iPonic 624 setting up Setpoints & Stages

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.

Here is an example of a setpoint worksheet for temp & relative Humidity

SET POINTS	START TIME	TEMPERATURE		RAMP TIME		HUMIDITY	
		Low Set Pt. (°F/°C)	High Set Pt. (°F/°C)	(min)		Low Set Pt. (%)	High Set Pt. (%)
1							
2							
3							

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.

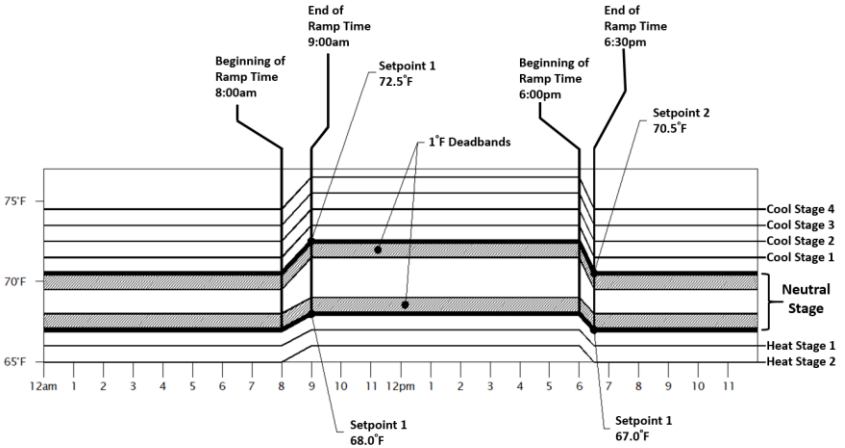
Deadbands

Often known as a neutral zone, **Deadbands** will prevent the equipment from shutting off when the temperature returns slightly within the normal 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 off and on.

Ramping

In addition, you have the option of a temperature **ramp** between the setpoints. Each setpoint time period begins with a Ramp time. The benefit of ramping allows for you to make smooth transitions within the greenhouse so that the plants don't experience temperature shock. Ramping also saves energy, which translates directly into lower operating costs.

In the example below, the start time is 8:00a with a 60-minute ramp time. The ramp time enables a smooth transition of the target temperatures between the setpoint time periods. Of course, the ramp times can be set to 0 and in this case there will be an immediate step transition in the set points. This is best explained by the illustration shown below.



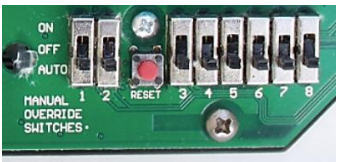
In this Example:

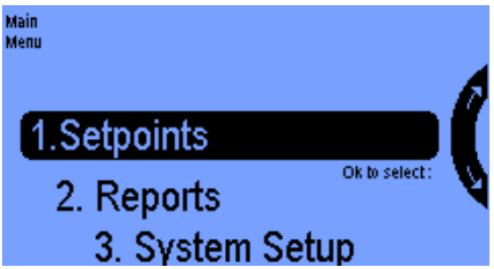
Setpoint 1 is set to 9:00am with a 60minute Ramp, Temp is set as 68 to 72.5°F

Setpoint 2 is set to 6:30pm with a 30minute Ramp, Temp is set as 67 to 70.5°F

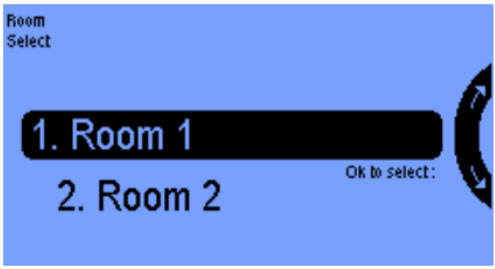
Programming Instructions

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.



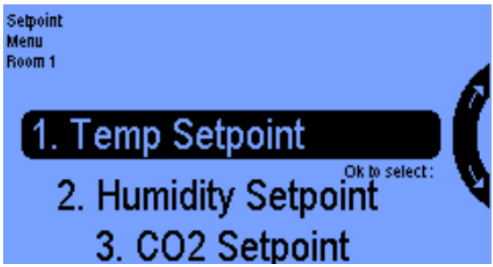


There are 4 selections in the **Main Menu** to set your **Setpoints** select option 1

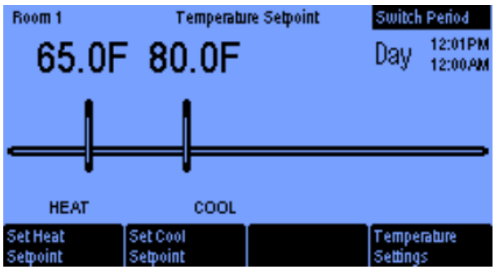


From the **Setpoints** option of the **Main Menu**, you can enter control targets for temperature, humidity, CO2 and lighting for **Room 1** and/or **Room 2**.

