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TrolMaster HCS-1 Hydro-X Control System



Specifications

- **Model:** HCS-1
- **Control System:** Hydro-X
- **Power Supply:** 12VDC
- **Sensors:** 3-in-1 Sensor, CO2 Sensor, Smoke Detector
- **Network Connectivity:** Internet connection

OVERVIEW

Hydro-X Control System is the most intelligent and versatile environmental control system on the market. It could control up to 512 lights, 4 temperature devices, 2 humidity devices, 2 CO2 devices, 9 preprogram devices. With the incredible flexibility, anyone could easily customize their own grow room system for maximum yield. The system comes with a 3-in-1 sensor detecting temperature, humidity & light. A CO2 sensor is available for measuring CO2 level. When the measured value exceeds your custom setting range, a warning message will be sent to your smart phone. Smoke detectors are also available for smoke detection to alert you if there is a fire. Hydro-X helps you to monitor your grow environments perfectly. Hydro-X is specially designed to set up a daily lighting management for your lighting system. Having 2 separate lines allows the user to create multiple lighting layouts (and dimming sequence) based on their individual preferences, This system can efficiently control your lighting system by running a schedule with advanced functions like auto dimming, overheat shutdown, sunrise & sunset simulation. Hydro-X can control almost all kinds of devices in your grow rooms with its 4 types of device stations. Temperature device stations, humidity device stations, CO2 device stations and program device stations are designed to be connected to different devices for centralized control, Hydro-X offers a more smart and flexible approach for the connection of the devices you want to control. Hydro-X keeps pace with the times, it has the ability to connect to the network directly with a standard network cable. After downloading the app, you can monitor and control the environment of your grow rooms anytime and anywhere, You could read the historical data through a graph on your smartphone and receive warning messages if the growing environment exceeds your setpoints. A micro-SD card is also available for data logging if the Internet is unavailable. With Hydro-X, you can monitor and control the growing environment at your fingertips.

FACTS

Here are some important things to consider when using the Hydro-X Control System.

- Each set of the Hydro-X Control System can connect to one 3-in-1 sensor, one CO₂ sensor, and one PAR sensor, up to five optional water detectors, and five optional smoke detectors. The 3-in-1 sensor is used to detect temperature, humidity, and light; the CO₂ sensor is used to detect CO₂ level; the PAR sensor can detect photosynthetically active radiation from the light source. And the water and smoke detectors are used to detect water leaks and prevent fires, respectively.
- Each lighting line MUST have a single wattage/type of fixture connected to it. You cannot mix fixtures with different wattages on the same line interconnect wiring. When connected to lights that are controlled by a digital signal (such as ThinkGrow DE ballast), 256 lights can be controlled on each line, with potentially 512 lights controlled in total. A lighting control adapter (signal converter) is available for controlling the traditional lights that are controlled by an analog signal (0-10V), such as Gavita, etc. Due to the limitation of the analog signal, the system can control up to 40 traditional ballasts on each line, 80 traditional ballasts in total on both lines.
- Various devices (such as for Temp/ Humid /CO₂, etc.) can be connected to this unit through 4 types of different Device Stations. Each device has its own dedicated device station, which can be purchased separately depending on your needs. Don't mix up the device station with a different device.
- Sensors, Device Stations, and Ballasts are connected to the main controller by using RJ12 cables to daisy-chain all the devices together. Each of the sensors and device stations comes with an RJ12 "T" splitter and RJ12 cables. Various length pre-crimped RJ12 cables and additional TT-shaped splitters can be purchased separately.
- A maximum distance of 1000 f/ 300 meters between the HCS-1 Hydro-X Control System and the devices to be controlled is needed.
- Follow all local and national electrical codes for installation requirements.
- The Hydro-X is designed for indoor use only. It is recommended to use our Trolmaster's accessories for good performance.

