



EZ-400 Vivarium Controller

Startup Guide



Contents

<i>Important Information! Read Before Using This Product</i>	1
General Statements	1
Warnings and Precautions - Read First!	1
Limited Warranty.	2
<hr/>	
<i>Getting Started</i>	3
Overview	3
Rear Panel	4
Getting Around the User Interface	4
Navigation Keys	5
Menu Navigation	5
Useful Status Display Menus	8
Connection and Installation	9
Placement	9
Connections	10
Summary Steps for EcoZone Controller Setup	10
Select the EcoZone.	11
Set The Date and Time	12
Review and Modify AC Line Operating Modes	12
Review and Modify Probe Type Defaults	16
<hr/>	
<i>Essential Functions Reference</i>	24
Setup EcoZone	24
Setup AC Lines	25
Setup Line Mode	25
Lighting Line Modes - Settings	25
Lighting OnTOD.	26

Lighting OffTOD	26
Lighting Ramp	27
Lighting PwrMax	28
Lighting PwrMin	28
Lunar New Moon	29
Temperature Control Line Modes - Settings.	29
Temp Hi	30
Temp Low	30
Hi TOD	31
Low TOD	31
Ramp	31
Seasonal Transition	32
Control Probe.	33
Control Prop Power	33
Control Hysteris.	33
Mister and Auto-Mister Line Mode - Settings	34
Mist Duration	34
Mist Control Interval	34
Mist On TOD<1-6>	35
Software Update Procedure	35

Important Information!

Read Before Using This Product

General Statements

The EcoZone Vivarium Controller is an electrically operated device, and can be used to power multiple high-wattage devices, such as lamps, heaters, and the like. As such, there are certain inherent risks of shock, fire, or other loss that could result from improper use. Please review and adhere to all safety and use precautions before using this product.

If you have any questions or need help, you can contact us directly either by phone or via email. Call or write anytime, and for phone support, please include a detailed message and the best way to reach you.

email: support@ecozonevivarium.com

Phone: 408 960-1069

Products can be returned for a full refund within 30 days of purchase. Please contact us first for an RMA number before returning any products.

Warnings and Precautions - Read First!

WARNING - ELECTRICALLY OPERATED PRODUCT.

FIRE OR ELECTRICAL SHOCK MAY RESULT FROM MISUSE. FOR INDOOR USE ONLY!

- The Ez400 Controller power input requires a grounded (3-prong) outlet for safe operation. Do not defeat the circuit ground, or risk of shock could occur!
- Do not overload the AC Line outlets! Each outlet can supply no more than 450W of rated load. Exceeding the ratings can cause the Ez400 to fail, which could result in an unsafe condition for either yourself or your animals!
- Product is for indoor use only. Do not use in wet or damp environments.
- Ventilation is required for proper functioning. Do not cover the unit or otherwise block airflow around it.
- Do not use dimming or proportional power control on non-dimmable loads! Use of dimming or proportional power control on non-dimmable loads can cause damage to the Ez400 or the non-dimmable load device, and could result in an unsafe operating condition.

As a precaution, dimming and proportional power control are disabled by default. Only enable dimming or proportional power control after confirming that your device can be used in this mode. If in doubt as to the support for dimming by a particular device, please consult the device manufacturer first, before attempting to dim the device.

Limited Warranty

EcoZone Technologies LLC warrants this product to be free from defects in workmanship and materials for a period of one year from the date of purchase by the original purchaser. During this warranty period, EcoZone Technologies will repair or replace the unit, at our discretion. The warranty is limited to the replacement of the product, and does not cover other losses, incidental or otherwise, including loss of profit, goodwill, or loss of livestock associated with product failure.

EXCEPT TO THE EXTENT EXPRESSLY PROHIBITED BY APPLICABLE LAW, THE FOREGOING LIMITED WARRANTY IS IN LIEU OF ANY AND ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING LOSS OF PROFIT, GOODWILL, OR OTHER LOSS ASSOCIATED WITH THE USE OF THIS PRODUCT.

Getting Started

Overview

Thank you for purchasing the EcoZone Vivarium Controller!

The Ez-400 combines advanced power control with complete programmability to create a truly natural habitat for your herps.

Ez-400 is the first vivarium controller which allows all system parameters on a monthly basis, including all of the temperature, lighting, and misting parameters, making it easy to reproduce the natural seasonal variations seen in your herps native habitat.

Our programmable ramp durations for the temperature and lighting levels allow for a more realistic, gradual transition from dawn, to mid-day, to dusk, and of course, all of these advanced parameters can all be varied on a monthly schedule.

