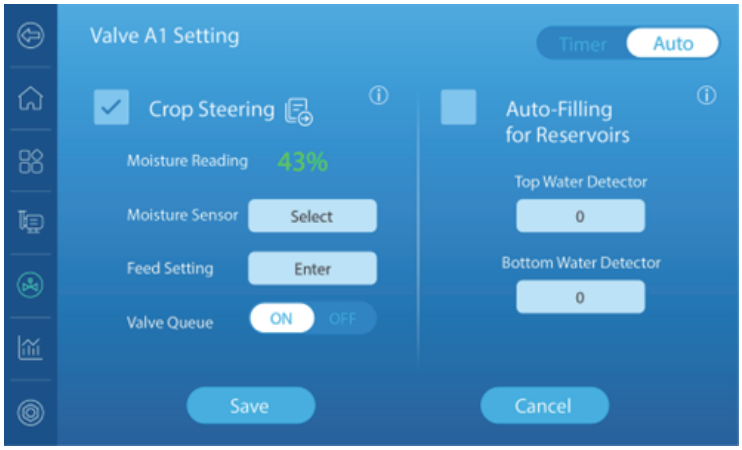


The first of the two valve setting pages is the Timer setting page shown above. On this page the user can choose from two different timer control modes, Recycle and Schedule modes.

Recycle mode will repeat a pre-set on / off "cycle" over and over. The user selects the start time, the On time duration, the Off time duration and the number of "cycles" they want to occur. In this mode the device will be activated repeatedly based on the same repeating cycle, and will stop cycling after the user' s preset number of cycles is complete.

Schedule mode allows the user to select up to 50 individual On and Off times for each 24-hour period. Timers can be set from 1 second to 24 hours On time … and from 1 minute to 24 hours Off time.

"Auto" Crop Steering & Auto-Fill



The second valve setting page is the Auto setting page. On this page the user can choose from two different control modes, Crop Steering and Auto-Filling.

*Note: If using only pumps and no solenoid valves, the Auto settings work the same for pumps.

Auto-Fill / Valves

The Auto-fill function on the Aqua-X Plus uses two water detectors (WD-1/2) which will be installed in your nutrient tank. One water detector will be positioned at the bottom of the tank and one at the top of the tank. When the liquid level drops below the bottom sensor, the Aqua-X Plus will activate a solenoid, or pump and the tank will fill back up to the sensor at the top of the tank.

*Note: To use the Auto-Fill function, you will need two of the WD-1 to act as float switches. Once the WD-1 is connected to the NFS-3' s Nutrient RJ12 port, pressing the "Address" button on the WD-1 will link the WD-1 to the NFS-3. You can then select the correct WD-1 sensor to assign to the "Top" and "Bottom" float switch used for the auto-fill.

Crop Steering / Valves & Pumps

On this page, growers can select which WCS moisture sensor to link to and whether to add this solenoid valve (or pump) to the valve queue. To access the crop steering settings, press "Enter" in the Feed Settings window. You will then be able to choose from multiple crop steering methods on the following pages.

*Note: The Valve Queue feature simply ensures that only a single valve (or pump) that is controlled by the NFS-3 can be operated at one time. If a valve is already in operation, and another valve is scheduled to operate, that 2nd valve will not be allowed to operate until valve #1 has turned off.

