

# iPonic™ 624

## Dual-Room Climate Controller



## User Manual

June 2014 Edition  
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# Introduction

Thank you for purchasing the newest edition of **Link4's illustrious** lineup of innovative hydroponic controllers. The **iPonic™ 624** is **Link4's latest** dual-room hydroponic environmental controller that enables you to seamlessly operate and fully integrate all your monitoring devices and equipment in your greenhouse facilities.

Link4 designed the user-friendly **iPonic™ 624** to exceed the demands of indoor growers by creating a state-of-the-art controller that's fast, flexible and functional. **With the iPonic™ 624, you will improve quality** and maximize efficiency. Most importantly, you will have the freedom to focus on your plants and profits.

At Link4, our mission is to provide independent growers with revolutionary control solutions. We understand that growing profitable yields is critical to your success. **That's why we're committed** to developing the best controllers to surpass your expectations.

Unlike the competition, we offer dedicated service and professional support. Our team of highly skilled designers and engineers – who **created the iPonic™ 624** – are available to answer all your questions.

# Theories of Operation

The iPonic™ 624 will control your climate – in two rooms, from one elite touchscreen controller. The ability to operate two rooms is the most innovative part of your new iPonic™ 624. **You can have half the controllers. The sensors will help your iPonic™ 624 monitor and control** the lights, CO2, irrigation, fans, and humidity. Your controller comes with eight outlets, all of which are preprogrammed. Each outlet is programmed to handle a different function. These outlets allow you iPonic to handle all of the system changes and control of your pre-selected environment and all you are left to do is monitor. This consistency and precision will increase the overall efficiency of your grow room.

Do not plug in all of your lights to this controller in the 8 outlets; the channels are programmed for specific jobs.

These outlets are preconfigured to work with certain equipment from your greenhouse, but they are also customizable. This means that you **can re configure your iPonic™ 624 to be uniquely yours and make every** outlet work with what equipment you want.

**An area that your iPonic™ 624 varies from Link4's predecessor, the iPonic 614,** is that this machine does not have a growth cycle. This was a main feature of the 614, but is not a part of the 624.

Monitoring your controller has never been as easy as it is with the **iPonic™ 624. You can monitor your grow room from anywhere on your** smartphone, tablet, or pc. All that you have to do is connect to the **internet and you have full control of your iPonic™ 624 from wherever you** are. You will receive text alerts from your iPonic that will let you know when something unusual is occurring in your grow room. The full functions of your controller will be accessible to you anywhere through this connection.

This controller will extremely reduce the quantity of time that you will be spending at your grow room in front of a controller.

## **Customer Service**

Link4's customer service team is ready to help you out twenty-four (24) hours a day, seven (7) days a week and 365 days a year.

Please write down the model and serial numbers of your iPonic™ 624 so we can better assist you.

For product information, firmware updates and an extensive list of frequently asked questions, please register at the Link4 Cloud (iponic.link4cloud.com). Registration is provided at no charge.

### **Contact Us**

866.755.5465

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support@link4corp.com

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iponic.link4cloud.com

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## Terms and Conditions

**Warranty** – Link4 warrants that the goods sold under this contract will be free from defects in material and workmanship for a period of twelve (12) months after the date of purchase. This warranty will be limited to the repair and replacement of parts, and the necessary labor and services required. **It is expressly agreed that this warranty will be in lieu of all warranties of fitness, and in lieu of the warranty of merchantability.** Any description of the goods contained in this contract is for the sole purpose of identifying them, it is not part of the basis of the bargain and does not constitute a warranty that the goods will conform to that description. The use of any sample or model in connection with this contract is for illustrative purposes only, is not part of the basis of the bargain and is not to be construed as a warranty that the goods will conform to the sample or model. No affirmation of fact or promise made by Link4, whether or not it's stated in this contract, will constitute a warranty that the goods will conform to the affirmation or promise.

Link4 is not responsible for replacement(s) or repair(s), which become defective from user negligence, modification, abuse and/or any types of improper usage. The failure to comply with any of the specifications in the product manual will void the warranty. Our liability to the goods sold, whether on warranty, contract or negligence, will be released upon the expiration of the warranty period when all such liability terminates.

Link4 is not responsible for any loss or claims due to consequential damages caused by the Buyer. Link4 also reserves the right to make any necessary changes to features and specifications, and to the terms and conditions of this warranty.

**Returns** – At Link4 we offer the option to return any product that is purchased and does not meet customer satisfaction. Note that all software is ineligible for return. A credit or a refund of the purchase price paid will be sent to the customer, minus shipping, handling, and any restocking fees associated. Note that discounted products or promotional items returned will receive the original amount that was paid at time of purchase. This is in line with the U.S. Return Policy guidelines, and a payment will be issued to you within 7 business days upon receipt of the return eligible products. This policy applies only to products purchased directly from Link4 Corporation. Link4 products purchased through other retailers must be returned directly to that retailer and handled in accordance with the respective returns and refund policies. For partial returns or damaged goods Link4 reserves the right to credit the customer less than may have been originally paid. Before returning a product, you must first contact Link4 customer service and obtain a RMA number before the end of the applicable return period. Link4 will not accept returns without a RMA number, to obtain this number please call customer services at 714.975.9474.

Visit [link4corp.com](http://link4corp.com) to learn more of the logistics of how to return a product.

**Repairs** – A repair order must also have a Link4 Return Merchandise Authorization (RMA) number. Repairs that are not covered by the warranty will be billed on a material and labor basis. Items that require repairs must be sent to Link4 with a prepaid return shipping label. Link4 is not responsible for damage(s) due to improper packaging or the shipping and delivery of items returned for repair.

**Additional Costs** – It is expressly agreed that the Buyer will reimburse Link4 for any additional costs attributable to changes in the specifications, directions or design of the items furnished, which are requested or approved by the Buyer at Link4's listed retail prices in effect at the time such changes are ordered.

**Governing Law** – The validity of this contract and any of its terms and conditions, as well as the rights and duties of the parties under this contract, will be construed pursuant to and in accordance with the laws of California. The parties specifically agree to submit to the jurisdiction of the courts in California.

# Installation

## Inspect Your Package

The package should come complete per the items listed below. Upon arrival, check the contents with the packing list to ensure that you have all the items, all associated hardware and the necessary tools to begin installation. Make sure nothing is damaged or missing. If there is any visible damage or missing parts, please contact your point-of-purchase customer service department immediately.

## Contents

iPonic™ 624	Qty: 1
Sensor modules with 16 ft. cable	Qty: 2
Preinstalled Internet Communication Module	Qty: 1
Quick start guide	Qty: 1
User manual	Qty: 1



\*D.I.S.M 50ft. Extension cable available from Link4  
P/N 995-0020-00

# Mount Your iPonic™ 624

Find a secure location outside your greenhouse facility to mount your iPonic™ 624 controller. The location should have a sturdy surface to hold the weight of the controller and the additional weight of the equipment power cords. The location should be away from direct sunlight and grow lights. Make sure the area is dry with no condensation, moisture, humidity, rain and extreme temperatures. For your convenience, make sure the controller is in an easily accessible location. Leave at least ten (10) inches of workspace below the unit.

**There are four (4) mounting holes on the outside of the iPonic™ 624 enclosure** to help you attach it to a suitable surface. Make sure you use appropriate tools.

The iPonic™ 624 comes with a 115 VAC power cord. Make sure there is an outlet within approximately six (6) feet. It is highly recommended that you use an outlet that is not shared with other high-voltage equipment. Disconnect all equipment from the iPonic™ 624 **before its initial start-up**.

**Safety Warning:** The iPonic™ 624 can only provide a total of 115 volts with a maximum of 15 amps. The recommended maximum is 12 amps or less. This rating is for both rooms. To avoid electric shock, always keep the hinged door closed and locked when the controller is turned on.

## Connect the Indoor Sensor Modules

The iPonic™ 624 comes with two (2) Digital Integrated Sensor Modules (DISM) – one for each room. The sensors measure temperature, humidity, CO2 and lighting. They come with a 16-foot cable. It is recommended that each sensor is hung in a central location within the greenhouse facility. Ideally, you will want to hang the module near the crop level, near to the center of the controlled environment to get accurate readings. You may want to keep the module away from irrigation emitters, unit heaters and any other type of equipment that may affect the accuracy of the sensor.