COMPONENTS



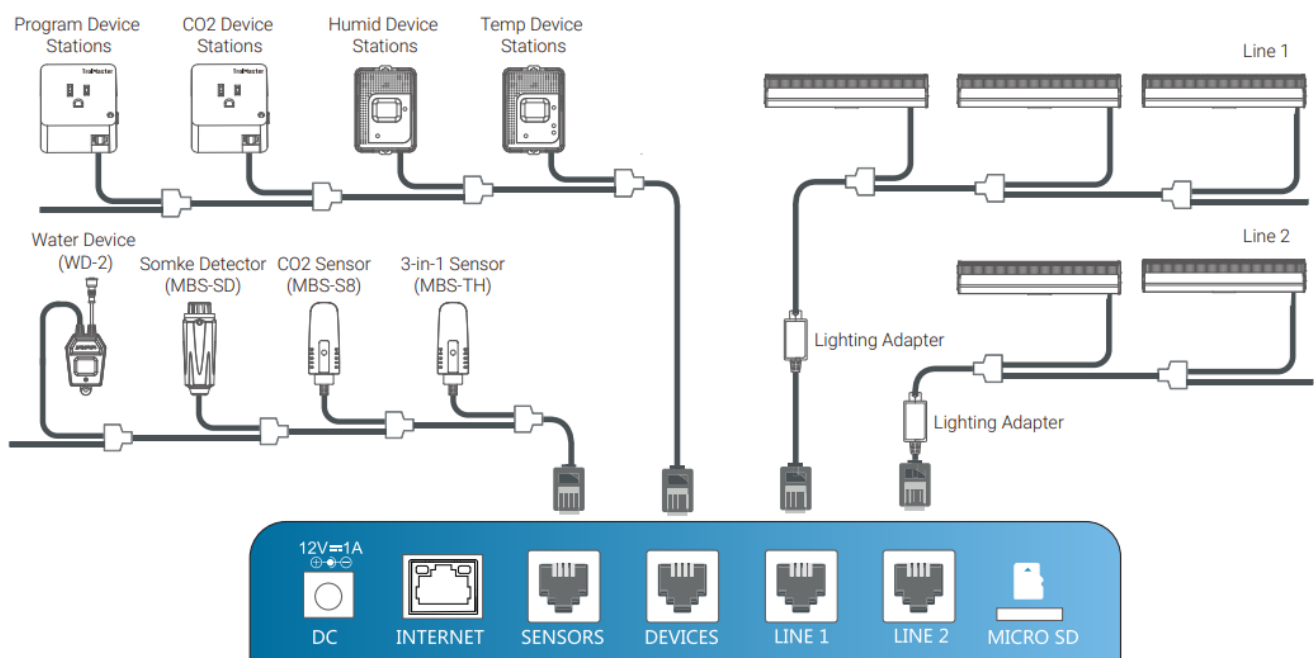
1. Controller
2. Back Plate (Bracket)
3. 4 ft RJ12 Cable
4. T-Shape Splitter
5. 12VDC Power Supply
6. 3-in-1 Sensor
7. 16 ft RJ12 Cable

INSTALLATION



Determine where to locate the main controller. 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. The interconnecting RJ12 communication cables are available in different lengths, select the correct length for your application. The HCS-1 Hydro-X 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. Power Connection:

Connect the plug-in power supply to the power (DC) connector.

2. Sensor connection:

Connect the RJ12 cable to the SENSORS connector and connect to a splitter on the other end. Plug the 3-in-1 sensor to the splitter for connection. The other connector on the splitter can be used to continuously connect to the next splitter. Connect a CO2 sensor to the 2nd splitter. Repeat the procedure and connect one or more smoke detector(s) if needed. Press the small button on the smoke detector, the Hydro-X will automatically assign an address to the unit sequentially.

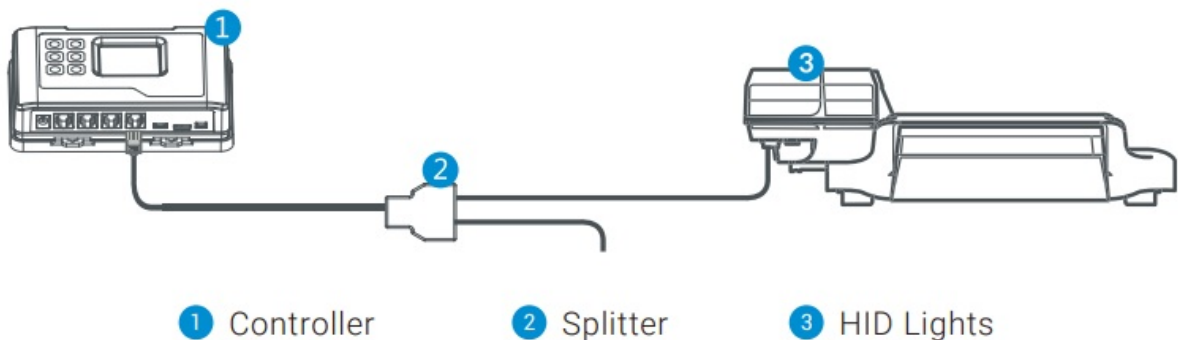
3. Device Station Connection (main controller needs to be powered on)