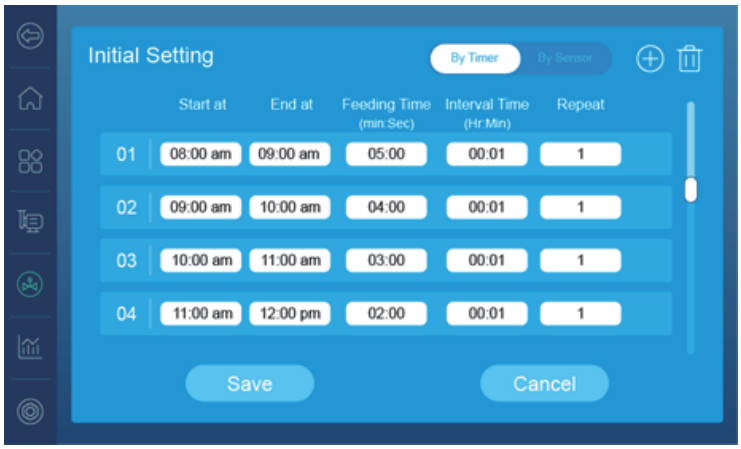
Crop Steering by TrolMaster

Before users get started selecting the crop steering settings, users should first understand how TrolMaster designed the NFS-3 to provide the most powerful crop steering controller currently available. We utilize precision Water Content Sensors or timers to allow users to completely customize their crop steering settings. What does that mean?

To start with we have 2 separate Crop Steering modes called "By Timer" or "By Sensor" . Each one of these modes allows the user to program multiple stages or steps within their crop steering profile. What that means is the users can specify how they want to control each of the 4 commonly used phrases (stages) of crop steering, and to do it with precision not available with other controllers. The user can program each "phase" of their crop steering profile based on how long they want to be in each phase, and the NFS-3 will automatically change to the next phase as scheduled within the user' s settings. It sounds complicated, but it is not. Let' s take a closer look at each of the 2 modes to see which one might be best for you.

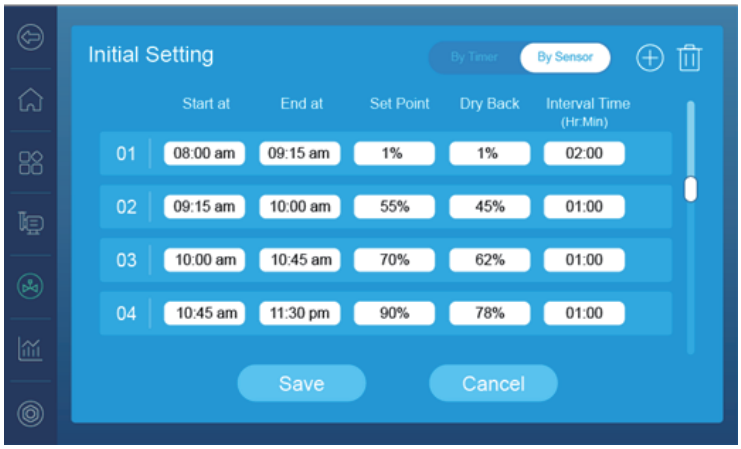
Crop Steering / "By Timer" Mode

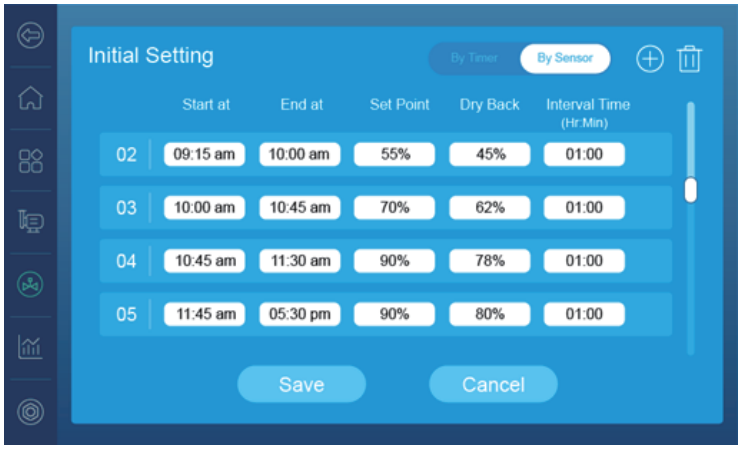
The simplest method to employ crop steering is to use a recycling timer that can control how often to irrigate, and for how long. We call it "By Timer" mode. The example below shows 4 separate phases (stages) created. Each stage has a Start at time, and End at time. It has the desired irrigation "Feeding" time, how many times the feeding will occur (Repeat), and the time "Interval" between the feedings. The user can select as many individual irrigation phases (stages) as they need, and each stage can have different settings.