**Connect the sensor module at the bottom of the iPonic™ 624. Make sure it is securely fastened.** There are two sensor inputs.

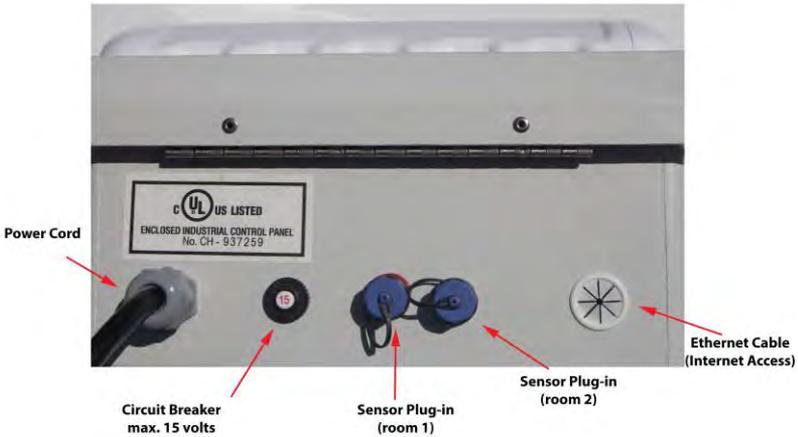
The top of the sensor is the end attached to the cable. For an accurate reading of your lighting, make sure this end faces the indicator lights. Because of the sensitivity of the sensors, you may want to experiment with different places and positions to determine which provides a more accurate reading of your lighting sources.

You may lengthen the sensor cable as needed, but be sure to use an adapter and wire approved by Link4 to make any extensions. If you make any splices to extend the length of the cable, make sure they are waterproof. Use shielded cables. Any water, fertilizer or liquid that seeps into the splices will result in unstable sensor readings.

Keep the cables away from high-voltage wiring, power inverters, motor controllers and mercury arc or sodium lamp circuits.

## Wiring Your iPonic™ 624

The iPonic™ 624 is equipped with sensor plugs at the base of the unit and an opening for the Ethernet cable for Internet access. Additional holes in the top, sides or back of the enclosure can result in condensation or moisture inside the unit, which may cause irreparable damage. Failure to install to Link4's specifications will void the warranty.



# Quick Start Guide

## Configure your iPonic™ 624 in four (4) easy steps!

### Step 1 – Mount Your iPonic™ 624

- Find a suitable place to mount your iPonic™ 624
- Locate the four (4) mounting holes at the base of your unit
- Leave at least ten (10) inches of workspace below the unit
- Use appropriate tools to mount the controller
- Mount the controller to a sturdy surface

Before you turn on your iPonic™ 624, find a secure location for permanent placement near an outlet. Ideally, the iPonic™ 624 should be located near the greenhouse facility in an area that won't be exposed to direct sunlight. Make sure the surface area is sturdy enough for the controller and the additional weight of the equipment power cords. The controller should be mounted in an easily accessible area at the primary user's eye level. Keep your iPonic™ 624 away from condensation, humidity, moisture and extreme temperatures.

### Step 2 – Install The Sensor Modules

- Unwrap the protective packaging
- Uncoil the 16-foot sensor cables
- Attach the plugs into the designated ports
- Screw in the blue plugs securely

For best results, hang the sensor modules from the plant canopy. Bear in mind that the light sensor is located at the top of the module. The module should be close enough to the grow lights to register an accurate reading. To ensure accurate and consistent sensor results, keep the cables away from high-voltage wiring, power inverters, motor controllers and mercury arc or sodium lamp circuits.

### Step 3 – Power Up Your iPonic™ 624

- Find an unobstructed electrical outlet
- Plug in the controller's power cord into the outlet
- Turn on the controller to initiate the **Startup Wizard**

Once you have mounted the unit and installed the sensor modules, you may plug it in and turn on your iPonic™ 624. When you power up your iPonic™ 624 for the first time, the **Startup Wizard** appears.

## Step 4 – Initiate The Startup Wizard

To set up the **Time**, follow the instructions below:

- First, you will be prompted to set up the time
- Use **Soft Button No. 1** to change the hour
- Use the **Navigation Menu** to highlight the hour
- Use **Soft Button No. 2** and **No. 3** to change the minutes
- Use the **Navigation Menu** to highlight the minutes
- Use **Soft Button No. 4** to set up the meridian indicator (AM/PM)
- Use **Soft Button No. 5** to set up the clock preferences (12H/24H)
- Press **OK** to confirm **Time** settings

To set up the **Date**, follow the instructions below:

- After you set the time, you will be prompted to set the date
- Use **Soft Button No. 1** to change the month
- Use the **Navigation Menu** to highlight the month
- Use **Soft Button No. 2** to change the day
- Use the **Navigation Menu** to highlight the day
- Use **Soft Button No. 3** to change the year
- Use the **Navigation Menu** to highlight the year
- Use **Soft Button No. 8** to set the date display mode
- Press **OK** to confirm **Date** settings

Once you have set up the time and date, the **Startup Wizard** will ask if you would like to sync your controller clock to the Internet. Press **Soft Button No. 1** for **Yes** or **Soft Button No. 2** for **No**. For instructions on setting up Internet access, see **Page 10**. To configure your **Basic Equipment Settings**, follow the instructions below:

- The controller defaults to the most commonly used equipment
- Use **Soft Button No. 3** to check or uncheck equipment options
- Use **Soft Button No. 5** and **No. 6** or the **Navigation Menu** to highlight fields
- Use **Soft Button No. 7** and **No. 8** to toggle between **Rooms 1** and **Rooms 2**
- Press **OK** to confirm your settings and proceed to the next option
- You will be asked if you're using a CO2 tank or generator for **Room 1** and **Room 2**
- Press **OK** to confirm settings
- Complete the **Startup Wizard**

## Connect To The Internet

The iPonic™ 624 comes with a preinstalled **Communication Module**.

The controller can be used to access the Internet with a standard CAT 5 cable that can be linked to your router.

**Note:** The Ethernet port for the Internet is inside the iPonic™ 624.

Before proceeding, make sure the Ethernet cable is functioning properly. Perform the following steps to connect your iPonic™ 624 to the Internet:

- Power down the controller
- Open up the hinged door
- Route cable through opening at the base
- Locate the Ethernet port in the upper left corner
- Plug in the cable to the Ethernet port
- Plug in the other end to your router
- Close and lock the controller door
- Power up the controller

Once you're connected to the Internet, the controller will automatically link up to the **Link4 Cloud Server** (iponic.link4cloud.com) and a **Registration Key** will be created for you. Use the instructions below to access the Registration Key:

- From the Main Menu, Press **Soft Button No. 3** or use the **Navigation Menu** to highlight **System Setup**
- Press **Soft Button No. 7** or use **Navigation Menu** to highlight **Communication Setup**
- Press **Soft Button No. 2** or use **Navigation Menu** to highlight **Server Setup**
- View your **Serial Number** and **Registration Key**

Once you have a **Registration Key** assigned, go to the browser on your computer or mobile phone and visit the **Link4 Cloud** (iponic.link4cloud.com). If you haven't done so already, please create an account.

# Remote Access

Additional help can be found on **page 52**.

To set up your controller for remote access through your computer or smartphone, please follow the three (3) easy steps below:

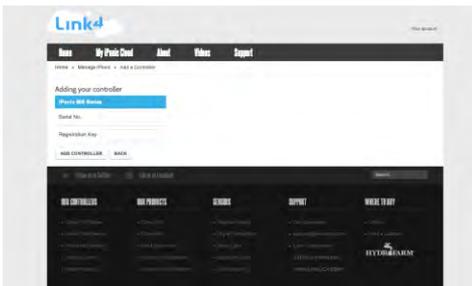
## Step 1 – Log in to your Link4 Account and click on My iPonic Cloud.



## Step 2 – Click on Add a controller to your account



## Step 3 – Enter the Serial Number, Registration Key and select ADD CONTROLLER



Congratulations! You can now remotely access your controller through your computer or smartphone.

