TrolMaster

Hydro-X Plus

HCS-3

Quick Instruction

TrolMaster

For more information, please visit

www.trolmaster.com

OVERVIEW

The Hydro-X Plus controller is an upgraded version of the Hydro-X controller. It's a professional-grade single-zone environmental control system. It has an 800x480 7" LCD touch-screen monitor, multiple advanced light control functions and expanded device control capacity.

As all of the main controllers from TrolMaster, the HCS-3 / Hydro-X Plus works with TrolMaster's free app and can be connected to your internet directly using a standard CAT5 network cable. The current conditions measured by the HCS-3 can be monitored remotely using the TM+ smartphone app. You can read the historical data by viewing a graph on your smartphone and receive warning messages / notifications if the growing environment exceeds your selected setpoints.with the HCS-2? You can read the historical data by viewing a graph on your smartphone and receive warning messages / notifications if the growing environment exceeds your selected setpoints.

PRODUCT CAPACITY

Lights	* Unlimited
Temperature Devices	8
Humidity Devices	8
CO2 Devices	4
Program (Timer) Devices	12
MBS-PRO, 4-in-1 sensor	1
MBS-PAR, PAR / Light meter	1
MBS-SD, Smoke Detector	10
WD-1, Water Detector	10

PLEASE READ BEFORE USE

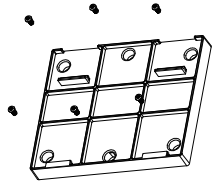
The HCS-3 controller comes with our MBS-PRO 4-in-1 sensor. The MBS-PRO sensor will accurately measure temperature, humidity and CO2 level within the growing environment. A photocell built into the MBS-PRO will detect the presence of light.

The MBS-PAR is used to measure the photosynthetically active radiation (PAR) from all light sources used to grow plants. With the MBS-PAR sensor installed, the HCS-3 can actively monitor OR control your light levels using the actual measured light level coming from the MBS-PAR.

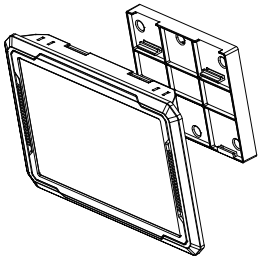
The MBS-SD smoke detector and MBS-WD will detect the presence of smoke and water leak. Multiple MBS-SD and MBS-WD can be connected to provide a larger coverage area for the detection of smoke and/or water.

The HCS-3 features two separate lighting control channels. Each lighting line (channel) MUST have a single wattage /type of fixture connected to it. You should never mix fixtures with different wattages, or different light fixtures on the same light line. Each of the two light control channels can be controlled individually. TrolMaster controllers can control 95% of the lighting systems available today. Using one or more of the available LMA lighting adapters, TrolMaster can control as many lights as necessary… unlimited numbers.

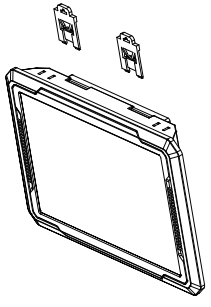
All of the connections between the HCS-3 and the device modules and sensors use standard RJ12 cable. A maximum cable length of 1000ft / 300 meters between the HCS-3 Hydro-X Plus Control System and the devices, or to the sensors is allowed.



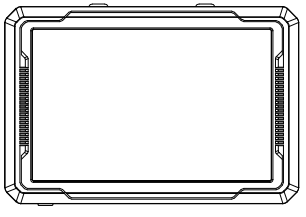
1. Mount the base panel on the wall with screws