Crop Steering “By Sensor” Mode

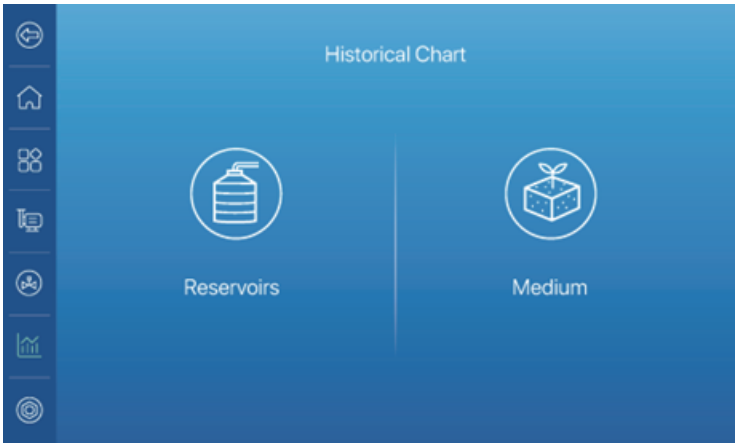
The next Crop Steering mode is called "By Sensor". In this mode, the irrigation schedule is controlled by the actual moisture level of the grow medium. By using the WCS-1 or WCS-2 sensor to measure the moisture content of grow medium, users can AUTOMATICALLY initiate an irrigation event based on Water Content % and dry-back. The users can create multiple crop steering "phases" and determine when each phase begins and ends by setting the "Start At" and "End At" time. Each of the phases created can have unique parameters to allow for precise crop-steering programming. The user needs to set the optimal "Set Point" and "Dry Back" level for moisture level / Water Content % within the grow medium. When the Water Content Sensor measures the moisture level dropped for the "Dry Back" level, the controller will initiate an irrigation event until "Set Point" is fulfilled. With this mode, the "Interval Time" allows the users to select the minimum time between irrigation events. This allows the user to select a single event for each phase, or multiple irrigation events within each phase. The user can select as many individual irrigation phases as they need, and each stage can have different settings.