Connect the cable going from the DEVICES connector to the first Device Station to be connected. Use the T-shape splitter and short RJ cable so that the first cable can

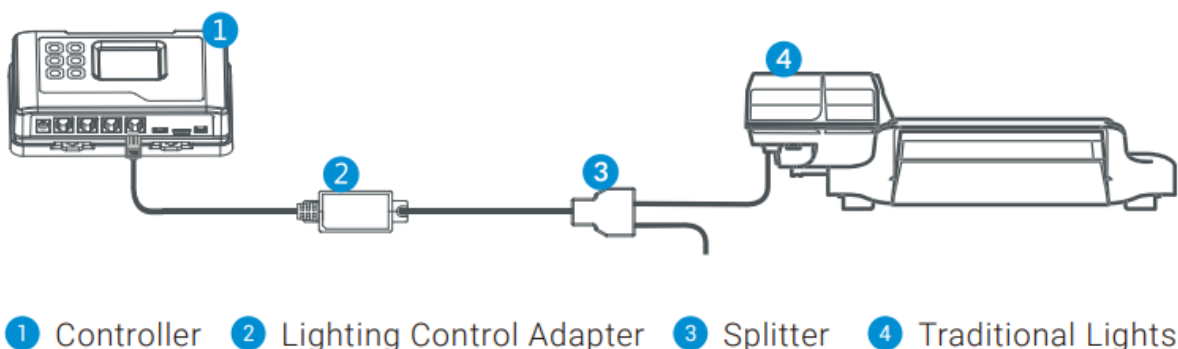
continue on to be connected to the next T-shape splitter (Device Station) to be connected. Plug the Device Station to the wall outlet for power supply. Press the small button on the device station, the system will automatically assign an address to the device station in sequence. Repeat this process until all device stations are connected to the main controller.

4. Light Connection

- **For HID Lights:** Connect the cable going from LINE 1 to the first digital ballast to be connected. Use the T-shape splitter and short RJ cable so that the first cable can continue on to be connected to the next T-shape splitter (ballast) to be connected. Repeat this process until all ballasts (fixtures) are connected to the LINE 1. Connect more lights through the LINE 2 port. Repeat the same procedure on LINE 2.



- **For Traditional Lights:** If connected to traditional lights which are controlled by analog signal (0-10v) such as Gavita fixtures, a lighting control adapter (signal converter) is necessary to convert the digital signal into analog signal. The connection is similar as above but with a signal converter connected between ballast and controller. First, connect the signal converter to the LINE 1 or LINE 2 connector and then connect to a splitter on the other end. Finally, use another RJ12 cable to connect between the splitter and the analog ballast. See the connection diagram.



- Each line can be set up to be a “staged” dimming zone. In other words, each zone has its own independent dimming temperature setting as well as the dimming action. Having 2 lines allows the user to create multiple lighting layouts (and dimming sequences) based on their individual preferences. Some examples are shown below.

LINE1	LINE2	LINE1
LINE2	LINE1	LINE2
LINE1	LINE2	LINE1

LINE1	LINE1	LINE1
LINE2	LINE2	LINE2

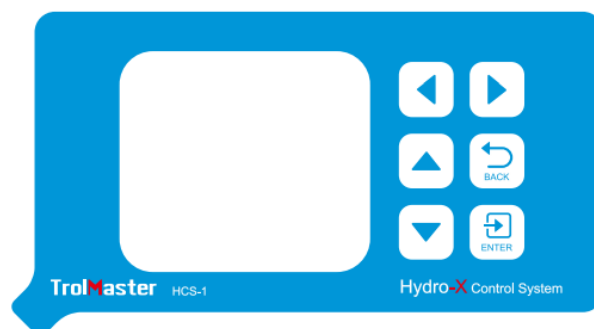
5. Internet Connection

This unit has the feature of connecting the network for remote control. User can use a standard network cable for connection through the INTERNET connector.