You get all this and more, and with new software features coming regularly, check the website for updates and enhancements at:

www.ecozonevivarium.com

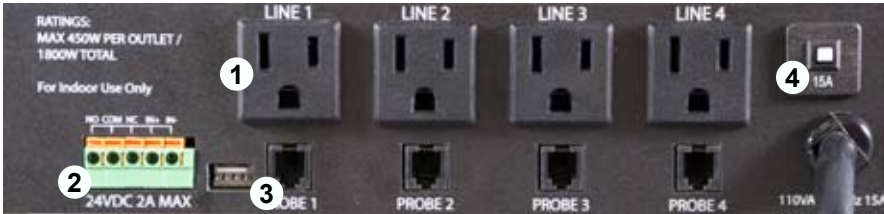
Front Panel



1. LCD Display - User interface for controller setup and status
2. Navigation Keys - Back, Prev, Next, Enter
3. Network Connector - 10/100 Ethernet interface, used for remote management, monitoring,

and control via HTTP, and for software upgrades.

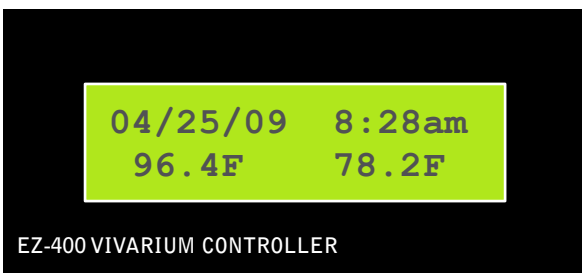
Rear Panel



1. AC Line Outlets - Supplies power to the devices to be controlled
2. I/O Connector - Normally Open, Normally Closed output, and input contact closure sensor
3. Sensor Probe Connector - Connect temperature-only or RHT Digital Humidity+Temp probes (depending on Ez400 model)
4. AC Line Breaker

Getting Around the User Interface

The EZ400 LCD interface menus allow you to view the unit status, or to edit/view the unit setup.



The main display is a summary status which provides date/time, and the current temperature and Humidity for the first temperature probes (probe 1 default). This display can be customized in Controller Setup - Unit Misc.

Navigation Keys

- ◆ **NEXT** ▼ or **PREV** ▲ keys to scroll thru the menus. When in “edit” mode, these keys will select the next/prev item, or increment/decrement the highlighted value.
- ◆ **ENTER** ► key is menu context sensitive, and is used for the following actions:
 1. Enter a sub-menu
 2. Enter “edit” mode
 3. Save the new value
- ◆ **BACK** ◀ key will move back to the previous menu, or when in edit mode, will exit the edit mode without saving the new value



Menu Navigation

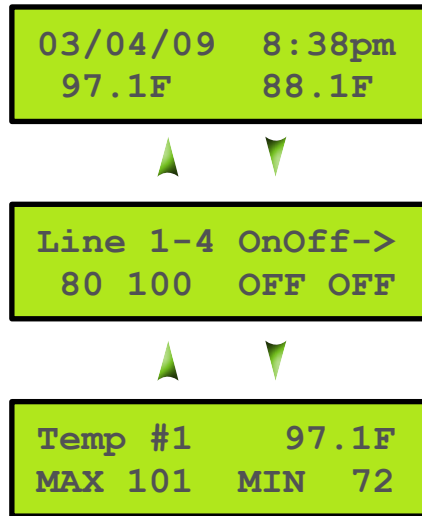
The LCD user interface navigation is controlled thru the four navigation keys on the front panel.

The EZ400 menu structure is multi-level, and the presence of a RIGHT arrow indicates the presence of either a SUB-MENU, or an available EDIT MODE.

Scrolling Thru the Menus

Use the **NEXT** and **PREV** keys to scroll thru the menus

When the end of the list is reached, the menu list will wrap-around again to the first item.