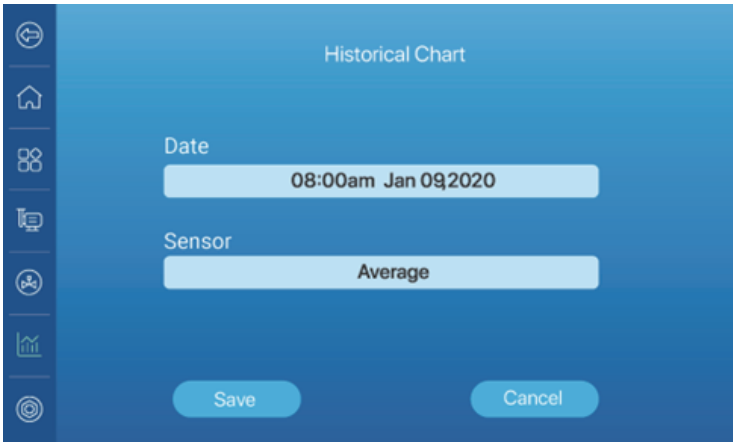


Historical Chart

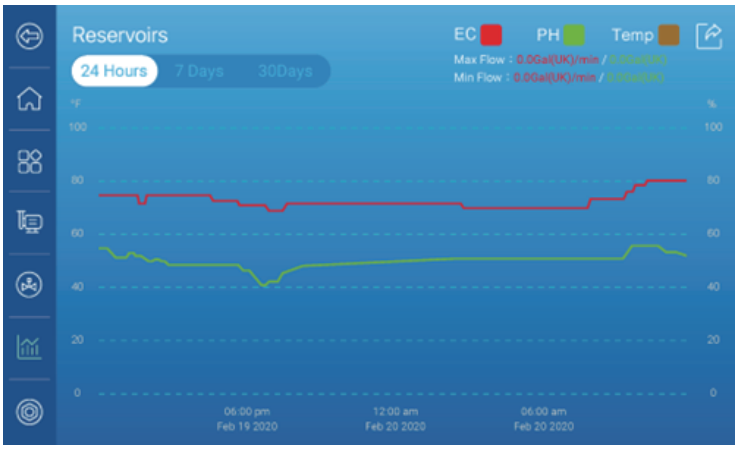
The NFS-3 controller automatically records and stores all of the data coming from all of the connected sensors. You are then able to go back and review that historical data displayed as a line chart that spans 1, 7 or 30 days worth of information. When you touch the Historical chart icon, you will see the page below. On this page you will select which type of sensors you want to view.



TOn the next page you can select the date and time that you want to view on the historical chart. You will also select which of the sensors you want to view the data from.

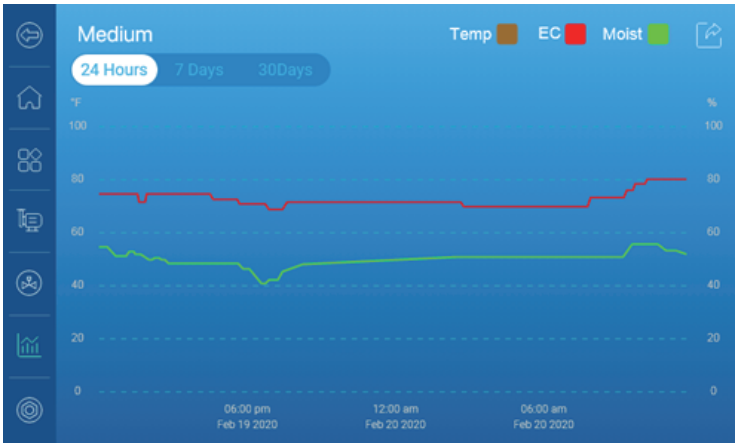


Reservoir Sensors Historical Data



The reservoir sensor data shown above can be viewed directly on the NFS-3 touch-screen display or on the free app. You can select to view the last 24 hours, 7 days or 30 days of data. You can also export the saved data as a csv file using the Export tab at the top right corner of the page.

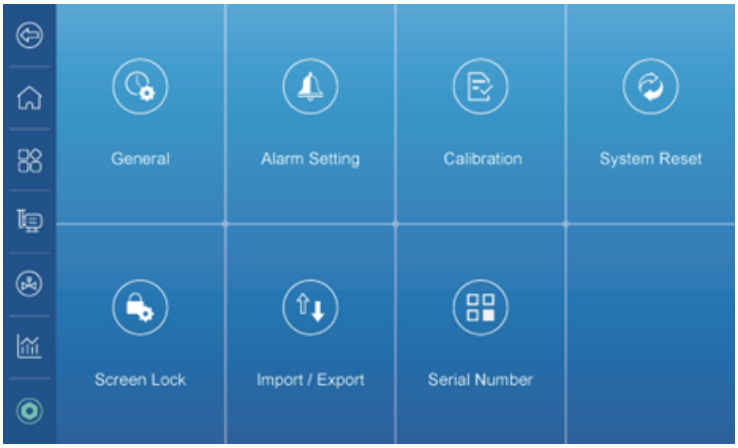
Grow Medium Sensors Historical Data



The grow medium sensor data shown above can be viewed directly on the NFS-3 touch-screen display or on the free app. You can select to view the last 24 hours, 7 days or 30 days of data. You can also export the saved data as a csv file using the Export tab at the top right corner of the page.