BUTTONS

The HCS-1 Hydro-X Control System is extremely easy to use. The backlit 128×128 LCD display will provide the user with the current conditions and access to all settings all settings. All settings can be accessed by using the 6 push buttons on the front of the unit. The button functions are described below.

- UP/DOWN:** The Up and Down buttons move the cursor up and down to select the item on the LCD display. **LEFT/RIGHT:** The Left and Right buttons move the cursor to the previous page or the next page, left item or the right item.
- BACK:** The Back button goes backwards to the previous page.
- ENTER:** The Enter button is used to open the menu item to be changed as well as to accept and “enter” the new setpoint into memory.



Familiarize yourself with the function of the 6 buttons on the front of the HCS-1 Hydro-X Control System in order to be able to access settings, and to better understand how to use the HCS-1 Hydro-X Control System to its greatest potential.

Start Settings

Once you have connected all devices, sensors and fixtures to the HCS-1 Hydro-X Control System, we can start using the unit. Connect the plug-in power supply to the power connector on the bottom of the HCS-1 Hydro-X Control System. HCS-1 Hydro-X Control System will turn on and boot up. If it is the first time you have used the HCS-1 Hydro-X Control System, when you power on the HCS-1 Hydro-X Control System the Welcome screen / page will be displayed.



First-Use Welcome Page



Normal Start Page

NOTE: Press ENTER button to first go to the Configuration page and begin set-up.

Time Setting: please refer to P18 for the time setting so as to change the default time into the current time before use.

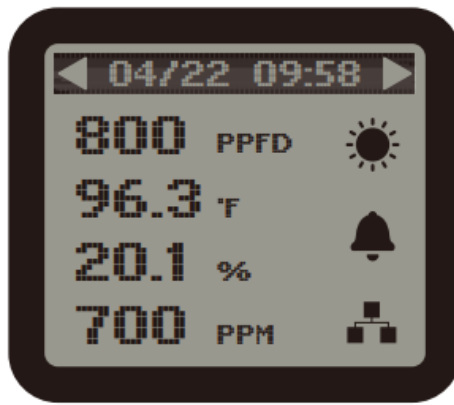


Default Time



Current Time

Main Menu



1. The main menu displays three elements:

- Temperature Value (°F) eg: 78.8°F
- Humidity Value (%) eg: 20.2%
- CO2 Level (PPM) eg: 1200 PPM

The top title bar indicates current date & time:

Month/Date eg: 09/07

Hour/Minute eg:18:20

Day Mode ☀

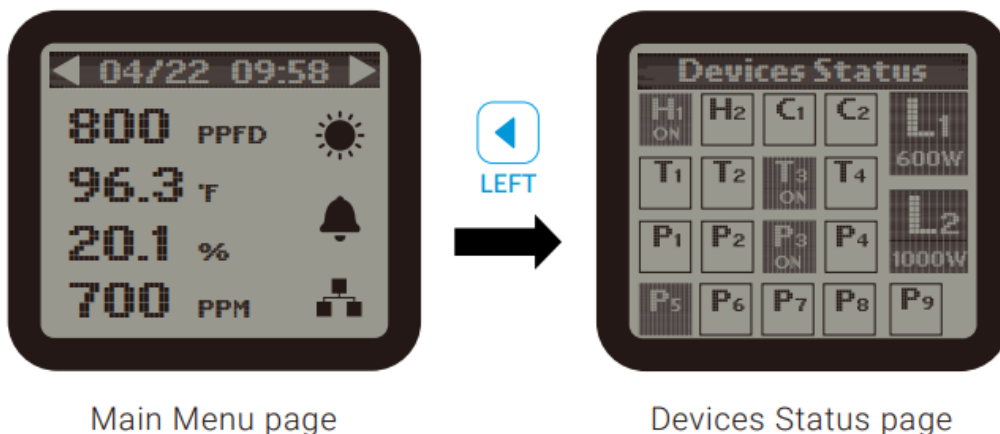
Night Mode 🌙

Alarm Activated 🔔

Internet Connected 🌐


No Network Connection (no icon)

NOTE: Download the TrolMaster app from App Store or Google Play.