2. Attach the controller onto the base panel



3. Lock the controller with the spring clips



4. Finished

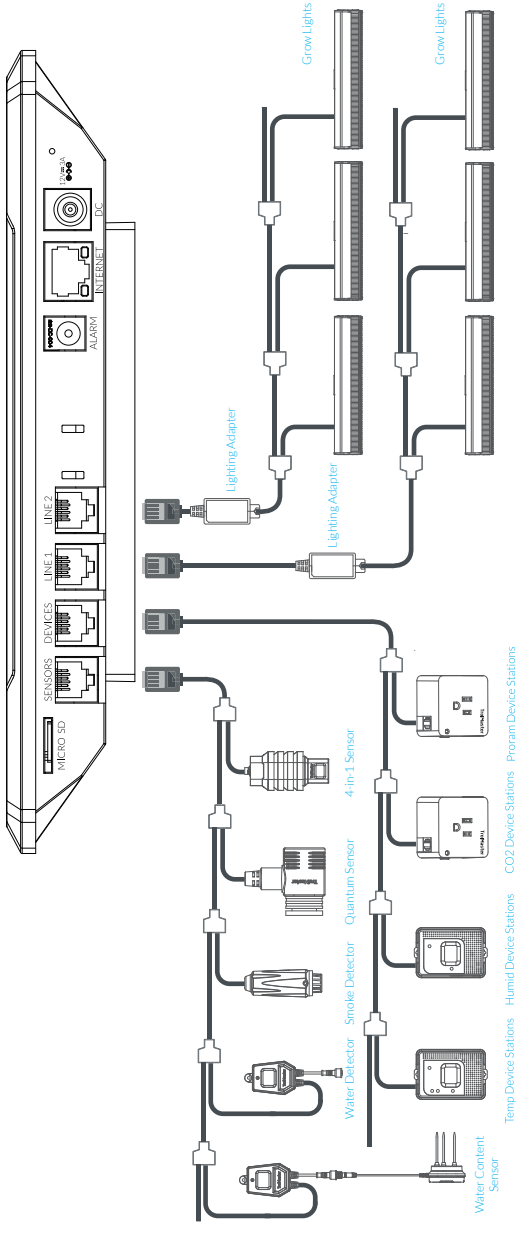
Determine where to locate the main controller. It is recommended to be located in an area that will remain dry and clean. The controller comes with a simple to use DIN type bracket.

Pull the 4 tabs outward to release the bracket from the unit, 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.

*Reminder: The interconnecting RJ12 communication cables are available in different lengths, select the correct length for your application. The HCS-3 Hydro-X Plus Control System is supplied with a 4ft and 16ft cable. These interconnecting RJ12 cables are also available in lengths of 25ft and 50ft. Select the correct length for your application.

CONNECTIONS



1. Internet Connections

The HCS-3 controller can be connected to the internet in order to provide remote monitoring, notifications, 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 HCS-3.
*There is no built-in wifi on the HCS-3. Contact TrolMaster Tech Support for options related to using a wifi connection as most commercially available wifi range extenders (with Ethernet ports) are NOT compatible with TrolMaster controllers.

2. Sensor connections

All of the sensors used with the HCS-3 will be connected into the RJ12 port on the bottom of the unit labelled SENSORS. Connect an RJ12 cable to the SENSORS port and then connect the other end of the cable to a Y-splitter or to an SPH-1 8-port splitter hub. Plug the 4-in-1 sensor into the Y-splitter or the SPH-1 hub. If using the Y-splitters, the other connector on the splitter can be used to connect another cable to the next splitter, or directly to the next sensor. Repeat the procedure to connect your MBS-PAR light meter, or to connect one or more smoke detector(s) or water leak sensors if needed. Once the sensors are all connected back to the SENSOR port on the HCS-3, you will now press the small button on the sensors to link or “address” each sensor to the HCS-3 controller. The Hydro-X Plus controller then automatically assigns an address to the sensors sequentially. Once the sensors are addressed, the addresses will be saved unless the user completes a factory or sensor reset within the system reset menu.