Entering and Exiting Sub-Menus

Use the **ENTER** key to descend into a sub-menu, and the **BACK** to back up one level



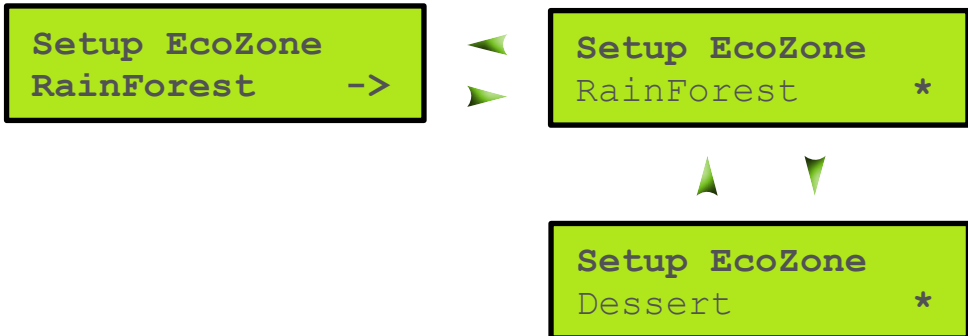
Editing Items

Use the **ENTER** key to edit menu items

The -> cursor will change to an asterisk (*), and the editable item will be flashing on the LCD display.

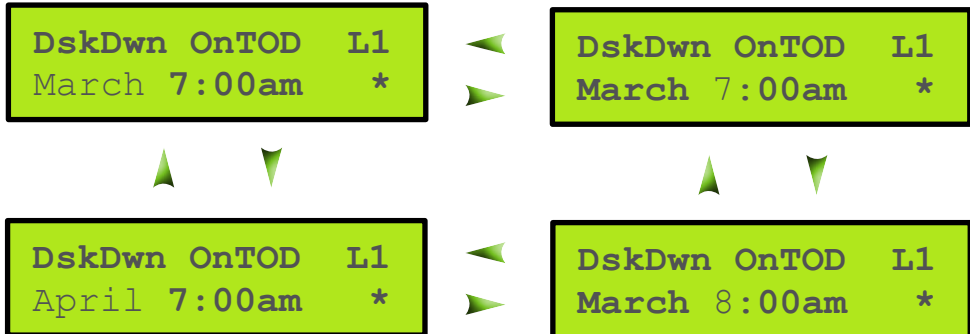
When in edit mode, use the **NEXT/PREV** keys to scroll thru the list, or increment/decrement the flashing value. After the new choice is visible on the display, press the **ENTER** key again to keep

the new value. Or, press the **BACK** to to exit edit mode and revert back to the original value.



Press the **ENTER** or **BACK** keys to select the next editable field

Some edit modes have multiple fields which can be changed. Press the ENTER key again to select the next editable field. When the desired field is selected for editing, use the NEXT/PREV keys to scroll thru the list.



HINT: Changing all month settings at once with the AllMo (All Month) selection

When modifying menu setup items which have per-month parameters (like the example shown above), scroll thru each month to view/edit the settings for that month.

However, to quickly program all months with a common value, rather than select and change each month, you can select the month **AllMo** (All Months). Saving changes to **AllMo** will write the value to all months at once.

Useful Status Display Menus

Initially scrolling thru the PREV and NEXT menu will provide the various unit status menus. Pressing the NEXT key from the main menu will navigate thru all unit status.

Two of these status displays and their function are described below. For more information on all of the available status menus, please refer to the Functional Reference section of this manual.

AC Line Power and Manual On / Off

This display will indicate the current AC line setting, either OFF, or the current power level in %.

Pressing the ENTER key enters manual on/off mode, and allows the on/off state of LIGHTING modes to be toggled from ON to OFF, or vice-versa. Manual On/Off only functions for AC line modes setup for lighting - not heaters, etc.


Manual On/Off mode works just like standard wall timers, in that the manual on/off state override will persist until the next programmed cycle.

If the AC lighting is utilizing a programmable ramp time (dimnable lighting), then toggling from on to off will enable a "fast ramp" of about 30 seconds to go from max power to Off, or from Off to max power.

*Use the **ENTER** key to enter Manual On/Off Mode*



Line 1-4 OnOff->
100 80 OFF 75



Line 1-4 OnOff *
100 80 OFF 75

Once in Manual On/Off Mode, press a key to toggle the corresponding AC line on/off

In Manual On/Off mode, the 4 keys correspond to AC lines 1-4.

BACK will toggle AC line #1, PREV will toggle AC line #2, NEXT will toggle AC line #3, ENTER will toggle AC line #4.

Temperature Control Set Point

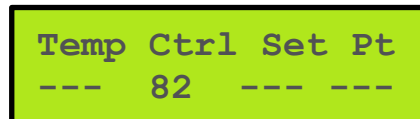
Temperature Control Set Point will display the CURRENT temperature set point in force for AC lines used for heating or cooling, which may differ from the Max or Min set points, if their programmable Ramp feature is being utilized.

One of the innovations of the EcoZone Vivarium controller is the concept of a programmable Ramp, which allows a gradual transition from Min to Max temperature, lighting, etc. This provides for a more natural transition in the vivarium environment.