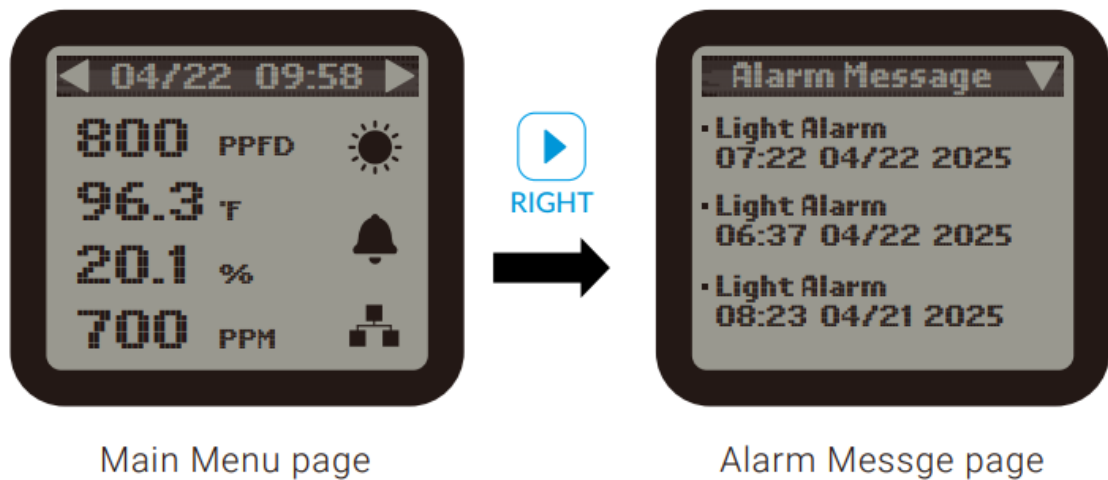
Main Menu page


Devices Status page

2. On the Main Menu page, press LEFT button  to get access to Devices Status page.

The screen will show devices in 3 states.

- State One:  Highlighted and with “ON” indicates the device is connected and under working condition (activated).
- State Two:  Highlighted and without “ON” indicates the device is connected but not under working condition (standby).
- State Three:  Non-highlighted indicates no device station is connected to this address.

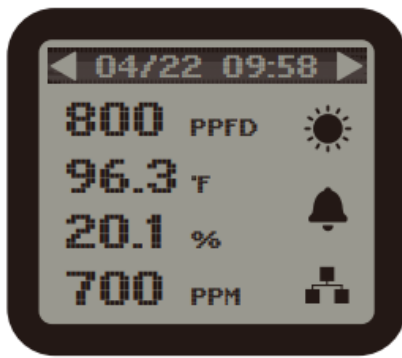


On the Main Menu page, press the RIGHT button  to get access to Alarm Message page. The LCD screen will show records of all alarm messages.

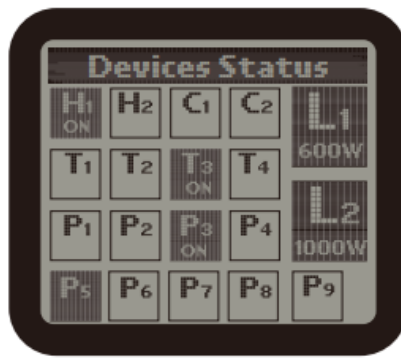
NOTE

- On the Devices Status page, the device states are not suitable to lighting devices. The LCD screen will display the lighting status for two lighting lines L1 & L2.
- Do not remove the Micro-SD card in the main screen (showing Temperature, Humidity & CO2). Otherwise, it is easy to cause damage to the card.