# Firmware Update

To update the firmware on your controller, please follow the instructions below:

- From the **Home** screen of your **Link4 Cloud Account**, click on the **Support** tab
- Click on the blue box labeled **iPonic Firmware UPDATE**
- Download the **iPonic Firmware UPDATE**
- Create a **New Folder** on your desktop and name it **PRG**
- Retrieve **iPonic Firmware UPDATE** and move it to your **PRG** folder
- Move the **PRG** folder to an empty **USB** drive
- Safely remove your **USB** drive from your computer
- Insert your **USB** drive into your controller
- Turn the **Navigation Menu** to launch the **Main Menu**
- Press **Soft Button No. 3** or use the **Navigation Menu** to select **System Setup** option
- Press **OK** to confirm selection and proceed to the **System Setup Menu**
- Press **Soft Button No. 5** or use the **Navigation Menu** to select **Advanced** option
- Press **OK** to confirm selection and proceed to **Room Select**
- Use the **Soft Buttons** or **Navigation Menu** to select **Room 1**, **Room 2** or **Shared**
- In the **Advanced Setup** menu, press **Soft Button No. 4** for **Bootload**
- You will be asked to begin **Bootload**
- Use the **Navigation Menu** to answer **Yes**
- Press **OK** to confirm your settings
- You will be asked if you want to **Reprogram**
- Use **Navigation Menu** to answer **Yes**
- Press **OK** to confirm your settings
- You will be asked if you want to **Configure** from **USB** drive
- Use **Navigation Menu** to answer **Yes**
- Press **OK** to confirm your settings
- A status message will appear and the controller will restart

**Warning:** Be advised that your iPonic™ 624 is equipped with a USB port (use the slot on top). For your safety, please shut down and unplug your controller before inserting a USB drive. You can use it to import schedules, install programs and upgrade your firmware. Please refer to the **User Manual** for more information.

# Status Screens

## Main Status Screens

There are three **Main** status screens. The default status screen is divided between two rooms. The top section displays the current status for **Room 1** and the bottom section displays the current status for **Room 2**. If you press the **Home** button, you will receive detailed information on the whole screen for **Room 1**. Press the **Home** button for detailed information for **Room 2**. The name of the equipment is displayed in each of the outputs, as well as the current control status. All of the numerical values shown are samples that will differ for each user. Below is a description of each of the common settings.

### Split screen view featuring two rooms.

Light	CO2	Cool	DeHum
AUTO	AUTO	AUTO	AUTO
ROOM 1	75.9F	919PPM	47%RH
Day Setpoint	65.0F - 80.0F	Target 1500PPM	30RH - 50RH
ROOM 2	76.9F	976PPM	84%RH
Night Setpoint	55.0F - 75.0F		40RH - 50RH
Alarm: [R1]TEMPHLS			03:54PM 06/ 5/2014
Light	CO2	Cool	DeHum
AUTO	AUTO	AUTO	AUTO DHUM

### Main screen view featuring Room 1 in Nighttime Setpoint

Light	CO2	Cool	DeHum
AUTO	AUTO	AUTO	AUTO
ROOM 1	75.8F	918PPM	Target 46%RH
Day SetPoint	65.0F - 80.0F	Set Pt: 30 - 50 RH	1500PPM
Normal			
Alarm: TEMPHL3		107.4W/m2	03:55PM 06/ 5/2014

### Main screen view featuring Room 2 in Daytime Setpoint

Light	CO2	Cool	DeHum
AUTO	AUTO	AUTO	AUTO DHUM
ROOM 2	76.9F	960PPM	84%RH
Night SetPoint	55.0F - 75.0F	Set Pt: 40 - 60 RH	
Stage : Cool		Dehumidify	
		1.4W/m2	03:56PM 06/ 5/2014

# Screen Displays

**Temperature** – The inside temperature of each room is displayed.

**CO2** – The carbon dioxide levels are measured in parts per million in each room.

**Humidity** – The relative humidity is listed in each room as a percentage.

**Day Setpoint** – This is the current Setpoint for heating, which features stages for temperatures and relative humidity, in addition to maximum carbon dioxide levels.

**Night Setpoint** – This is the current Setpoint for cooling, which features stages for temperatures and relative humidity, in addition to minimum carbon dioxide levels.

**AUTO** – Each of the output sections has equipment that is automatically controlled with the **Soft Buttons** or the **Manual Override Switches**. Equipment that is displayed on the status screen is on.

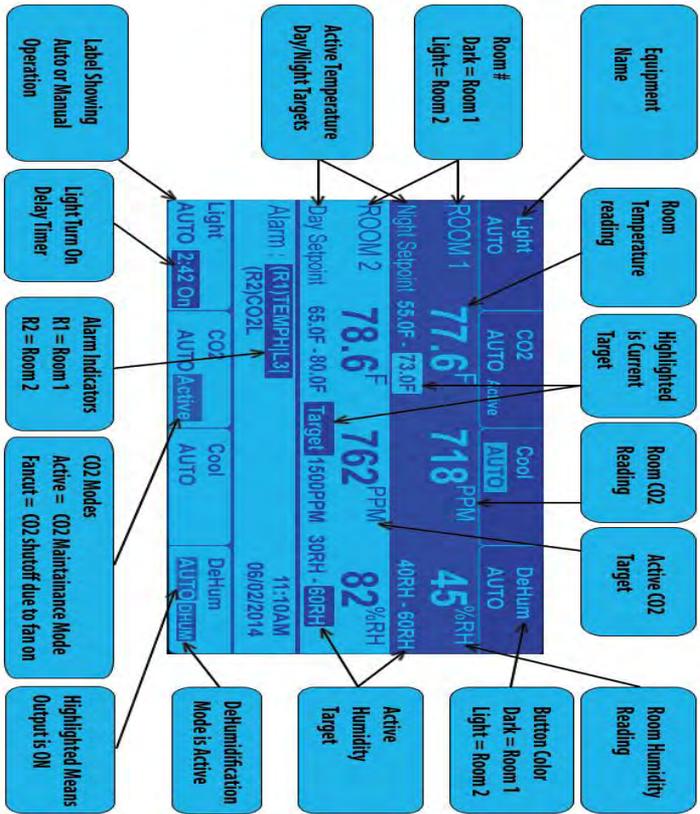
**ON** – Equipment is being manually forced to **ON** with the **Soft Buttons** or the **Manual Override Switches**.

**OFF** – Equipment is being manually forced to **OFF** with the **Soft Buttons** or the **Manual Override Switches**.

**Note:** Be advised that you can control the output by pressing the corresponding **Soft Button**. The inside of the controller also has **Manual Override Switches**. These switches need to be in the **AUTO** position at all times. If they are used to turn **ON** the outputs or to shut **OFF** the outputs, they will override all programmed settings.

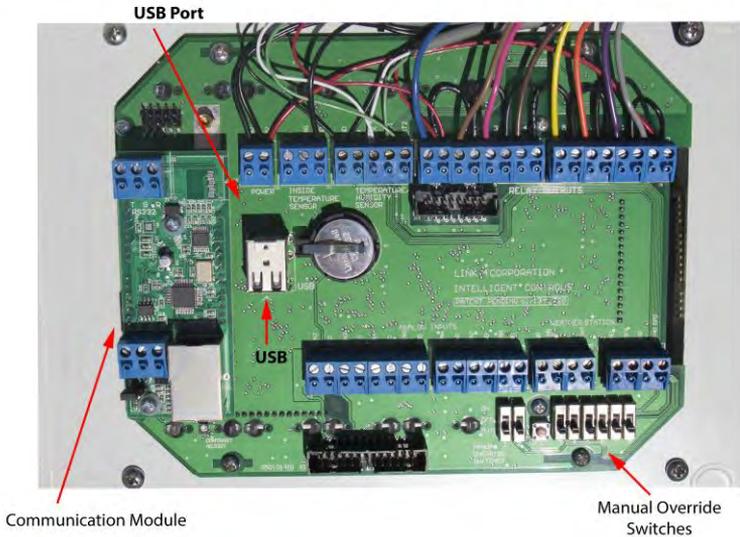
# Screen Overview

The iPonic™ 624 has three main screens. The **Main** status screen is divided into two sections to showcase each room. The other two status screens feature detailed information for **Room 1** and **Room 2**.