3. Device Module Connections

All of the device modules used with the HCS-3 will be connected to the RJ12 port on the bottom of the unit labelled DEVICES. Connect an RJ12 cable to the DEVICES port and then connect the other end of the cable to a Y-splitter or to an SPH-1 8-port splitter hub. If using the Y-splitters, the other connector on the splitter can be used to connect another cable to the next splitter, or directly to the next device module. Repeat the procedure to connect all of the device modules back to the DEVICES RJ12 port. Once the devices are all connected back to the DEVICES port on the HCS-3, you will now press the small button on the device modules to link or “address” each module to the HCS-3 controller. The Hydro-X Plus controller then automatically assigns an address to the device modules sequentially. Once 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 : You can use one or more SPH-1 splitter hubs to replace Y-Splitters in your setup for a "cleaner" installation. The SPH-1 provides a centralized point where all of the cables can come back to. Using the SPH-1 8-port splitter eliminates the need to use the Y-splitters.

4. Light Connections

The HCS-3 can control most brands of the LED or HID lights using the two built-in lighting control channels on the HCS-3. Each of the two channels can operate independently of each other to allow two different types or brands of lights to be controlled, or to be able to split a grow room's lighting into two separate “zones”.

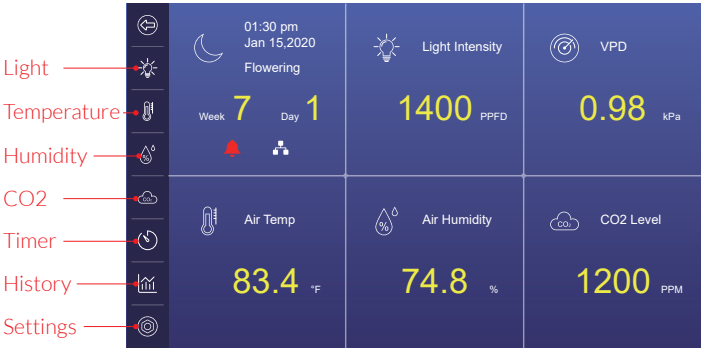
In order to control your lights, you must first install one of TrolMaster’s Lighting Adapters into the RJ12 ports on the bottom of the controller labelled Line 1 and Line 2. TrolMaster offers several types of Lighting

Adapters for different brands and types of lights. If you have questions about which adapter is correct for your lights, contact Tech Support or go to TrolMaster's website @ www.trolmaster.com.

Since each of the two lighting control channels are independent, each line can be set up to have its own timer settings, dimming temperature setpoints as well as the dimming/power % that each group of lights will be operated at. Having 2 lighting control lines allows the user to create multiple lighting layouts (two-zone, checkerboard), and dimming sequences based on their individual preferences.

INSTRUCTIONS

1) Main Interface



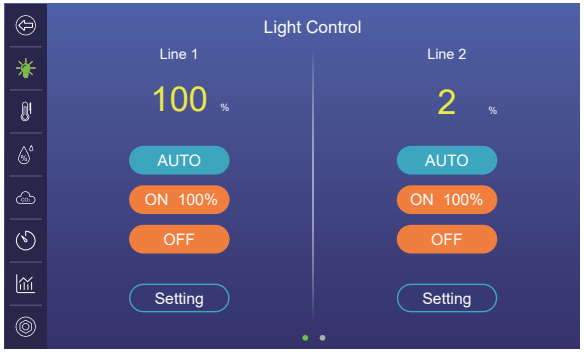
The main settings are all accessed by touching on one of the settings ICONS on the left side of the main page. Each ICON will bring you to a specific page that contains all of the settings for each of the control functions; Lights, Temperature, Humidity, CO2 & Timers. There are also ICONS to take you to the onboard historical data page, and the System Settings page.

2) Grow Light Control

There are 2 separate channels or light control ports that allow users to control their lighting fixtures. Each channel can be controlled separately allowing the user to use two types or wattage of lights, within a single room.

The MBS-PAR quantum meter can also be added to the system to measure and automatically adjust the light intensity in order to maintain the light's PPFD, at the user's preset level.

