

# Hydro-X Plus System / HCS-3

Upgraded Version of Hydro-X System

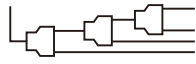
The Hydro-X Plus (HCS-3) controller is an upgraded version of the Hydro-X controller. It's a professional-grade single-zone environmental control system. It has an 800x480 7" LED touch-screen monitor, multiple advanced light control functions and expanded device control capacity.



HCS-3 for Hydro-X Control System

## Connection

Daisy Chain Connection



The sensors and control modules (device stations) are connected to the HCS-3 with a standard RJ12 cable and RJ12 Y-splitters, making installation as simple as plug-and-play. The modules are "daisy-chained" together using the RJ12 cables allowing for flexible installation, and future expansion. To make installation even easier, you can also use the SPH-1 8-port hub instead of using the Y-splitters.

## Remote Control

App-based IOS / Android



Besides the onboard user interface / touch-screen, the Trolmaster app will provide real-time data and user notifications from the HCS-3. The HCS-3 also offers a free App TM+ that allows remote control and monitoring through the internet with any smartphone or tablet.

## Specifications

HYDRO-X Plus (HCS-3)

### Product Capacity

<b>4-in-1 (Temp &amp; Humidity &amp; CO2 &amp; Day/Night) Sensor</b>	Max. 1pc per HCS-3
<b>Par Sensor</b>	Max. 1pc each per HCS-3
<b>Smoke &amp; Water Detectors</b>	Max. 10pcs each per HCS-3
<b>Temp Device Stations</b>	Max. 8pcs per HCS-3
<b>Humidity Device Stations</b>	Max. 8pcs each per HCS-3
<b>CO2 Device Stations</b>	Max. 4pcs each per HCS-3
<b>Program Device Stations</b>	Max. 12pcs per HCS-3
<b>Light Channel(s)</b>	2 per HCS-3
<b>Number of Lights</b>	*Unlimited With the correct adapters

### Display & Control

<b>Size</b>	800*480mm (7" LCD Screen)
<b>Control</b>	Touch Screen Control
<b>Language</b>	English (International)
<b>micro-SD</b>	Save/Copy/Import/Export data

### Environment Setting

<b>Temperature</b>	40-100 °F
<b>Humidity</b>	20-99%
<b>CO2</b>	300-2500PPM
<b>Light Intensity</b>	0-2000 PPFD

\*current setting range



### Operating Requirements

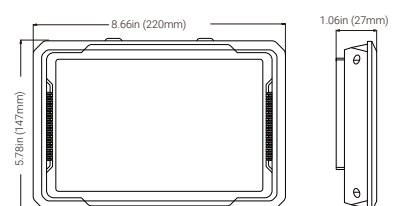
<b>Temperature</b>	32 °F to 120 °F (0 °C to 49 °C)
<b>Humidity</b>	5% to 90% RH, non-condensing

### Power Supply

<b>Supply Voltage</b>	100-240VAC, 50/60Hz, 3A
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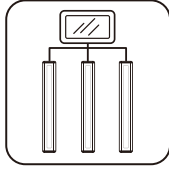
### Dimensions & G.W.

<b>Dimensions</b>	220*147*27mm
<b>Approx. G.W.</b>	0.5 kg



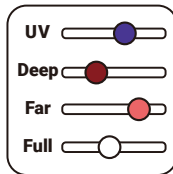
# Hydro-X Plus

Advanced Lighting Features



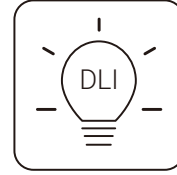
## Group Control

(Up to 10 Groups) of lighting control for ThinkGrow brand LEDs allows a customized combination of light settings for up to 10 separate groups of LEDs on a single HCS-3 controller.



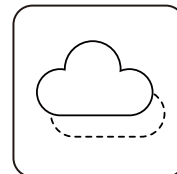
## 4 Adjustable Spectrum

Ultimate control on UV, White, Deep Red and Far Red spectrums for creating special light recipes.



## DLI (Daily Light Integral) Control and Monitoring

Can be used to calculate the exact amount of light needed based on the PPFD to enhance growth rates and to save energy.



## Cloud Effect

The HCS-3 can simulate natural cloud movements to mimic a natural outdoor environment which ensures less stress on the plants and will also save electricity.

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## Lighting Control

With Hydro-X System

### Light Control

The Hydro-X Plus can control almost all horticultural lighting systems ( LED / HID ) in the market using one of Trolmaster's LMA series of lighting adapters. Two separate lighting control channels allow users to control two different lighting systems with separate setpoints.

When used with Hydro-X Plus, the LMA-T can provide user's ultimate control over ThinkGrow LED ( i.e. individual control on 4 different spectrums of the PLUS series ), and allows users to adjust and control the light spectrum according to their individual needs.



### MBS-PAR Sensor

The PAR sensor can be incorporated into the Hydro-X Plus system to provide a measurement of "PAR" ( Photosynthetically Active Radiation ). After entering the value of the desired amount of PPFD to HCS-3, the PPFD sensor will automatically increase or decrease the output level of the supplemental lighting systems to continuously maintain the exact lighting level ( in terms of PPFD) selected.



# 4-in-1 Sensor MBS-PRO

Temp/Humidity/CO2/Photocell

This sensor will measure air temperature, humidity, CO2 ( PPM ) and has a photocell to detect Day or Night operation, making it a perfect all-in-one environmental sensor. The sensor will detect the environmental parameters then send the collected data back to the Hydro-X Plus. By using different modules connected to the Hydro-X Plus system, the controller will then send signals to the modules and control those devices based on the environmental readings provided by the 4-in-1 sensor.

\* Photocell sensor detects only the presence of light, not light intensity.



## Temperature

Temperature can be regulated with the modules by controlling the temperature control devices.

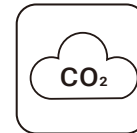
For example, the ARS-1 can control mini-split AC, TS-2 can control HVAC system etc.



## Humidity

Humidity can be regulated with the modules by controlling the humidity control devices.

For example, the HS-1 can control dehumidifiers, TSH-1 can control EC fans etc.



## CO2

CO2 level can be regulated with the modules by controlling the CO2 control devices.

For example, the DSC-1 can control CO2 tank regulators and CO2 generators etc.

## Other Control & Sensor

For Different Circumstances

### Other Control

There are other modules that can be used to control devices in different circumstances in accordance with user's need.

For instance, devices like fans or pumps can be controlled based on time rather than Temperature, Humidity, and CO2 with the Timer Control module the DSP-1.

The DCC-1, DSV-1 and the 4RS-1 Expander Station offer dual condition control, low voltage control and multiple device control respectively.

### Other Sensor Alert

We also have 2 other sensors that can provide user alerts. The MBS-SD and WD-2 are used to detect smoke or water leaks. Alarm notification alerts will be sent to users on the TrolMaster App when abnormal conditions are detected... to alert them about potential problems before things get out of hand.