Setting Page



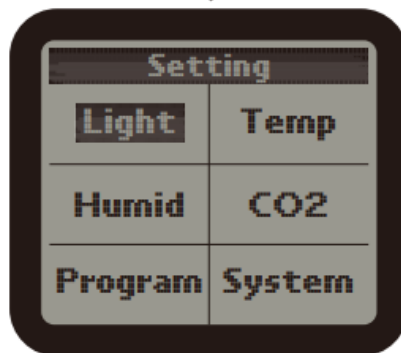
Main Menu page



Devices Status page



Alarm Message page



On the Main Menu page, Device Status page or Alarm Message page, press ENTER



button to get access to the SETING page. The LCD screen will display 6 subjects (Light/Temp/Humid/CO2/Program/System) as shown on the picture, You can move the cursor (UP/DOWN/LEFT/RIGHT) to select the subject you wish to edit setting.

Lighting Settings

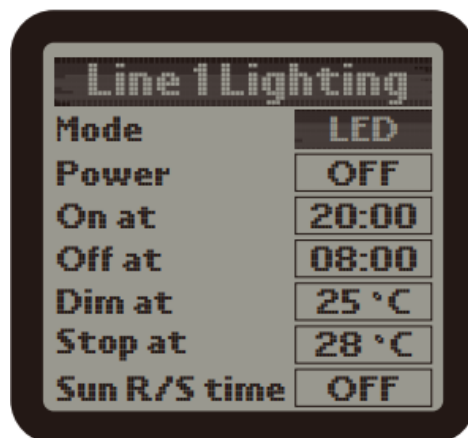




1. On the Setting page, select the Light subject and then press ENTER button to confirm your selection. The screen will display Line 1 and Line 2. Press **UP** button or



DOWN button to select Line 1 or Line 2. Then press ENTER button to get into the configuration page.

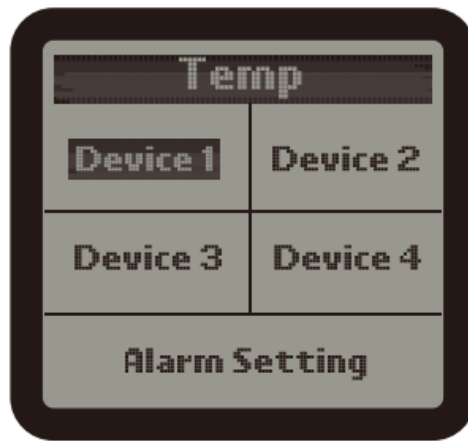


2. Use the UP and DOWN button to select the optional item. Press ENTER button, the digits will be flashing, then press UP or DOWN button for change setting. Finally, press ENTER button to confirm and save change. Mode: Select the correct type of your lighting drivers/ballasts (HID/LED) that will be connected to this line.

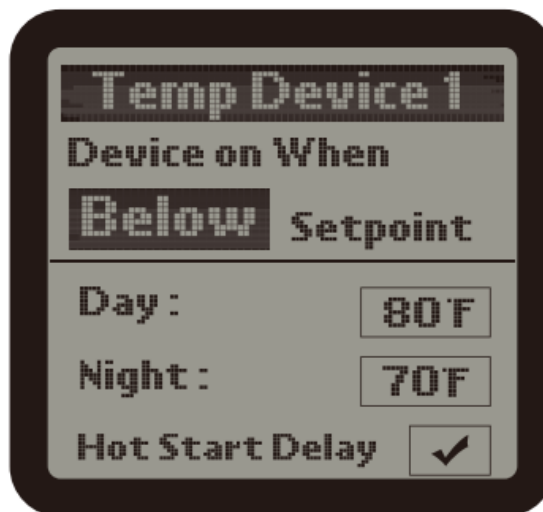
- Power: Select the light brightness percentage for the light channel. (0-100% for LEDs, 0-120% for HIDs).
- On at: The time of day that the lights for that LINE 1 will be turned ON.
- Off at: The time of day that the lights for that LINE 1 will be turned OFF.
- Dim at: Select the temperature you want the lights within each line to dim.
- Stop at: The max temperature that the growing area can get to before shutting down the lights. Normally, set at least 5° F up to 10 degrees F above the “Dim at” setting.
- Sun R/S time: simulate Sunrise and Sunset by slowly raising and lowering the lighting level (brightness). User can select from 0 minute (off) to 30 minutes in 5-minute increments for the Sunrise / Sunset feature.