Lighting control with the Hydro-XPlus is easy to use. There are two pages on the HCS-3 for grow light control settings. The first page that comes up when you touch the Lights ICON is the basic light control settings. There you will select Line 1 or Line 2 light settings and be able to select the lights to be AUTO controlled or to manually turn them On / Off. The other page is for advanced settings. Users can switch between the two pages using a right-left / left-right swiping motion on the screen.



The Hydro-X Plus includes 4 advanced light control functions: DLI Control, Spectrum Control, Group Control, Cloud Control.
*Note : Only one of the advanced light control functions can be activated at a time.

DLI Control : DLI control replaces the standard method of controlling light levels by controlling the light power "percentage". With DLI control the HCS-3 uses the MBS-PAR sensor's light level reading, to automatically control the light level outputs. When the MBS-PAR is installed, the user will select their desired PPFD setting (in umol/s) and the lights will automatically provide that exact amount of light on the plants. Using the DLI control function will also calculate the exact amount of light the plants receive each 24-hour day and display that DLI (Daily Light Integral) number. This will allow you to provide precise control of light levels for enhanced growth rates and to save energy.

*NOTE : The 3 advanced light control functions below only work with the ThinkGrow brand of LED lights.

Spectrum Control : When using the "Plus" series of LEDs from ThinkGrow, Spectrum Control will allow the user to fine-tune their LEDs' color output/spectrum. When using Spectrum Control you will have separate control of the UV, White (full spectrum), Deep Red and Far Red LED chips on the ThinkGrow PLUS series of LEDs.

Group Control : All other light brands can be controlled with just two channels of lighting control on a single HCS-3 controller. When using the ThinkGrow brand of LEDs, the Group Control function allows up to 10 separate "groups" of LEDs to be controlled separately... with different light levels, timer settings and high-temp dimming levels.

Cloud Control : Now you can simulate a natural outdoor environment with cloud-cover moving over the plants to provide better plant health and energy saving with NO reduction in yield. We do that by selectively dimming / brightening one "group" of lights at a time to simulate natural cloud cover. Cloud-control gives you 100% control to simulate how thick the cloud cover is, when the clouds appear and when they disappear and even how fast the clouds are moving.

*NOTE : Only one of the 4 advanced settings can be used at one time.

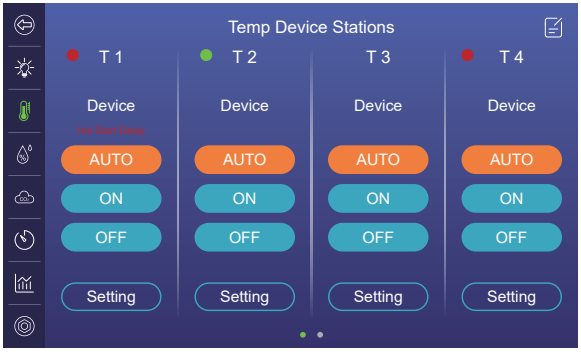
3) Device Modules

The Hydro-X Plus controller can control almost any kind of device within your grow rooms. It does that by using up to 4 types of device stations. Trolmaster's temperature, humidity, CO2 and program (timer) device stations are designed to be connected to various equipment to provide centralized control and remote access to those devices when using the Trolmaster app. Trolmaster offers over 16 different device/control modules which provide a smarter and more flexible approach to controlling EVERYTHING within your grow rooms.

4) Assigning device module names

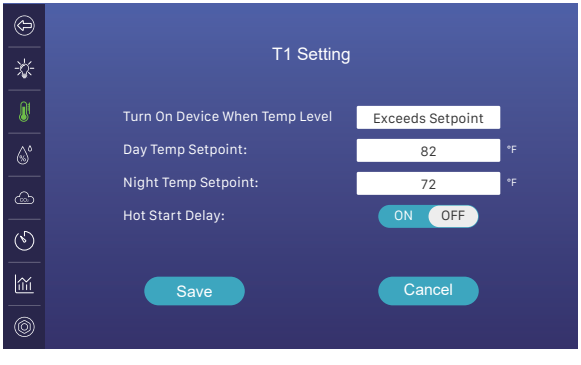
With the HCS-3, each of the connected device/control modules can have customized "names" easily assigned by the user. At the top right corner of each of the Setting pages, is the Edit ICON. When the Edit ICON is touched the user can enter a unique label for that specific device module.