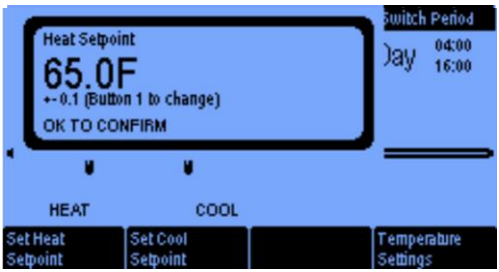
Temperature Setpoint



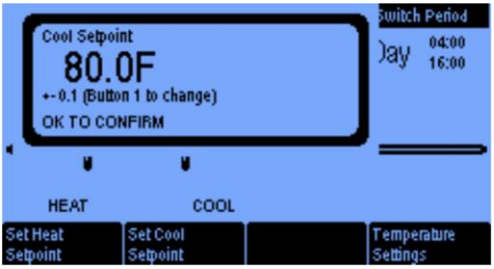
The **Temperature Setpoint** allows you to program the **Cool Setpoint** and the **Heat Setpoint**, which are your normal temperature ranges.



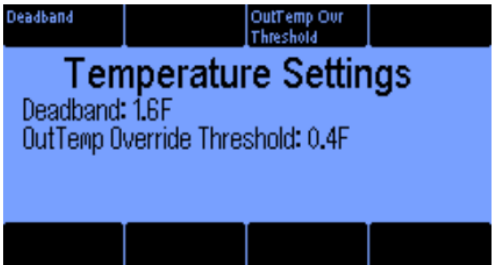
In the **Temperature Setpoint** screen, you can program a cooling temperature target by selecting **Set Cool Setpoint** and a heating temperature target by selecting **Set Heat Setpoint**. If the temperatures are above or below normal temperature ranges, the corresponding heating and cooling equipment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



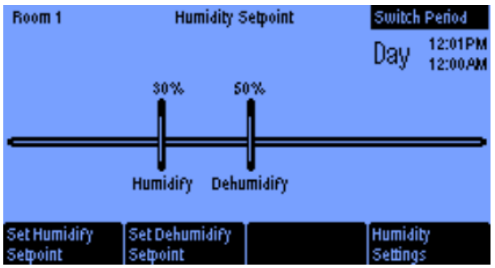
The **Set Cool Setpoint** allows you to configure cooling settings for your rooms. If inside temperatures rise above the **Cool Setpoint**, the cooling equipment will be activated



The **Temperature Settings** allow you to configure a **Deadband** for heating and cooling to prevent equipment oscillation, also you can set the Out Temp Override Threshold for Cold Dehumidification.

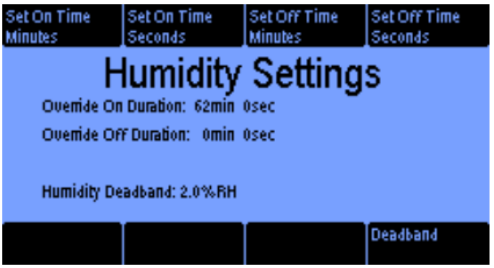
Humidity Setpoint

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**.

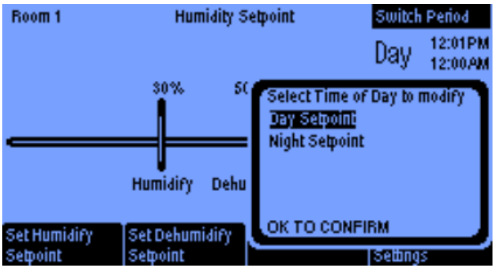


The **Humidify Setpoint** allows you to humidify your room when humidity levels fall below control values. The **Dehumidify Setpoint** allows you to dehumidify your room when levels rise above control values.

Humidity Settings is a shortcut to advance humidity programming.