For example, if a heater control is utilized on AC line #2 with a temperature high set point of 90 Deg F, and a temperature low set point of 70 Deg F, with a ramp of 120 minutes, this means that on the transition from Temperature Low to Temperature High, the temperature set point will be gradually increased from 70 Degrees up to 90 degrees, over the 120 minute interval.

At any point in time, you can view the CURRENT temperature set point on the menu. During the ramp up/down cycle, the current set point will be somewhere in-between the Max and Min set points.

The display indicates AC lines 1-4 temperature control set points. AC lines not utilized for temperature control will be displayed as ---



Temp Ctrl Set Pt
--- 82 ---

Connection and Installation

Placement

Locate your EcoZone Vivarium controller in a dry area, outside of the vivarium. Make sure that the unit is exposed to the air to keep it cool, do not cover it with blankets, towels, etc.

!!Warning !!

The EZ400 Vivarium Controller is for indoor use only!

Do not use it outdoors, or in an area which will be exposed to moisture.

Mounting bracket options are available for wall mount or other fixed installations.

Contact www.ecozonevivarium.com for more information.

Connections

After selecting a location for your unit, Connect the AC lines, probes, and optional I/O to your Vivarium Controller.

Any AC line can operate any device type (lighting, heater, mister, etc). Selecting the “Line Mode” for each outlet will tell the EcoZone controller what type of device is connected, and how it is to be controlled.

Setup Procedure

The EcoZone Vivarium Controller setup is easy, with an intuitive LCD interface and 4-button control. Pre-programmed default EcoZones simplify setup by picking line modes and programmable parameters of a typical setup, which can then be customized per your specific vivarium needs.

The EcoZone Vivarium Controller is completely programmable, any AC line can function in any Line Mode, and all parameters are programmable on a monthly basis - thus you can re-create the rhythm and cycles of nature thru subtle changes in temperature, lighting, and humidity - or, not, it's up to you and your vivarium needs, there are no limits to the environmental control with the EcoZone Vivarium Controller.

Use the Menu Navigation hints described earlier, along with the summary steps in this section as a guide. Each step is described in detail in this section.

If you need further detail on any specific menu item, the Functional Reference will provide detailed information for each menu item.

Summary Steps for EcoZone Controller Setup

1. Connect the AC Lines and Probes to the EZ-400 (see earlier section)

2. Select the EcoZone which is closest to your Vivarium needs

Setup Controller -> Setup EcoZone ->

3. Setup the Date and Time

Setup Controller -> Setup Date & Time -> Setup Date ->

Setup Time ->

4. Modify the Default AC Line Modes to match your Vivarium Connections

Setup Controller -> Setup AC Lines -> Setup AC Line # -> Line Mode
L#

5. Modify Default Probe Types to match your Vivarium Connections

Setup Controller -> Setup Probes -> Setup Probe # ->

6. Modify Default AC Line Settings to meet your needs

Setup Controller -> Setup AC Lines -> Setup AC Line # ->

Scroll thru settings for each AC Line #<1-4> where Lighting line modes are selected, and verify/edit your choices

Select the EcoZone

The EcoZone Vivarium Controller uses the concept of an **EcoZone** to setup default line modes, lighting temperature, and humidity parameters typical of that environment. The EcoZone is simply an environment type - RainForest, Dessert, Woodlands, or Savannah, which defines the initial setup.

Then after the EcoZone selection, you can modify any **Line Mode**, say, change the AC Line 4 Lunar Light to a 2nd Basking Spot, etc. to suit your specific vivarium setup. The default durations and intensities for the new line mode are determined by the selected EcoZone.

Changing the EcoZone will re-set all AC Line and Probe settings to the defaults (linemode and parameters), so keep this in mind.

After the EcoZone is selected, you can go and change the pre-determined lighting on/off times, temperature high and low values, programmable ramp durations, misting parameters, etc for each AC line. The parameters are completely programmable on a monthly basis, allowing the simulation of natural changes in the environment over the year - each month can have a different setting for any parameter. Or, if you want a uniform setting across the whole year, you can use the **AllMo** (All Month) shortcut to program the same setting for all months.

Note:

Each time that a NEW EcoZone setting is selected and saved, all AC line, I/O, and Probe settings will be re-configured for defaults for that EcoZone selection.

Thus, once you have customized your Ez400 Vivarium Controller setup (Line Modes, Lighting on/off times, Temperatures, etc), do not set/change the EcoZone again, else all settings will be changed to defaults, and your customizations will be lost!