## Internal Layout

The diagram below shows how the iPonic™ 624 looks on the inside. There are eight (8) **Manual Override Switches**, a **Reset Button** that clears all configurations, a preinstalled **Communication Module** with an **Ethernet** port and a **USB** slot (use the slot on top). Make sure the power is turned off before opening your controller to avoid electric shock or irreparable damage.



# Before You Begin

## Setpoints

The iPonic™ 624 allows you to use up to three (3) temperature **Setpoints** in a twenty-four (24) hour period. By configuring **Setpoints** at different times of the day, you can regulate the temperature within a range. When a **Setpoint** is in effect within a specific time frame, the controller will activate either a cooling stage or a heating state to return the greenhouse room to normal temperature ranges. The same principle applies when the humidity rises and falls beyond the normal range. Anytime one or more **Setpoints** are active, the subsequent set will begin and the previous one will end.

## Temperature Control

With the iPonic™ 624, you can program a cooling temperature target (**Cool Setpoint**) and a heating temperature target (**Heat Setpoint**) to set the normal temperature range. The cooling and heating equipment is not activated when the greenhouse temperature is within the normal range. Some circulation fans, which are also known as horizontal air flow or HAF fans, may be activated to maintain air movement within the greenhouse environment.

Anytime the temperature within the greenhouse deviates from the **normal temperature range**, whether it's above the **Cool Setpoint** or below the **Heat Setpoint**, the iPonic™ 624 will either enter a cooling stage or a heating stage to **return to normal levels**. With the iPonic™ 624, you can program up to six (6) cooling stages and two (2) heating stages.

When the temperature in the greenhouse rises above the **Cool Setpoint**, the system enters the first stage of cooling (referred to as **Cool 1**). If the temperature continues to rise, the system will enter the second stage (**Cool 2**), then the third stage (**Cool 3**) and so forth. The goal is to keep the temperatures in the normal range.

The same occurs when the temperature drops below the **Heat Setpoint**. The only difference is that there are only two heating stages in this mode.

## Deadbands

Often known as a neutral zone, **Deadbands** are intervals between **temperature stages**. The iPonic™ 624 allows you to set a normal temperature range. If the temperature is above the **Cool Setpoint**, the cooling equipment will be activated to bring the temperature back to the normal stage. The same process occurs when the temperature rises below the **Heat Setpoint**. Configuring a **Deadband Setting** will prevent your temperature-control equipment from oscillating or repeatedly shutting on and off through frequent cycles.

## Programming Instructions

Before you program your iPonic™ 624, make sure the equipment has been properly connected and tested with the **Manual Override Switches** first. Be advised that the switches must be placed back to the **AUTO** position before the controller can activate your equipment.

# Control Panel

The iPonic™ 624 has a **Navigation Menu** with four (4) **Soft Buttons** (**HOME**, **CANCEL**, **OK**, and **BACK**). The functions of the **Menu** and **Buttons** are as follows:



- Use the **Navigation Menu** to highlight a selection. Press **OK** to confirm the selection. The center of the **Navigation Menu** is **NOT** a button. If an alphanumeric field is highlighted, the **Navigation Menu** can be used to increase or decrease the value of the entry.

## HOME



- Brings you back to the **Main** status screen. If changes have been made, the user will be prompted to save the data.

## Cancel



- Pressing **CANCEL** in the middle of an entry will bring the user back up a level without making any changes.

## OK



- Pressing **OK** will prompt the system to accept the selected **MENU** entry or save the user input data.

## BACK



- **BACK** will take the user up one level. User will be prompted to save data if needed.

## SOFT BUTTONS

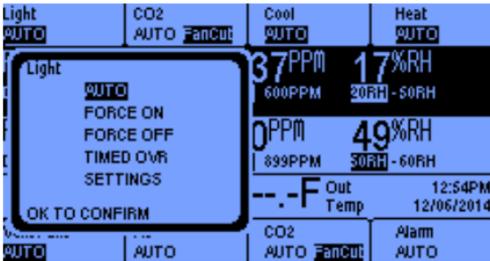


- There are eight (8) **Soft Buttons** surrounding the display. They serve as controls for the outputs and as shortcuts for the **Equipment Settings**.

Be advised that you can control the output by activating the corresponding **Soft Buttons** on the channel. The inside of the controller also has **Manual Override Switches**. These switches need to be in the **AUTO** position at all times. If they are used to turn **ON** the outputs or to shut **OFF** the outputs, they will override all programmed settings. **The display area is not a touch screen.**

## Soft Button Shortcuts

The iPonic™ 624 is equipped with eight (8) **Soft Buttons** that surround the interface. Each of the **Soft Buttons** corresponds to one of the outputs that enable you to control the **Equipment Settings** without using the **Main Menu**.



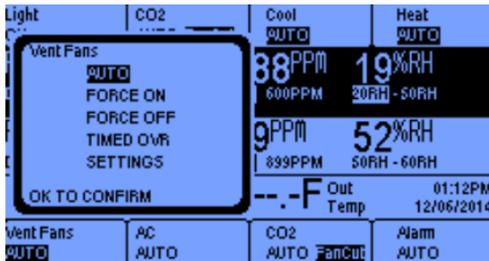
**Soft Button No. 1** is a **Shortcut** to the designated **Equipment Settings** for **Room 1**. In this example, it's the **Light Setpoints**.



**Soft Button No. 2** is a **Shortcut** to the designated **Equipment Settings** for **Room 1**. In this example, it's the **CO2 Setpoint**.



**Soft Button No. 3** is a **Shortcut** to the designated **Equipment Settings** for **Room 1**. In this example, it's the **Cool Setpoint**.



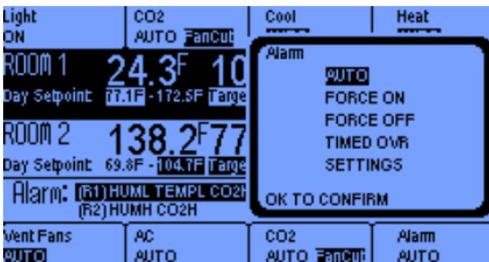
**Soft Button No. 5** is a **Shortcut** to the designated **Equipment Settings** for **Room 2**. In this example, it's the **Ventilation Settings**.



**Soft Button No. 6** is a **Shortcut** to the designated **Equipment Settings** for **Room 2**. In this example, it's the **Air Conditioner Settings**.



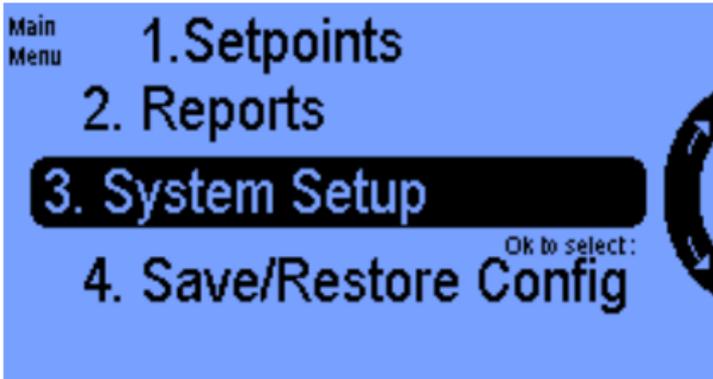
**Soft Button No. 7** is a **Shortcut** to the designated **Equipment Settings** for **Room 2**. In this example, it's the **CO2 Setpoint**.



**Soft Button No. 8** is a **Shortcut** to the designated **Equipment Settings** for **Room 2**. In this example, it's the **Alarm Settings**.

# Top Level Menu

The **Main Menu** will appear when the **Navigation Menu** or **OK** button is activated.