(The temperature device interface page is used as an example below)



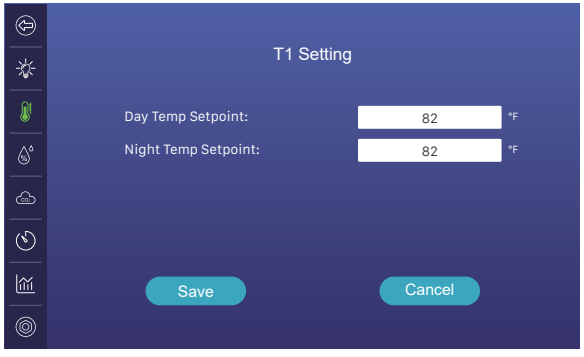
Up to 8 individual temperature device/control modules can be connected to the HCS-3 and those module's settings will be displayed on one of two available pages. Press the "Setting" button to enter the settings page for the device module you want to set. Depending on the model of the device module you are using, you will then see one of two pages that will allow you to enter the correct settings for that specific module. The HCS-3 will swap to the correct page corresponding to the device type you are using.

Temperature Interface A



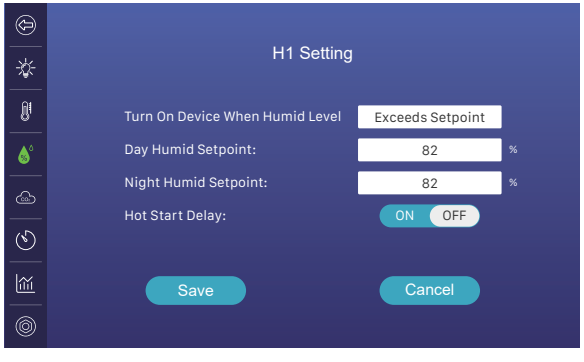
Some TrolMaster temperature modules like the DST-1 and DST-2 will allow you to select the Day and Night temperature settings, heat or cool control, and whether or not to use a hot-start time delay.

Temperature Interface B



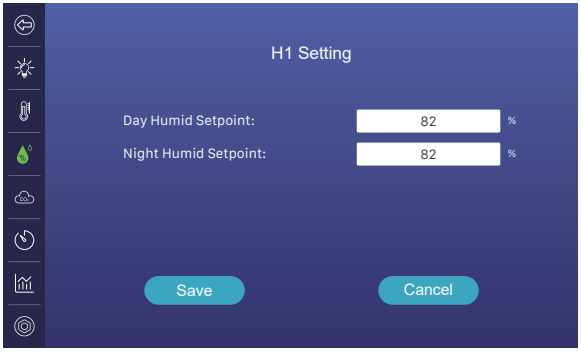
Other TrolMaster temperature modules like the TS-1 and TS-2 will allow you to select only the Day and Night temperature settings.

Humidity Interface A



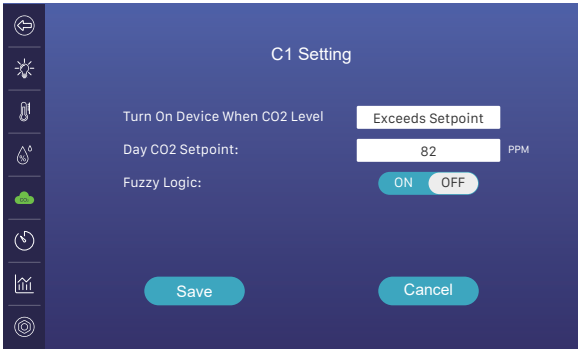
Some TrolMaster humidity modules like the DSH-1 and DSH-2 will allow you to select the Day and Night humidity settings, dehumidify or humidity control, and whether or not to use a hot-start time delay.