Set The Date and Time

On initial installation, the Ez400 date/time must be set. If the Ez400 unit loses power, the last current date/time will be maintained during power down, up to several days. However, the clock will not update while the unit is powered off, so the time may need to be adjusted after an extended power loss.

Use the navigation keys to select Setup Date, and Setup Time, then ENTER to edit the values for each.

```
Setup Controller -> Setup Date & Time -> Setup Date ->
                                     Setup Time ->
```

Review and Modify AC Line Operating Modes

The default line modes selected for each AC line are typical for most vivariums of that EcoZone. Any AC line can change to any one of the available operating modes, offering maximum flexibility.

The table below describes each of the available AC Line operating Modes. Modify the AC line mode depending on your vivarium setup specifics.

Note:

Each time a NEW Line Mode is selected and saved for an AC line, the EcoZone Vivarium controller parameters for that line (i.e. lighting on/off times, temperature settings, etc) will return to the defaults as determined by the EcoZone and Line Mode.

Thus, once you have customized your line mode settings, do not change the line mode again unless you want to return to the defaults.

EcoZone AC Line Operating Modes

Line Mode Name	Line Mode Description
Dusk/Dawn	<p>Dusk/Dawn light is the primary “viewing” lighting for the vivarium, on at dawn, off at dusk.</p> <p>Default Dusk/Dawn lighting settings optionally use dimming to provide a gradual ramp up in the morning (sunrise simulation) and ramp down in the evening (sunset simulation), as well as slightly reduced lighting intensity in the winter months.</p> <p>To utilize the dimming capability, your Dusk/Dawn lighting must be a dimmable light source, either incandescent lamps (which are inherently dimmable), or for a beautiful, dramatic effect, use with dimmable fluorescent fixtures, available from EcoZone Vivarium.</p> <p>Note: By default, Dimming and Ramp functions are disabled, for compatibility with non-dimmable lighting.</p> <p>Please see the website for more information on dimmable lighting, www.ecozonevivarium.com.</p>

EcoZone AC Line Operating Modes	
Line Mode Name	Line Mode Description
Basking Spot	<p>Provides a late-morning to late-afternoon basking spot for your reptile. Typically used with Halogen or other heat-producing spot lamp.</p> <p>Basking Spot lamp is typically an incandescent, halogen, mercury vapor (UV-heat, etc), or halide lamp which provides visible light and acts as a localized heat source.</p> <p>Basking Spot default settings turn lighting on at late morning, and off at late afternoon, with some variation on/off times across the seasons.</p> <p>Incandescent and halogen lamps can be dimmed, allowing programmable ramp up/down to full intensity, as well as reduced intensity during the winter months, for a more natural effect.</p> <p>Mercury vapor (Active UV-Heat, etc.) and metal halide lamps cannot be dimmed.</p> <p>Note: By default, Dimming and Ramp functions are disabled, for compatibility with non-dimmable lighting.</p>
Heater Control	<p>Vivarium heat source which is controlled by a temperature probe. Typically a ceramic heat emitter, incandescent lamp, under-tank heat map, etc.</p> <p>Heater Control settings can use on/off or proportional control, and by default also utilizes a slow ramp up to daytime high / nighttime low to simulate natural gradual warm-up / cool down cycle, along with slight temperature variation throughout the year.</p>
Cooling Fan	<p>Cooling fan control mode will provide for vivarium temperature-controlled cooling. Can be programmed for either on/off or proportional control, which means that the fan speed will be adjusted somewhere between zero and maximum speed depending on the temperature differential between set-point vs actual.</p>

EcoZone AC Line Operating Modes	
Line Mode Name	Line Mode Description
Timed Mister	<p>Timed mister mode is used to control a misting / humidity device.</p> <p>Timed Mister is configured for up to 6 specific on times of day, and Mist Duration programmed in seconds (1 to 295 seconds). Misting parameters are completely programmable across the 12 month calendar to simulate rainy and drier seasonal variations.</p>
Automatic Mister	<p>Humidity regulated mister operation, combines humidity regulated misting intervals in addition to the 6 time-based intervals.</p> <p>Specify the Humidity Check Interval (1 to 240 minute interval), and the Ez400 will check the humidity at that interval. If the humidity is low, the mister will run for the user-programmed Mist Duration (1 to 295 seconds). The mister will not run again until the next interval has elapsed, and the humidity is checked again.</p> <p>Includes user selectable the day and night humidity set points, hysteresis, and selectable the humidity control probe.</p> <p>In addition to the humidity regulated misting, up to 6 time-based misting intervals can also be specified to ensure misting occurs even if the humidity is above the set point (like for drinking / watering needs for example)</p>
Humidity Controller	<p>Humidity Controlled outlet, for either a Mister or Humidifier.</p> <p>When the humidity is below the set point + hysteresis value, the AC outlet will turn on and stay on until the humidity set point is reached. Day and Night humidity set points are programmed along with hysteresis and selected humidity control probe.</p>
Timed Mister	<p>Timed mister mode is used to control a misting / humidity device.</p> <p>Timed Mister is configured for a specific on time, and mist duration, up to 6 times per day. Misting parameters are completely programmable across the 12 month calendar to simulate rainy and drier seasonal variations.</p>