System Setting

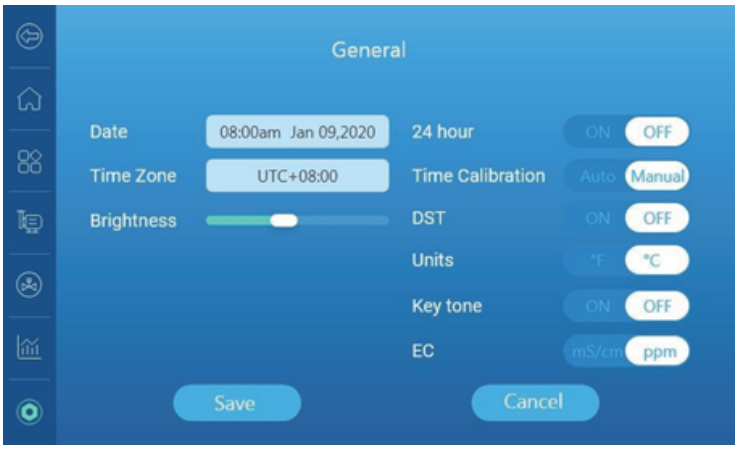
All of the controller internal system settings and functions are accessed by touching the System settings icon in the lower left corner.



Tap on the nut icon on the bottom of the column to access the different pages for system settings including time zone and unit of measure selection, sensor calibration, alarm settings, passcode protection, program backup, firmware updates and to restore factory settings. The unique QR code and serial number of the controller is also accessed in the system settings. You will scan that QR code in order to add your new NFS-3 to your app account.

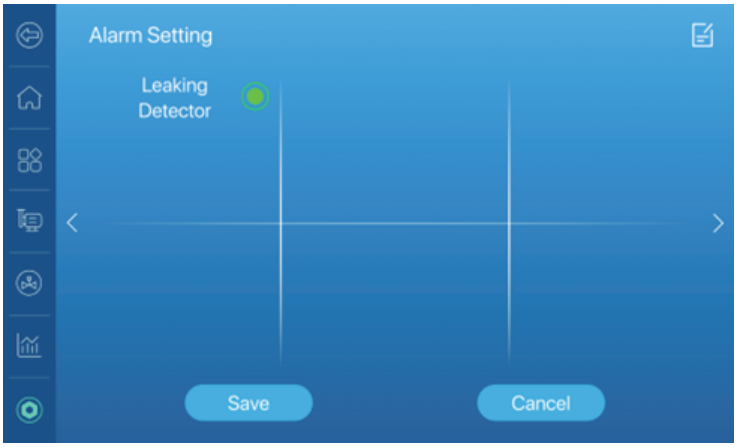
General Settings

1.General Settings: The General setting page is for the NFS-3 controller' s basic settings. Here you will set the Date, 24-hour Clock, Time Zone, Daylight Savings Mode, Time Calibration, Brightness, Temperature Unit, Key Tone and EC Units.



Alarm Settings

2.Alarm Settings: On the alarm setting page, you can activate or deactivate any of the alarms by clicking on the small green (or red) dot in the upper right corner of each alarm setting window. The alarm settings on page one are Reservoir pH, EC and Temperature; Grow Medium EC, Moist and Temperature.