The following four (4) options will appear on the **Main Menu**:

**Setpoints** – This section allows you to configure preferred operating conditions for two greenrooms (see Page 24).

**Reports** – All user data information, graphs and reports are viewable in this option (see Page 30).

**System Setup** - Initial programming and advanced parameters are set here (see Page 32).

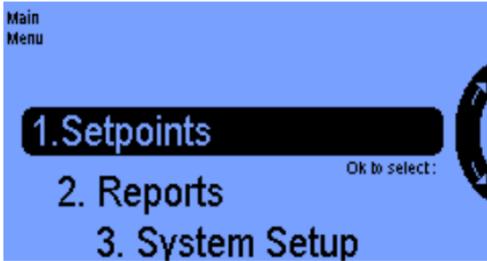
**Save/Restore Configuration** – Configuration data can be saved or restored on a USB drive (see Page 54).

**Stages** – This option is hidden by default unless it's activated in the Advanced settings (see Page 55).

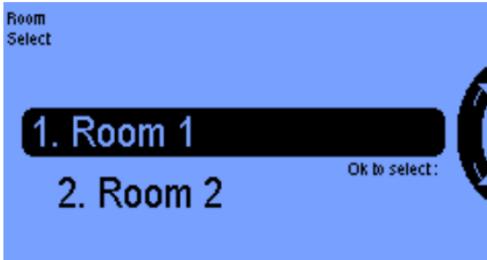
The following pages describe the programming menu in details.

Be advised there are many settings that are room specific (either Room 1 or Room 2) and shared settings (both Room 1 and Room 2).

# 1. SETPOINTS



There are 4 selections in the **Main Menu** to choose from, including **Setpoints**, **Reports**, **System Setup** and **Save/Restore Configuration**. The 5<sup>th</sup> selection, **Stages**, is optional and can easily be activated from the **Advanced** option in the **System Setup** (See Page 45).

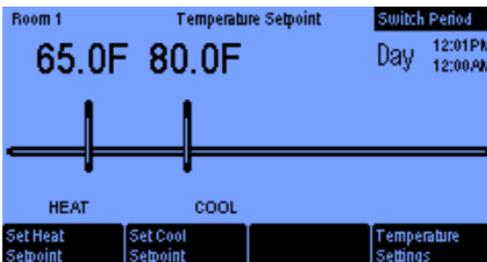


From the **Setpoints** option of the **Main Menu**, you can enter control targets for temperature, humidity, CO2 and lighting for **Room 1** and/or **Room 2**.

## Temperature Setpoint



The **Temperature Setpoint** allows you to program the **Cool Setpoint** and the **Heat Setpoint**, which are your normal temperature ranges.



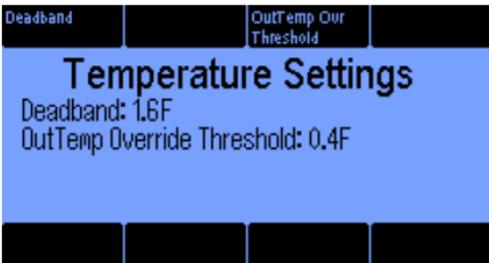
In the **Temperature Setpoint** screen, you can program a cooling temperature target by selecting **Set Cool Setpoint** and a heating temperature target by selecting **Set Heat Setpoint**. If the temperatures are above or below normal temperature ranges, the corresponding heating and cooling equipment will be activated.



The **Set Heat Setpoint** allows you to configure heating settings for your rooms. If inside temperatures drop below the **Heat Setpoint**, the heating equipment will be activated.



The **Set Cool Setpoint** allows you to configure cooling settings for your rooms. If inside temperatures rise above the **Cool Setpoint**, the cooling equipment will be activated.

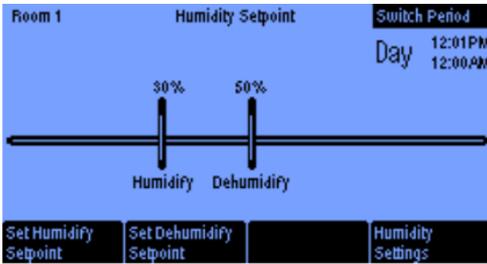


The **Temperature Settings** allow you to configure a **Deadband** for heating and cooling to prevent equipment oscillation.

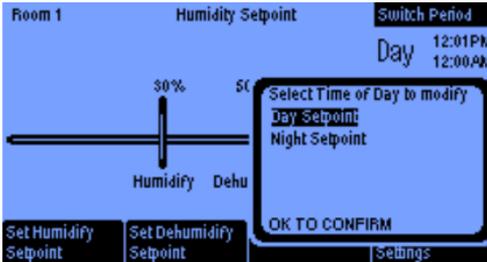
## Humidity Setpoint



The **Humidity Setpoint** option in the **Setpoint Menu** allows you to program control targets for relative humidity levels inside **Room 1** and/or **Room 2**.



The **Humidify Setpoint** allows you to humidify your room when humidity levels fall below control values. The **Dehumidify Setpoint** allows you to dehumidify your room when levels rise above control values. The **Humidity Setpoint** allows you to increase humidity levels.

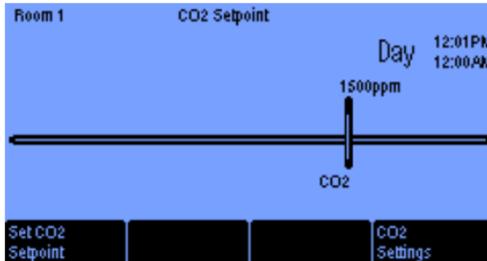


In the **Switch Period** option, you can select which time of day to modify. The **Day Setpoint** allows you to activate the lights to simulate daytime and the **Night Setpoint** allows you to cut off the lights to simulate nighttime. **Humidity Setpoints** can also be programmed for **Day** and **Night Setpoints**.

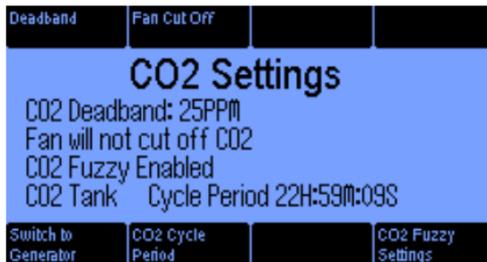
# CO2 Setpoint



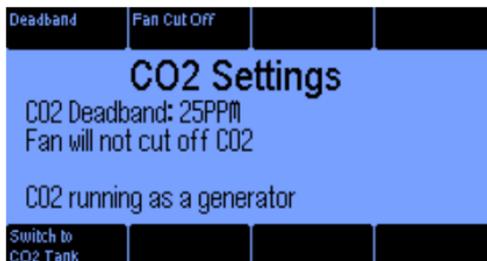
In the **Setpoint Menu**, you can select the **CO2 Setpoint** option to control carbon dioxide levels in **Room 1** and/or **Room 2**.



In the **Set CO2 Setpoint** screen, you can configure carbon dioxide levels for each room. The **CO2 Settings** allows you to set daytime carbon dioxide levels. The CO2 equipment shuts off by default in the nighttime.

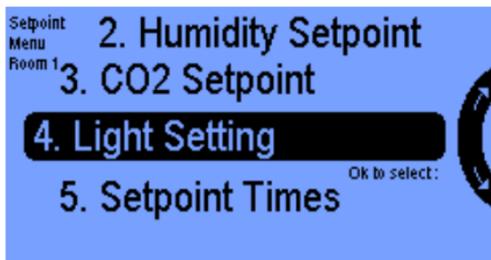


The **CO2 Settings** allows you to customize advanced parameters to control carbon dioxide levels.

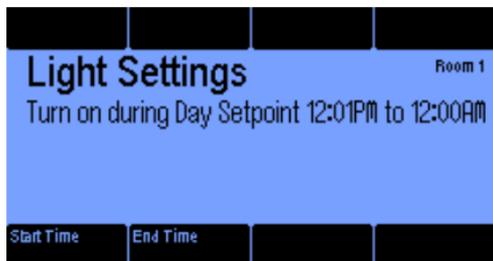


In this screen, you can specify if you're using a **CO2 Tank** or a **CO2 Generator**.

## Light Settings



In the **Setpoint Menu**, select the **Light Setting** to control operating times for light sources in each room.