EcoZone AC Line Operating Modes	
Line Mode Name	Line Mode Description
Lunar Light	<p>Lunar light is a low wattage incandescent or led blue/green light source which simulates the moon.</p> <p>The pre-programmed lunar cycle varies on/off time and lamp intensity to simulate the lunar cycle.</p> <p>To enable variable intensity lunar cycle, set PwrMax equal to desired full moon power, and PwrMin to desired no-moon power (0 typically)</p>
Interval Timer	Specify up to 6 On/Off intervals thru the day. Unique settings are available for each month.
Unused / Off	Use this setting to disable an AC line, the line will not turn on.

Review and Modify Probe Type Defaults

The Ez400 probe slots are hard-wired for either Temp-Only or Digital Humidity+Temp probes per probe slot, depending on the specific Ez400 model. Installing the wrong probe type in addition, the correct probe type must be selected in the software to match the probe that is installed. Installing un-supported probe type in a probe location will result in "Error", even if the software setting matches that probe.

Ez400 T4 models support the Temp-Only probes in all locations 1-4. RHT2 models support Digital Humidity+Temp probes in locations 1-2, and Temp-Only probes in locations 3-4. RHT4 models support the Digital Humidity+Temp probes in locations 1-4.

Set unused probe connections to "Disabled" to suppress the display for those locations.

Review and Modify Line Settings

On selecting a new Ez400 AC Line Mode default settings will be applied. These settings can be easily modified to meet your specific setup needs. The following sections provide an overview of the line mode settings depending on line mode type.

Heating/Cooling Parameters Summary

The following programmable parameters are available for heating/cooling modes. Temperature set points, ramp durations, and more are variable on a 12-month calendar, allowing creation of seasonal variation, automated brumation cycles, etc.

To modify all 12 months to a single uniform setting without editing each one, use the AllMo (All Month) selection for the month. Saving a setting AllMo will save the setting to all 12 months.

Programmable Heating and Cooling Parameters	
Parameter Name	Parameter Description
Heat(Cool) Temp Hi L# <Month> <Time of Day>	<i>Daytime High</i> temperature set point. If a programmable temperature ramp is utilized, this will be the final temperature set point after the ramp time has completed.
Heat(Cool) Temp Low L# <Month> <Time of Day>	<i>Nighttime Low</i> temperature set point. If a programmable temperature ramp is utilized, this will be the final temperature set point after the ramp time has completed.
Heat(Cool) High TOD L# <Month> <Time of Day>	Programmable <i>Time Of Day</i> for the <i>Daytime High</i> temperature set point. If a programmable ramp time is utilized for the temperature set point, then the Heat(Cool) High TOD is the time at which the temperature ramp-up starts, and final Daytime High temperature set point is reached after the ramp-up time has completed.
Heat(Cool) Low TOD L# <Month> <Time of Day>	Programmable <i>Time Of Day</i> for the <i>Nighttime Low</i> temperature set point. If a programmable ramp time is utilized for the temperature set point, then the Heat(Cool) Low TOD is the time at which the temperature ramp-down starts, and final Nighttime Low temperature set point is reached after the ramp-down time has completed.