3. The lighting configurations of Line 2 is same as the setting of Line 1.

Temperature Settings

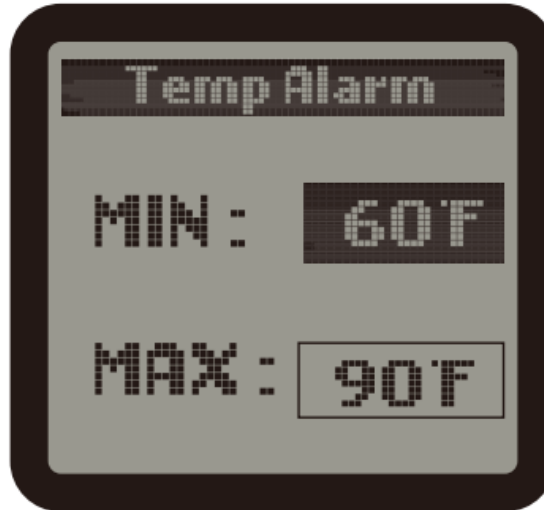


1. On the Setting page, select the Temp subject and then press ENTER button to access the Temp setting page. Use the **Up button** or **Down button** to select the device or Alarm Setting.



2. When the Device 1 is selected, user can set the temperature setpoint for Day / Night mode for the Device
 1. The unit will automatically turn ON the Temp Device 1 when the measured temperature is ABOVE or BELOW the setpoint. Press ENTER button and the Above or Below text will be flashing. Press UP or DOWN button to change between Above and Below. Finally, press ENTER button to confirm and save the change.
For example: Turn on device when temp reaches Above setpoint for Cooling devices; Turn on device when temp reaches the Below setpoint for Heating devices. Use UP and DOWN button to select Day mode or Night mode, the selected item will be highlighted. Press ENTER button and the current temperature value will be flashing. Press UP or DOWN button to change the setpoint. Finally, press ENTER button to confirm and save the change. The LCD


will display “Setting saved”.



3. Press DOWN button to select and enter the Temp Alarm page. The screen will display the Min / Max setpoint. Press UP or DOWN button to select the Min or Max setpoint. The selected item will be highlighted. Then press ENTER button again, the current temperature setpoint will be flashing. Press UP or DOWN button to change the setpoint. Finally, press ENTER button to confirm and save the change. The LCD will display “Setting saved”. When the Temperature level exceeds the setting range, the unit will send a warning message to your smartphone. The setting procedure of other Temp Device Station is same as above.

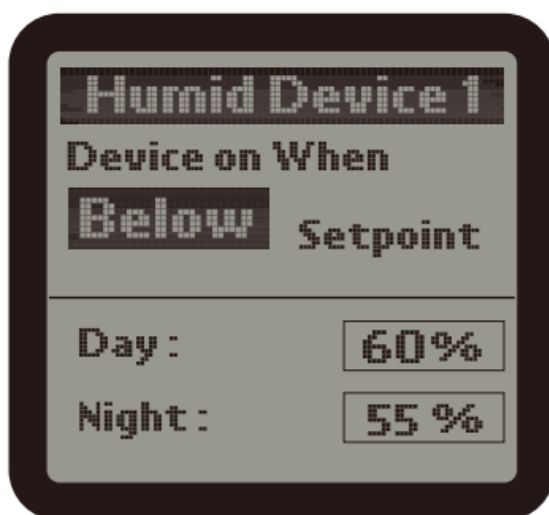
Humidity Settings



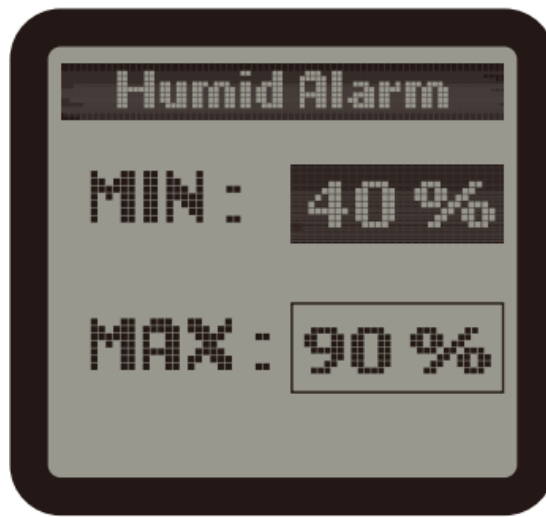
1. On the Setting page, select the Humid subject and then press ENTER button  to access the Humid setting page. Use the **Up button** or **Down button** to select the Device 1 or Device 2, or Alarm setting.
2. When Device 1 is selected, the user can set the humidity setpoint for Day/ Night mode for Device 1. The unit will automatically turn ON the Humid Device 1 when the

measured humidity is ABOVE or BELOW the setpoint. Press the ENTER button and the Above or Below text will be flashing. Press the UP or DOWN button to change between Above and Below. Finally, press the ENTER button to confirm and save the change. The LCD screen will display “Settings saved”.