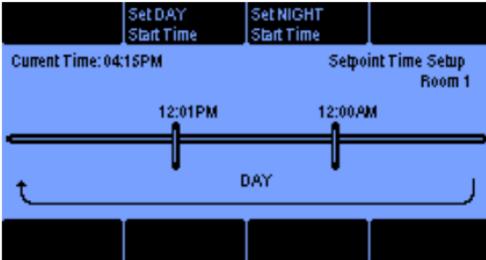


In the **Light Settings** option, you can configure the **Start Time** to turn the lights on to initiate the daytime period. To shut the lights off, you can configure the **End Time** to initiate the nighttime period.

## Setpoint Times



In the **Setpoint Menu**, select **Setpoint Times** to control inside temperatures, relative humidity, carbon dioxide levels and lighting sources.



The **Setpoint Times** settings allow you to program the simulated daytime and nighttime periods with the **Set DAY Start Time** and **Set NIGHT Start Time** options. The lights turn on during the daytime and turn off during the nighttime.

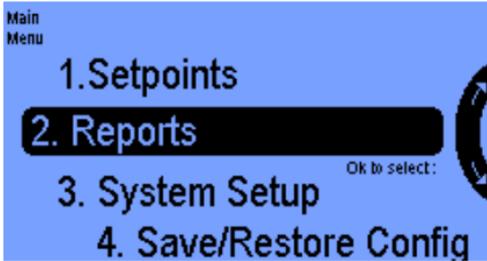


In the **Set DAY Start Time** screen, you can program your daytime settings. The lights will turn on during this time.

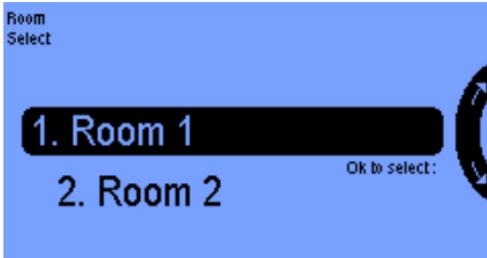


In the **Set NIGHT Start Time** screen, you can program your nighttime settings. The lights will turn off during this time.

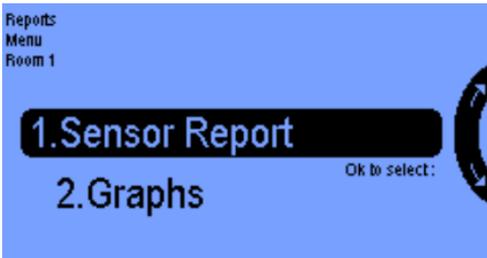
## 2. REPORTS



The 2<sup>nd</sup> option in the **Main Menu** is **Reports**. In the **Reports** option, you can get detailed data about each rooms' performance.



From the **Room Select** menu, highlight **Room 1** or **Room 2** with the **Navigation Menu**.



In the **Reports Menu** setting, highlight the **Sensor Report** option to instantly review all data collected by the sensor modules in numerically summarized formats.

Last 24 Hours

Room 1	Min	Max
Temperature	73.0F	78.5F
Humidity	42%	48%
CO2	530.0PPM	951.0PPM

This screenshot shows a table titled 'Last 24 Hours' with three columns: 'Room 1', 'Min', and 'Max'. The table contains three rows of data: Temperature (73.0F to 78.5F), Humidity (42% to 48%), and CO2 (530.0PPM to 951.0PPM). The table is displayed on a blue background with a navigation wheel on the right.

The **Sensor Report** shows data collected by the sensor modules for temperature, humidity, CO2 and lights. **Soft Button No. 1** and **No. 4** allow you to toggle between the **Last 24 Hours** and **Since Reset** (the last time the unit was powered on or when the **Reset** button was activated).



In the **Reports Menu**, select **Graphs** to view data for temperature, humidity, CO2 and lighting levels in a graphical format.



In the **Temperature** option of the **Graphing Menu**, you can view graphs illustrating temperature, humidity, lighting and carbon dioxide levels.

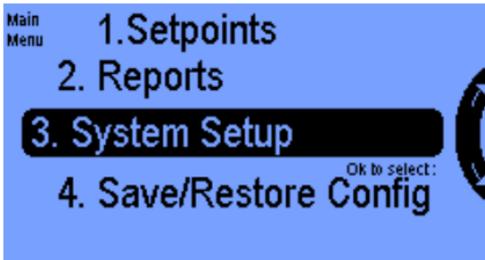


In the **Temperature Graph Menu**, you can view graph illustrations showing data collected by the sensor modules for the **Inside Temperature**, in addition to the **Heat Setpoint** and the **Cool Setpoint** for **Room 1** and **Room 2**.



From the **Select Graphing Period** menu, you can view graphing information collected by the sensor modules **Since Reset** (the last time the unit was powered on or when the **Reset** button was activated), **Last Hour**, **Last 24 Hours** or **Last 7 Days**.

### 3. SYSTEM SETUP



**System Setup** is the 3<sup>rd</sup> option in the **Main Menu** where you can set up greenhouse equipment, sensors and alarms for specified periods of time.



**Systems Setup Menu:** **1. Equipment Setup** allows you to customize each equipment type for every outlet; **2. Sensor Setup** allows you to map the sensor module that is used to read inside temperatures, humidity, CO<sub>2</sub> and lighting; **3. Alarms Setup** allows you to create different alerts for up to 8 channels; and **4. Time/Date Setup** allows you to program the time and date settings.



**System Setup Menu** continued: **1. Advanced** allows you to configure specialized settings for each equipment type in detail and the controller settings; **2. Save/Restore** allows you to save and restore system settings and data files; **3. Communication Setup** allows you to set up Internet access; and **4. Measurement Units** allows you to set the desired units of measurement for temperatures and lighting.

## Equipment Setup



The **Equipment Setup** option allows you to customize each equipment type for every outlet.



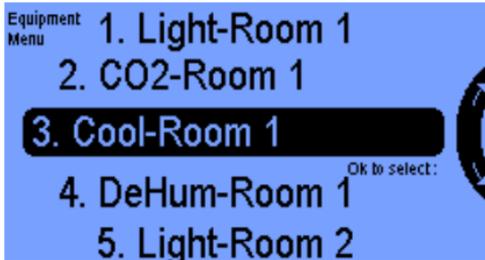
The **Quick Setup** option allows you to configure 8 outputs. It is recommended that you begin with the **Quick Setup**. The **Soft Buttons** that surround the display can also be used.

Equipment	Room 1	Room 2	Uncheck
Light	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Basic Equipment Setting
CO2	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
Cool	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
Heat	<input type="checkbox"/>	<input type="checkbox"/>	
DeHum	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
Hum	<input type="checkbox"/>	<input type="checkbox"/>	
Imo Pump	<input type="checkbox"/>	<input type="checkbox"/>	

The **Basic Equipment Setting** screen shows factory defaults that can be checked or unchecked by toggling with the **Soft Buttons**. The only restriction is that there can only be 8 checked boxes, which correspond to the outlets.



The **Advanced** option allows you to customize the settings for each equipment type in detail.



The **Equipment Menu** options matches the 8 outlets on the controller. You can also select the room the equipment controls.



The **Equipment Menu** has 8 equipment settings for each room. The procedures for setting up the **Lights** for **Room 1** will be examined in the next four diagrams. The same process applies to the other equipment options.



The **Equipment Settings Light** screen also applies to other equipment options. For each equipment type, you can set the override parameters, customize the equipment type (or function) and select the room the equipment is located in.



The **Override Setup Light** screen applies to the other equipment types. This setting allows you to force the equipment to turn on or off, regardless of the programmed setting.



The **Override Duration** screen can be programmed to turn on or off at a specified start time until it ends. After that, the output will revert back to **AUTO**.

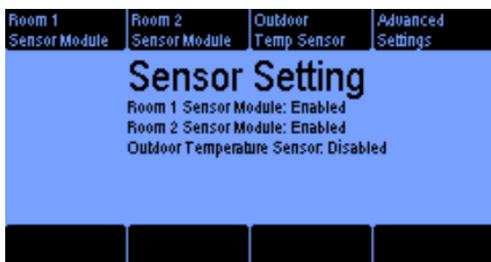


If enabled, the **Override Duration** setting can be set to occur at the designated start time. It can be programmed to operate **Daily** or **One Time**. The **Override** will default to **Disabled** after that. Once the output has been overridden, the indicator will change from **AUTO** to either **ON** or **OFF**.