Programmable Heating and Cooling Parameters	
Parameter Name	Parameter Description
Heat(Cool) Ramp TOD L# <Month> <Value> Min	<p>Programmable <i>Ramp Time</i> in Minutes.</p> <p>The temperature set points for Daytime High and Nighttime Low can be programmed for a gradual transition from low to high, and high to low, to create a more natural environment. During the ramp time, the temperature set point will be somewhere between Temp Low and Temp High, and will reach the final set point at the end of the ramp time.</p> <p>The current temperature set point can be viewed on the Temp Ctrl Set Point display menu</p> <p>To disable the ramp up/down feature, set the ramp time duration to 0 minutes.</p>
Season Trans L# <Month> <Value> Days	<p>Programmable Seasonal Temperature transition in Days</p> <p>The Ez400 temperature set points can an be programmed for a gradual transition from the prior month to the current month settings over a programmed number of days, create a more natural environment with gradual seasonal changes, and also allowing automatic entering and exiting of brumation temperature settings.</p> <p>When the Season Transition is set to 1, the new month set point takes effect on the 1st of the month with no delay. When the Season Transition Days is set > 1, the temperature set point will change gradually each day, in even increments over the programmed number of days, till the new month set point is reached.</p> <p>The current temperature set point can be viewed on the Temp Ctrl Set Point display menu</p> <p>To disable the Seasonal transition feature, set the Seasonal Transition days to 1 Day. Then the new month settings will take place on the 1st of each month without delay.</p>
Heat(Cool) Control L# Probe <Probe #>	Determines which temperature probe is used as the sensor for this Heat/Cool controller.

Programmable Heating and Cooling Parameters	
Parameter Name	Parameter Description
Heat(Cool) Control L# Prop Power <level>	<p>Determines the strength of the proportional power control, or disabled proportional mode (in which case temperature control is on/off mode).</p> <p>Available settings are: Low, Med, Hi, XHi, Off</p> <p>The default is set to Off, to disable proportional control. To enable proportional control, set this to Medium which is suitable for most vivariums.</p> <p>In proportional mode, if the max temp set point has difficulty being reached (like in a drafty location, low wattage heater, or poorly insulated vivarium), increasing the Proportional Power Level may help.</p> <p>To operate the temperature control in on/off mode (non-proportional), set this value to Off.</p>
Heat(Cool) Control L# Hysteris <value> Deg	<p>The temperature control hysteresis only applies in on/off mode, and has no effect in proportional control mode.</p> <p>Hysteresis value delays the tun on/off of the heating or cooling element until the temperature has exceeded a threshold - the set point +/- the hysteresis value.</p>

Review and Modify Lighting Parameters

Available lighting parameters include on/off times of day, lighting intensity, and ramp duration (for dimmable lighting). When a lighting **Ramp** is enabled with a non-zero value, the lighting will ramp up linearly from **PwrMin** (Minimum Power) to **PwrMax** (Maximum Power), and ramp down from **PwrMax** to **PwrMin**, over the programmed **Ramp** interval.

All lighting parameter settings can be programmed unique values for every month of the year, to create natural seasonal variations in lighting and temperature.

The **PwrMin** value indicates the minimum power setting of the lamp before switching OFF in a ramp down interval, or the first starting power ramp up interval. The Min Power setting thus indicates the minimum power level that a lamp would be set, before/after moving to the OFF

state.

Lunar Lighting mode is a special case in that it does not have a ramp duration, but instead the intensity is varied on a nightly basis between max and min intensity.

All AC line lights can be manually turned ON or OFF using the **Line 1-4 OnOff->** menu. The manual On/Off setting is a toggle operation, similar that of a wall timer manual override, and the manual switch will stay in effect till the next **OnTOD** or **OffTOD** is reached. Lighting with non-zero ramp settings settings will quickly dim up/down to the final set point, while non-ramped lights will simply switch from off to on and vice-versa.

Programmable Lighting Parameters	
Parameter Name	Parameter Description
< Mode> OnTOD L# <Month> <Time of Day>	Programmable <i>Time Of Day</i> at which the lighting will turn on. If a programmable ramp time is utilized, then the ramp up starts at OnTOD, and the lighting will be fully On at PwrMax level after after the ramp up period has expired.
< Mode> OffTOD L# <Month> <Time of Day>	Programmable <i>Time Of Day</i> at which the lighting will turn off. If a programmable ramp time is utilized, then the ramp down starts at OffTOD, and lighting will be off after the ramp down period is complete.
< Mode> Ramp L# <Month> <Value> Min	Programmable lighting ramp time in minutes. To disable lighting ramp up/down, set this value to zero. Note, your lighting must be capable of dimming to use the programmable ramp feature!
< Mode> PwrMax L# <Month> <Value> %	Specifies the maximum lighting power level when the light is in the "on" state. For lunar lighting mode, PwrMax corresponds to the lighting intensity during "full moon". Lighting power is specified in %, from 10% to 100% of lighting power. Use of this feature requires dimmable lighting.