For example: Turn on the device when the humidity level is above the setpoint for the Dehumidifier; Turn on the device when the humidity level is below the setpoint for the Humidifier. Use the UP and DOWN buttons to select Day mode or Night mode; the selected item will be highlighted. Press the ENTER button, and the current humidity value will flash. Press the UP or DOWN button to change the setpoint. Finally, press the ENTER button to confirm and save the change. The LCD will display “Setting saved”.




3. Press DOWN button to select and enter the Humid Alarm page. The screen will display the Min / Max setpoint. Press UP or DOWN button to select the Min or Max setpoint. The selected item will be highlighted. Then press ENTER button again, the current humidity setpoint will be flashing. Press UP or DOWN button to change the setpoint. Finally, press ENTER button to confirm and save the change. The LCD will display “Setting saved”. When the humidity level exceeds the setting range, the unit will send a warning message to your smartphone. The setting procedure of Humid Device Station 2 is same as above.

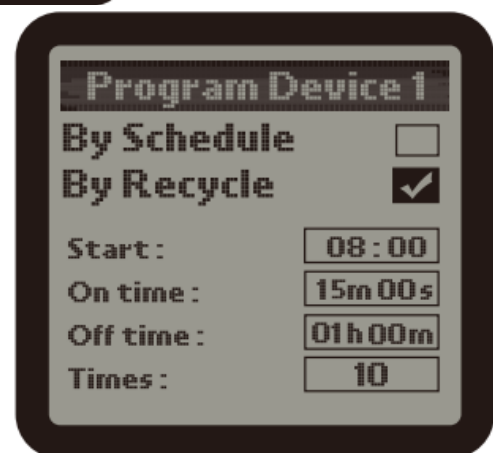
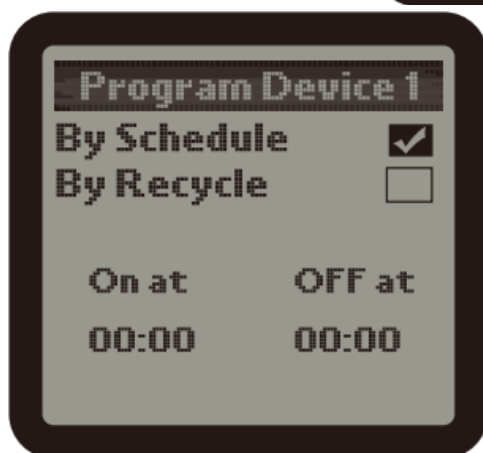


CO2 Settings



1. On the Setting page, select the CO2 subject and then press ENTER button  to access the CO2 setting page. Use the Up button or Down button to select the Device 1 or Device 2 or Alarm Setting.





Frequently Asked Questions

Q: How do I connect additional devices to the Hydro-X Control System?

A: To connect additional devices, follow the same procedure as connecting sensors or lights. Use splitters and cables to extend connections as needed.


Q: Can I control the system remotely?

A: Yes, you can control the system remotely by connecting it to a network using a standard network cable through the INTERNET connector.

Q: How do I set up different lighting layouts?


A: Each line can be set up as a staged dimming zone, allowing for independent dimming settings. Follow the instructions provided in the manual to connect and configure lighting fixtures accordingly.


Documents / Resources

	TrolMaster HCS-1 Hydro-X Control System [pdf] User Manual HCS-1 Hydro-X Control System, HCS-1, Hydro-X Control System, Control System, System
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References

- [User Manual](#)

 TrolMaster

 Control System, HCS-1, HCS-1 Hydro-X Control System, Hydro-X Control System, System, TrolMaster

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