Humidity Interface B



Other TrolMaster humidity modules like the HS-1 will allow you to select only the Day and Night humidity settings.

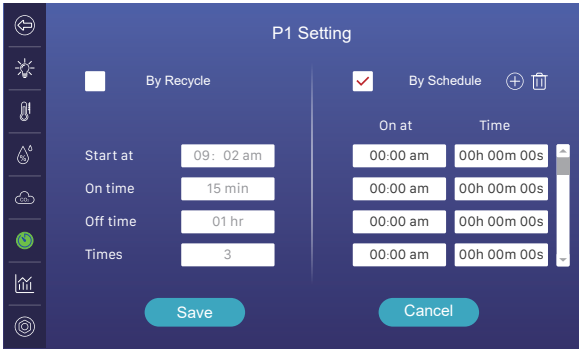
CO2 Interface



There is a single page to change the settings for device modules that are set up to control CO2 devices like solenoids, CO2 generators and exhaust fans. There are multiple settings within the CO2 settings page that provide customized CO2 control.

*NOTE : Fuzzy Logic CO2 control can only be used on a compressed CO2 gas tank!

Programmable Timer Interface

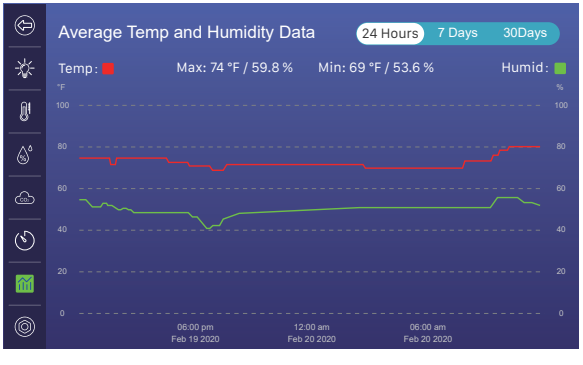


There is a single page to change the settings for device modules that are set up to control any equipment that needs to be controlled using a timer. The user can choose from two different timer control functions, Recycle and Schedule modes.

Recycle mode will repeat a pre-set “cycle” over and over. The user selects the start time, the On duration, the Off duration and the number of “cycles” they want to occur.

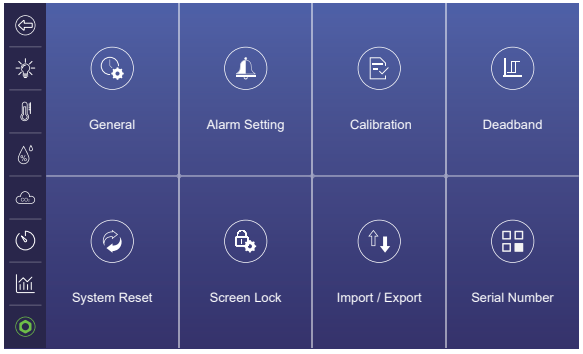
Schedule mode allows the user to select multiple individuals On and Off times.Timers can go down to 1 second On time and 1 minute Off time.

Historical Chart Interface



Historical data from all of the sensors are automatically recorded and stored within the HCS-3. That data can be viewed by the user directly on the touch-screen display, on the app or on the Web program. The user can select which sensor data to display, and to view 24-hour, 7-day or 30-day historical charts.

System Setting Interface



Tap on the nut icon on the bottom of the column to access the different pages for system settings including program backup, restore factory setting etc.

The system setting page is for the controller's basic settings including:

1.General Settings: Room Status, Date, Time, Time Zone, DST, Auto Time Calibration, Time format, Brightness etc.

2.Alarm Settings: Maximum and Minimum Day and Night Alarm Setpoint for Temperature & Humidity, Light, CO2 and VPD etc.

3.Calibration: Calibration for Temperature, Humidity and CO2 sensors.