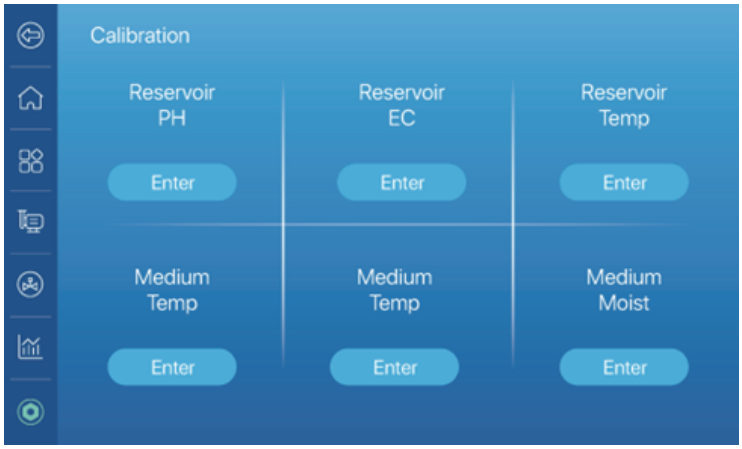


When you press the right arrow, it will show the other Alarm settings which include the Leaking Detector.

To set any of the available alarm setpoints, press ENTER to open the specific alarm setting. The page shown below will open and will show the current alarm settings for each of the sensors you have connected to the NFS-3 controller. There you can also individually choose to disable alarms for selected sensors if you choose to by changing the Green dot in the upper right corner, to a Gray dot.

Calibration

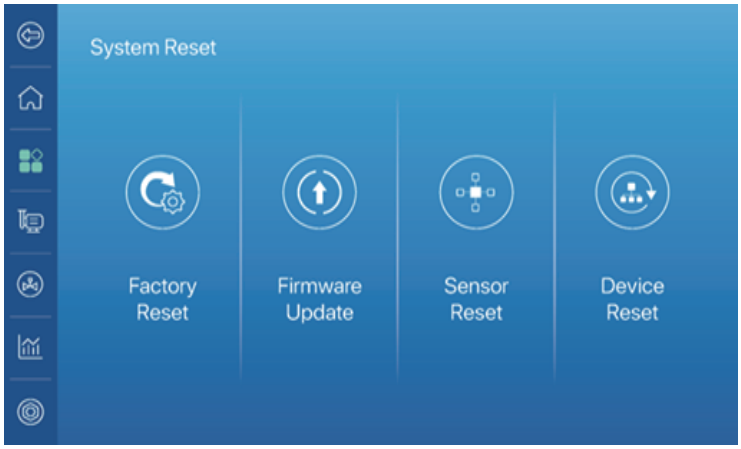
3.Calibration: The NFS-3 allows calibration of all of the connected sensors quickly and easily. When you open the calibration page, you can then select to calibrate all of your sensors including Reservoir pH, EC and Temperature; Grow Medium EC, Moist and Temperature. You can use standard pH and EC calibration solutions to calibrate the pH and EC probes. To calibrate the WCS sensors, refer to the WCS instructions.



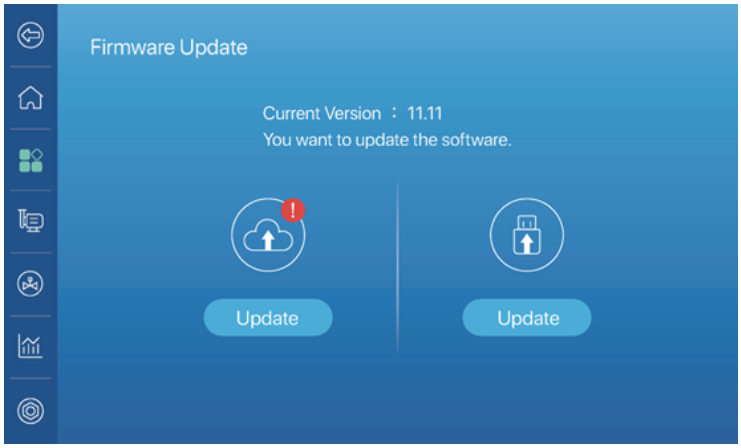
System Reset / Firmware Update

4.System Reset: The system reset page allows you to perform several critical operations including Factory Reset, Sensor Reset, Device Reset and Firmware Update. Sensor Reset will reset all of the attached sensor addresses. The Device Reset will reset all of the attached device module addresses. Factory reset will reset the entire controller to factory settings. (All previous settings and addresses will be lost)

*NOTE: It is always a good idea to save all of your settings BEFORE completing a factory reset. Refer to the Import / Export section for instruction on how to save and retrieve all of your setpoints.