## Sensor Setup



**Sensor Setup** is the 2<sup>nd</sup> option from the **System Setup Menu**. It allows you to program sensor modules to read inside temperatures, humidity, CO<sub>2</sub> and lighting.



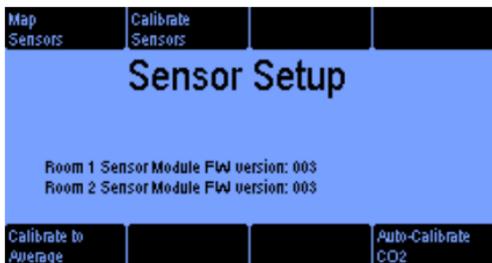
The **Sensor Setting** option allows you to map the sensor module that is used to read inside temperatures, humidity, CO<sub>2</sub> and lighting.



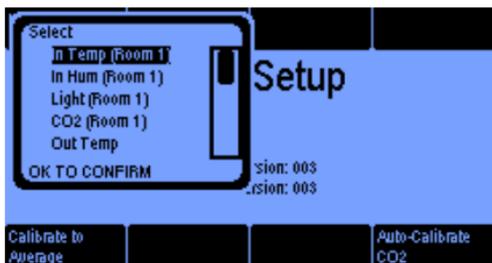
**Sensor Module Settings** can be **Enabled** or **Disabled** with programmable configurations to read inside temperatures, humidity, CO<sub>2</sub> and lighting.



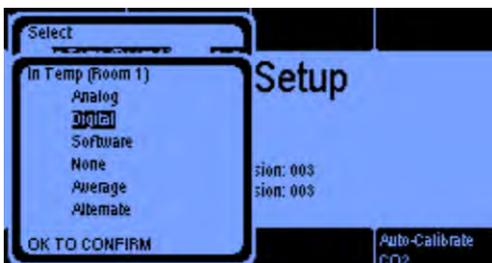
**Outdoor Temperatures Settings** can be **Enabled** or **Disabled** with programmable configurations to read outside temperatures, humidity, CO<sub>2</sub> and lighting.



The **Sensor Setup** screen in the **Advanced** menu allows you to program the temperature, humidity, CO2 and light configurations for each sensor.



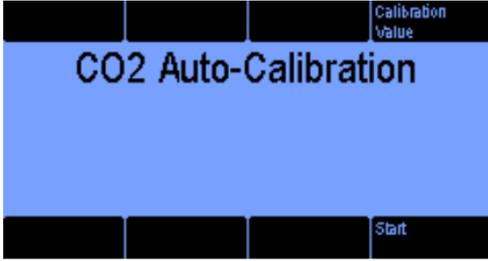
In the **Sensor Setup** screen, you can manually assign sensors to inputs on your controller.



After you confirm your settings in the **Sensors Setup** screen, you can assign it to a specific input.

Previous	Next	Edit	
Sensor Calibration			
SENSOR	RAW	CAL	ADJ
CO2 LSB (Room 1):	1.0	1.0	1.0
In Temp (Room 2):	76.9F	0.0F	76.9F
Humidity (Room 2):	43%	40%	83%
Light (Room 2):	0.1W/m2	16.6	1.4W/m2

The **Sensor Calibration** option allows you to manually adjust collected data. The **Raw** value is the direct reading from the sensor. The **CAL** value is added to the **Raw** value to generate the **ADJ** value. The **ADJ** value will be reflected in the status screen.



From the **Sensor Setup** option, you can calibrate the sensor to a specific CO2 measurement reading. This is achieved by putting the sensor outside and pressing **Start**. It will automatically calibrate to the CO2 outside which is always a default setting of 400.

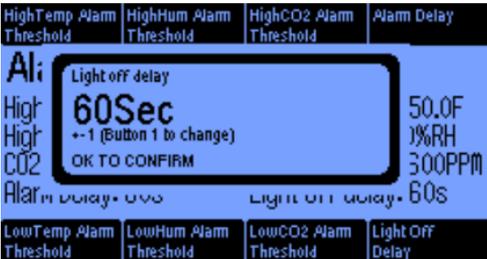
# Alarms Setup



**Alarms Setup** is the 3<sup>rd</sup> option of the **Systems Setup Menu** that allows you to create different alerts for up to 8 channels.



The **Alarm Settings** features 6 alerts that can be designated to warn you of high and low temperatures, high and low humidity, and low carbon dioxide levels. An **Alarm Delay** is the amount of time an undesirable condition exists before the alarm sounds off to take corrective action.



The **Light Off Delay** is related to inside temperatures for the room. Lights are a source of heat that could raise temperatures beyond acceptable levels. If the temperature rises above the **Heat Setpoint**, you can configure the lights to shut off at a specific time.

## Time/Date Setup



The **Time/Date Setup** is the 4<sup>th</sup> option of the **System Setup Menu**. This option allows you to change the time and date.



From the **Set Time & Date** option, you can set the time, set the date or synchronize your controller with the time clock on the internet.



The **Internet Time Server** option allows you to synchronize the time and date of your controller with the time and date on the internet. This can only be done after you manually set up the time and date.

## Advanced



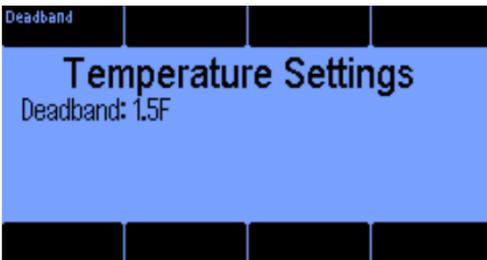
**Advanced** is the 5<sup>th</sup> option of the **System Setup Menu**.



Each of the selections in the **Advanced Setup** screen allows you to customize different functions. For more information, please see the examples below.



The **Humidity Settings** option allows you to set the time for the override to remain active and/or inactive. The **Low Outside Temperature Threshold** allows you to configure the override to activate if the temperature falls below programed levels. **Deadband** settings can be set to prevent frequent stage changes.



Temperatures may fall outside **Heat** and **Cool Setpoints**. To bring temperatures back to normal without damaging your equipment, you can configure **Deadband** settings to initiate incremental stage changes.



The **CO2 Settings** screen allows you to program a **Deadband** to prevent equipment from turning on and off, set a **Fan Cut Off** time to not waste carbon dioxide, switch between a CO2 tank and/or generator, and configure all cycle times.



Your CO2 equipment will not run when the **CO2 Fan Cut Off** option is enabled. This will prevent you from wasting carbon dioxide.



The **CO2 Cycle On Time** allows you to schedule the time when carbon dioxide is injected into the room from a tank.



The **CO2 Cycle Off Time** is set to shut off to allow the carbon dioxide to fill the room to avoid saturation.



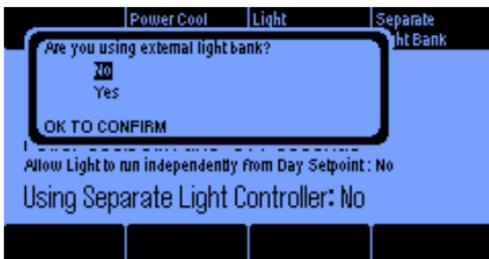
The **Light Settings** are advanced features that allow you to prevent equipment damage if there's a power surge, control lighting for the **Day Setpoint** and add additional light sources.



The **Power Cool Down Time** is a safety feature that protects your equipment. When you plug in the controller or when there is a power surge, there is a delay of up to 15 minutes before the light banks will be turned on.



The **Light Settings** operate concurrently with your **Day Setpoints**. You can also configure your lights to run separately.



The **Light Settings** allow you to add external light sources that are not run by the controller.



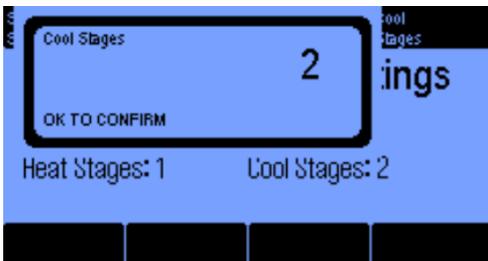
The **Air Exchange Settings** allows you to program your ventilation system to circulate fresh air inside your growing environment.