4.Deadband: Set Deadband Setpoints for Temperature, Humidity and CO2.

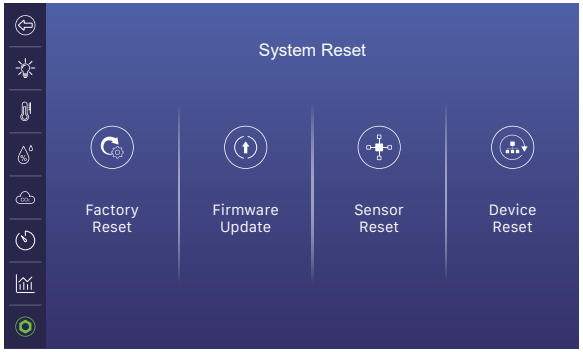
5.System Reset: Options include Factory Reset, Firmware Update, Sensor Reset and Device Reset.

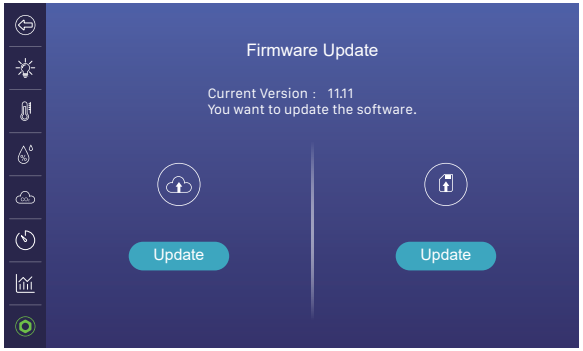
6.Screen Lock: Screen Saver and Passcode setting.

7.Import/Export: The user can save & restore their controller settings by using the Import / Export functions. The export will save all settings on the MicroSD card, Import will restore all settings from the MicroSD card, back into the HCS-3 controller. (only support exFAT & FAT32 format)

8.Serial Number: Users can check the serial number of the controller on this page. The QR code on the controller is what you will scan to add your HCS-3 controller to the TM+ app.

5) Firmware Update





Update to the latest firmware for bug fixes and new functions that are added to the unit. Visit our website to find out the most updated version of the firmware. To update the firmware, press the nut icon on the lower-left corner, choose system reset, then choose Firmware Update. You may update it online if you have your controller connected to the internet or update the firmware with a MicroSD card. You can find the latest firmware on our website.

SPECIFICATIONS

Input Voltage Tension D'entrée	100-240VAC, 50/60Hz 100-240VAC, 50/60Hz
Certifications Certifications	ETL/FCC ETL/FCC
Degree of Ingress Protection Indice de protection	IP20 IP20
Max Number of HID Fixtures	256*2
Max Distance to Device to be connected	1000 ft/300 meters
Temperature Accuracy	± 0.36°F
Temperature Deadband	3°F(1~15)
Humidity Range	5-95%
Humidity Accuracy	±3%
Humidity Deadband	3°F(1~15)
CO2 Range	0-2000 PPM
CO2 Accuracy	±30 PPM
CO2 Deadband	50ppm(10~250)
Working Environments	Temperature 31-104°F Humidity ≤ 90%

WARNING: DO NOT allow the Hydro-X PLUS Control System to be exposed to water or excessive heat. 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 Hydro-X PLUS is dirty, wipe it with a dry towel.
The Hydro-X PLUS operates under natural ventilation conditions.

AVERTISSEMENT: N'exposez PAS le régulateur de zone Hydro-X PLUS à de l'eau ou à une chaleur excessive. NE l'ouvrez PAS, NE tentez PAS de le réparer ou de le démonter, car il ne contient aucune pièce réparable par l'utilisateur. L'ouverture du régulateur entraîne l'annulation de la garantie.
Si la surface du Hydro-X PLUS est sale, essuyez-la à l'aide d'un chiffon sec. Le Hydro-X PLUS fonctionne sous des conditions de ventilation naturelle.