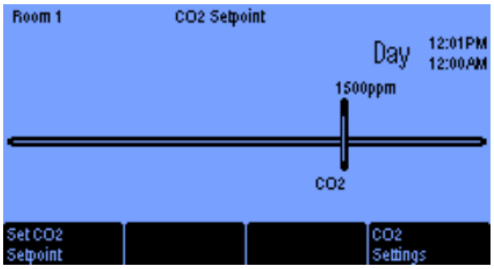
You can set an **On Time** and an **Off Time** in minutes and seconds which will create a cycle for humidity control. If you do not want a cycle and want your control to run nonstop till your setpoint is reached, set the off time to 0 minutes 0 seconds.



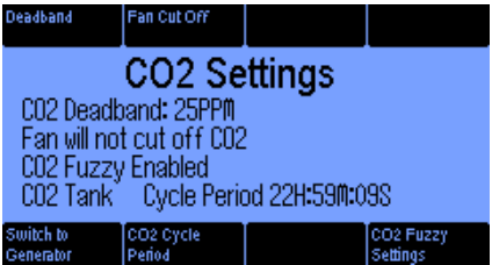
In the **Switch Period** option, you can select Day or Night Relative Humidity Setpoints to modify

CO2 Setpoint

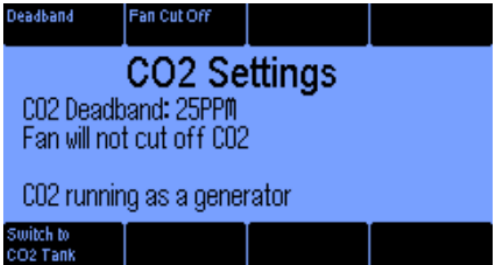
In the **Setpoint Menu**, you can select the **CO2 Setpoint** option to control carbon dioxide levels in **Room 1** and/or **Room 2.**



In the **Set CO2 Setpoint** screen, you can configure carbon dioxide Setpoints for each room. The **CO2 Settings** allows you to set daytime carbon dioxide Setpoints.
Note: 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**.

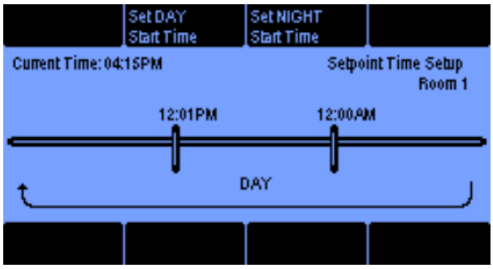
Light Settings

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 the Time you're Day and Night Setpoint begins.
You can also have a time for the 3rd Setpoint DIF, but it has to be enabled in Advance Setpoint Settings in the Advance Setup of Room 1 or Room 2 (pg. 44)

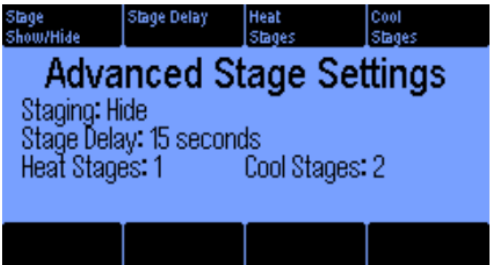


The **Setpoint Times** settings allow you to program your Daytime period. The lights turn on during the daytime and turn off during the nighttime.

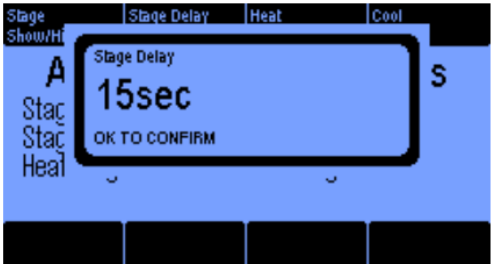
For example your day can be 8am to 5pm or it can be 7pm to 5am whatever time value you choose with a 24 hour period.

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

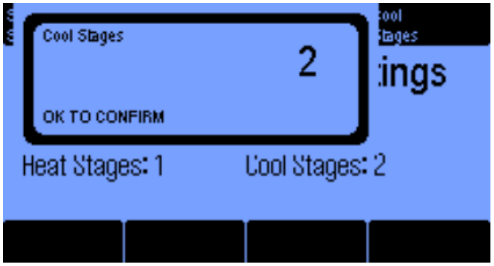
In the **Set NIGHT Start Time** screen, you can program your nighttime settings. The lights will turn off during this time.