The firmware update will allow you to update the internal operating software of the NFS-3. We are constantly improving and upgrading our controllers, and updating the firmware allows us to provide the most up-to-date experience easily.

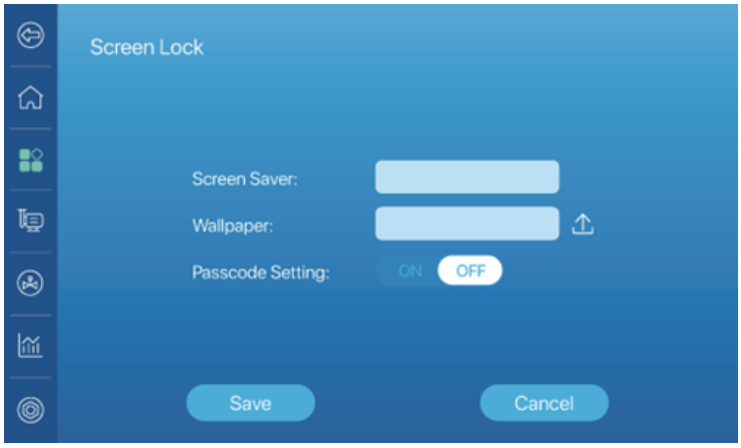


The image above shows there are two ways to complete the firmware update. If your controller is connected to the internet, you can simply choose to select the "CLOUD" update. If the unit has outdated firmware, the new firmware will automatically install. The other option is to select to use the microSD card update. You will copy the new firmware file from the TrolMaster support page, onto a microSD card 32 gb or smaller. Once the file is on the card, you will insert the microSD card, and select the USB symbol to complete the firmware update.

*Note: It is always a good idea to save all of your settings BEFORE completing a firmware update. Refer to the Import / Export section for instruction on how to save and retrieve all of your setpoints.

Screen Lock

5.Screen Lock: On the Screen lock page, you can create a passcode and activate a screensaver so that after several minutes of inactivity on the controller, the screen will be "locked" . The passcode will then need to be re-entered before anyone is allowed to access or change settings on the controller. On this page you can also select a JPG image or logo to upload to the controller (using the microSD slot) that will be displayed on the controller screen.



Import / Export

6.Import/Export: Users can save and restore their controller settings by using the Import/Export functions. The export will save all of the current settings in the NFS-3, onto the MicroSD card. Selecting Import will install the settings stored on the microSD card, back into the NFS-3 controller. (Only supports exFAT & FAT32 format for the microSD card sizes 32gb or smaller)

Serial Number

7.Serial Number: When installing the controller for the first time, you are going to need to know what the serial number / QR code is. Users can check the serial number / QR code of the controller on this page. The QR code is what you will scan with your smartphone to add your NFS-3 controller to the TM+ app.

Specifications

Input Voltage: 100-240VAC, 50/60Hz

Certifications: ETL/FCC

Degree of Ingress Protection: IP20

Max Distance to Device to be Connected: 1000 ft/300 meters

Max Distance to Sensors to be Connected: 1000 ft/300 meters

Working Environments: Temperature: 32-104°F, Humidity: ≤90%

WARNINGS

DO NOT allow the NFS-3 / Aqua-X PLUS Control System to be exposed to water or excessive heat. It is not waterproof. Install the NFS-3 in a clean / dry location, or use the TrolMaster SCC-3 pre-wired cabinet for professional installation and best system performance.

DO NOT open or attempt to repair or disassemble the controller, as there are no user-serviceable parts inside. Opening the controller will void the warranty.

If the surface of the Aqua-X PLUS is dirty, wipe it with a dry towel.

The Aqua-X PLUS operates under natural ventilation conditions.