The **Advanced Stage Settings** allows you to go into the options for situations that occur less often. Here you will have your settings for more uncommon occurrences. Ex. High fans for a hot day. These are here to help avoid damage to your crop.



There are 6 stage settings to prevent equipment damage, including two **Heat Stages** and 4 **Cool Stages**. The delay is the time that it takes for the advanced settings to begin once they are put into use instead of the normal temperature settings.



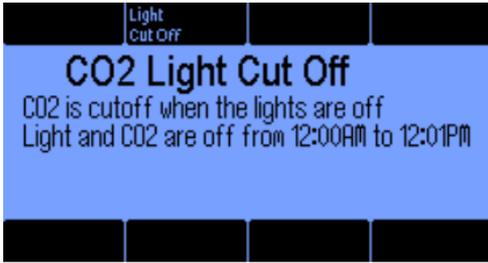
In the **Advanced Stage Settings**, you can configure the number of cool and heat stages to prevent oscillation.



The **Advanced Setpoint Settings** allow you to either **Enable** or **Disable** the **CO2 Night Setpoint**, **DIF Setpoint**, **Ramping** and **CO2 Fuzzy Settings**.



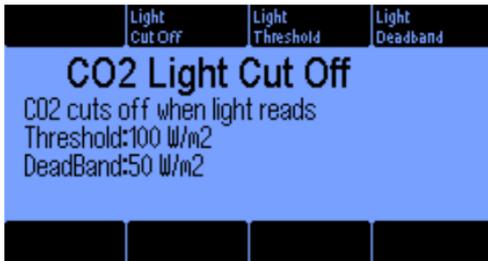
The **CO2 Night Setpoint** allows you to maintain a specific CO2 level during your night setpoint. The **DIF Setpoint** allows you to set a 3<sup>rd</sup> time period for use on occasion when the normal settings are not useful. This setting is not used very often. **Ramping** allows you to set gradual changes in between temperatures and **humidity's** when changing between setpoint periods. Enabling **CO2 Fuzzy Settings** is when the user modifies carbon dioxide levels based on the needs of the room rather than a fixed **Setpoint**.



The **CO2 Light Cut Off** allows you to shut off carbon dioxide when the lights are turned off.



The **CO2 Light Cut Off** option allows you to cut off carbon dioxide when the controller turns the lights off or when the room is dark (if the lights are controlled by the unit).



The **CO2 Light Cut Off** option allows you to shut off carbon dioxide based on the level of darkness in the room.



The **Advanced Setup** menu allows you to configure the settings on your controller, clear data, enable user passwords, bootload and run diagnostics. To **Bootload** is to begin updating your controller with Link4's newest software. By selecting the **Start Wizard Enable** you can restore all default settings to your iPonic.



The **Back Light Time** sets the lighting on the screen of your controller. The **Button Light Time** operates the navigational buttons on your controller.



The **Controller Version** is the same screen that appears when your unit is activated. It contains information about your iPonic™ 624, including the serial number. This latest version operates two separate rooms.

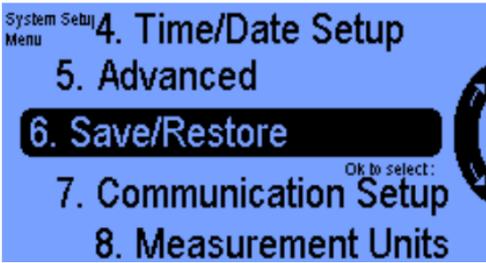


In the **Advanced Setup** menu, you can clear all your data, delete all saved files or restore factory defaults and initiate the **Startup Wizard**.



In the **Diagnostics** mode, you can perform tests and receive diagnostic information for troubleshooting. Using this screen would be most helpful with a call to the Link4 customer service helpline.

## Save/Restore



**Save/Restore** is the 6<sup>th</sup> option in the **System Setup Menu**. All settings and data files can be saved on a USB drive. This option is also the 4<sup>th</sup> selection of the **Main Menu**.



In the **Save/Restore Configuration** option, you can save and restore system settings and data files. In the **Save Log Files** option, you can save configuration logs of controller events to a USB drive.



The **Save and Restore Configuration** option allows you to store settings for different crops and seasons with the ability to restore deleted programs.



You can enter a file name by pressing the corresponding letters with the **Soft Buttons**. Press **OK** when you're done.



From the **Save and Restore Configuration** menu, you can select specific files to store and recall.



The **Save Log Files** screen allows you to save the data measured by the sensors in .csv or .xml format. The information can be viewed in Excel.



The **USB Data Log** can be enabled to transfer information to a USB drive. **The Log File Format** allows you to choose between .csv and .xml. **The Set Data Logging Period** can be set for a specific time.

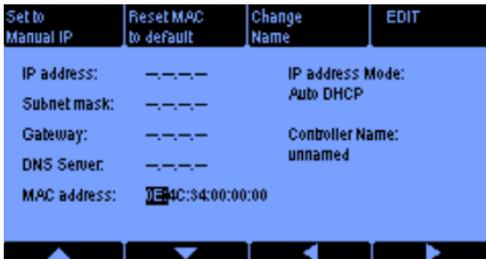
## Communication Setup



**Communication Setup** is the 7<sup>th</sup> option in the **System Setup Menu** that allows you to configure your controller to connect to the Internet for remote access.



From the **Communication Setup Menu**, you can configure your controller to be accessible from your PC with the **IP Address** on your router.



Your controller can be accessed remotely through the internet. Once you plug in your Ethernet cable, the settings from your router will appear. You can also manually enter all the values by pressing **Soft Button No. 1** to populate router information. See Page 13 for more information.



You will need a **Registration Key** to access the **Link 4 Cloud**. From the **Server Setup** option, you can obtain a new **Registration Key** by selecting **Reset Registration Key**. See Page 13 for more information.

## Measurement Units



**Measurement Units** is the 8<sup>th</sup> option in the **System Setup Menu**, which allows you to set desired units of measurement for temperatures and lighting.



From the **Measurement Units Setup** option, you can select Fahrenheit or Celsius for temperatures and W/m<sup>2</sup> or klux for light units.

## 4. SAVE/RESTORE CONFIGURATION



**Save/Restore Configuration** is the 4<sup>th</sup> Option in the **Main Menu**. It allows you to save and restore system settings. It is also the 6<sup>th</sup> option in the **System Setup Menu**.



The **Save and Restore Configuration** allows you to store settings for different crops and seasons with the ability to restore deleted programs.



The **Configuration** setting allows you to save different files and programs that can easily be restored.

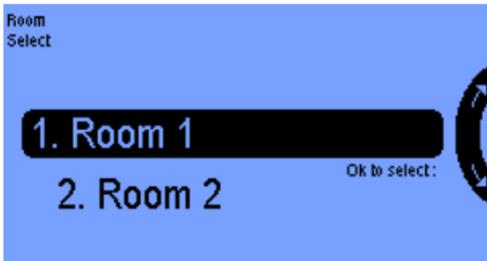


From the **Save and Restore Configuration** menu, you can select specific files to store and recall.

## 5. STAGES



**Stages** are the 5<sup>th</sup> option of the **Main Menu**. This selection is optional. It is a shortcut to the **Equipment Setup Menu**. It can be enabled in the **Advanced** settings.



From the **Room Select** menu in the **Stages** option, you can control the temperature and humidity settings for **Room 1** and/or **Room 2**.



The **Assign Stages** option allows you to set temperature preferences based which equipment you have activated.

	Setup			
Stages →	H1	N	C1	C2
Cool	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
DeHum	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

This option allows you to control temperatures for each room separate from the other.



From the **Assign Stages** option, you can set humidity levels by selecting **Humidity Stages**.

	Setup		
Stages →	Humi dify	De-Hum	Cold De-Hu
Cool	No Change	No Change	No Change
Humidify	Override On	Override On	No Change

This option allows you to program control settings for humidification and dehumidification processes. After humidification and dehumidification settings have been set, you can choose to **Override** your settings for specific humidity levels.