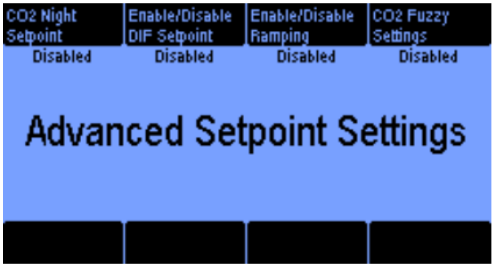
The **Advanced Stage Settings** allows you to show your Stage Screen on the Main Menu, set a Stage Delay, and assign the quantity of Heat and Cool Stages you Wish to use.



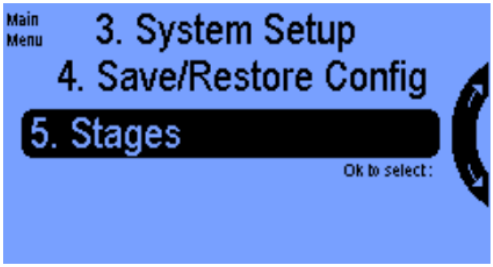
The **Stage Delay** is used to set a delay between stage changes, If you have an unsealed room using vents, dampers and fans you would want vents or dampers to open before fans turn on.



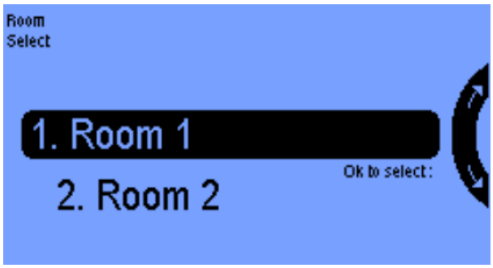
Cool Stages / Heat Stages
There are 6 temperature stage settings, you can have 2 heat stages and up to 4 cool stages to control your environment. The **Heat Stage** button is where you would set the number of heat stages and the **Cool Stage** Button is where you would set the number of cool stages you wish to use.



Ramping allows you to set a time that gradually changes the values of temp and humidity while changing between setpoint time periods.

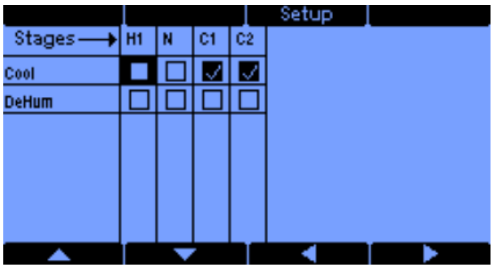


Stages are the 5th option of the **Main Menu**. This selection is optional. It is a shortcut to the **Equipment Setup Menu**. It can be enabled in the **Advanced** settings.
You would hit OK->System Setup->10. Advance->Room 1 or 2-> 5. Advance Stage Settings ->then press button 1 to show the stages on Main Menu.

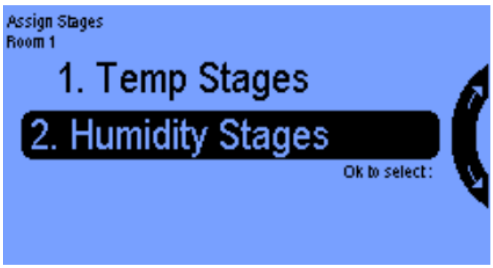


From the **Room Select** menu in the **Stages** option, you can control the temperature and humidity settings for **Room 1** and/or **Room 2**.

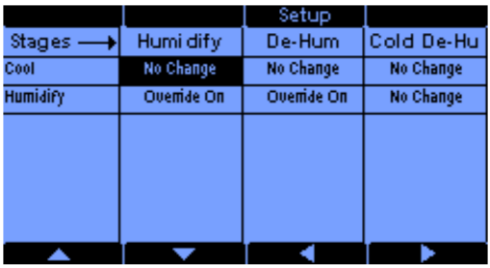
The **Assign Stages** option allows you to set temperature preferences based which equipment you have activated.



This option allows you to control temperatures for each room separate from the other. Use the arrows to move the highlighted cursor, then press the Setup button to set the output to be On or Off for that stage. The Checkmark in box symbolizes ON no Checkmark OFF



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



This option allows you to program equipment for relative humidity control. You have 3 options, **Humidify**, **De-Hum** and **Cold De-Hum**. Use the arrows soft button 5,6,7,8 to move the highlighted cursor, then press the Setup button to set the output to be **Override On**, **Override Off**, or **No Change.**
You can use equipment for both Temperature and Relative Humidity Control, just remember that Relative Humidity Control overrides Temperature Control.