Programmable Lighting Parameters	
Parameter Name	Parameter Description
< Mode> PwrMin L# <Month> <Value> %	<p>Specifies the minimum lighting power level when lighting is ramping down to the “off” state. Once the PwrMin level is reached, the light will turn off.</p> <p>This feature ensures that a dimmable lamp, when ramping down to the “off state, will never dim below a pre-determined level. This is useful for dimmable fluorescent lighting that may flicker when dimmed below 10% power, for example.</p> <p>For incandescent lamps, or lamps which can dim all the way down to 1% power, this value can be set to 0 for maximum dimming range.</p>
Lunar New Moon L# <month/day/year>	<p>Lunar lighting line mode only.</p> <p>This sets the date for the lunar New Moon, the point at which the moon just starts to reappear, and this starts the 28 day lunar cycle with the lamp at PwrMin, increasing each night to PwrMax (full moon).</p> <p>This value is pre-set at 08/01/08, which provides a lunar cycles synchronized to North America.</p>

Review and Modify Mister and Humidifier Parameters

If you are using a mister, use the table below to review or modify your settings.

Programmable Mister Parameters	
Parameter Name	Parameter Description
Mist (Humid) Rh Hi L# <Month> <Time of Day>	<p><i>Daytime High</i> humidity set point.</p> <p>Setting is available for Auto Mister and Humidity Control modes only (not Timed Mister mode).</p>

Programmable Mister Parameters	
Parameter Name	Parameter Description
Mist (Humid) Rh Low L# <Month> <Time of Day>	<i>Nighttime Low</i> humidity set point. Setting is available for Auto Mister and Humidity Control modes only (not Timed Mister mode).
Mist (Humid) Rh High TOD L# <Month> <Time of Day>	Programmable <i>Time Of Day</i> for the <i>Daytime High</i> humidity set point. Setting is available for Auto Mister and Humidity Control modes only (not Timed Mister mode).
Mist (Humid) Rh Low TOD L# <Month> <Time of Day>	Programmable <i>Time Of Day</i> for the <i>Nighttime Low</i> humidity set point. Setting is available for Auto Mister and Humidity Control modes only (not Timed Mister mode).
Mist Duration L# <Month> <Value> Sec	Mist duration in seconds. When the mister turns on, it will mist for the programmed time period. The mist time period, as well as the number of mist cycles per day, can be varied over the 12 month calendar.
Mist Control L# Intrvl <Value> Min	Humidity check interval in minutes. In Auto-Mister mode the humidity set point will be checked 1 time each interval, and if the humidity is low, the mister will run 1 cycle. This humidity check and mist if low will repeat every Auto Mist Interval minutes. For Auto Mister mode only (not Timed Mister or Humidity Control mode)
Mist(Humid) Control L# Probe <Probe #>	Determines which Digital Humidity+Temp probe is used as the control sensor for this humidity controlled line. For Auto Mister and Humidity Control modes only (not Timed Mister mode)

Programmable Mister Parameters	
Parameter Name	Parameter Description
Mist(Humid) Control L# Hysteris <value> %	<p>Hysteresis value delays the tun on/off of the Humidity Control or Mister element until the humidity has exceeded a threshold - the set point +/- the hysteresis value.</p> <p>For Humidity Control mode, determines both the turn-on and the turn-off of the device. For Auto Mister mode, determines the turn-on only (turn off is after Mist Duration has elapsed).</p> <p>Setting is available for Auto Mister and Humidity Control modes only (not Timed Mister mode).</p>
Mist(Humid) OnTOD1 L# <Month> <Time of Day>	<p>First misting time of day. Up to 6 mist times per day can be programmed, per month.</p> <p>At the programmed Time Of Day, the mister will run for the time period specified in Mist Duration.</p> <p>To disable misting during this time period, edit the Time Of Day, select Hrs, and scroll thru the Hrs until the Time Of Day reads Off.</p>
Mist(Humid) OnTOD2 L# <Month> <Time of Day>	Same as OnTOD1. There are 6 programmable mist times per day.
Mist(Humid) OnTOD3 L# <Month> <Time of Day>	Same as OnTOD1. There are 6 programmable mist times per day.
Mist(Humid) OnTOD4 L# <Month> <Time of Day>	Same as OnTOD1. There are 6 programmable mist times per day.
Mist(Humid) OnTOD5 L# <Month> <Time of Day>	Same as OnTOD1. There are 6 programmable mist times per day.
Mist(Humid) OnTOD6 L# <Month> <Time of Day>	Same as OnTOD1. There are 6 programmable mist times per day.

Essential Functions Reference

These sections provide detailed information on the most often used controller functions. However, there are so many features and function available in the EcoZone Vivarium Controller, we cannot list them all here. For a full reference to all EcoZone Vivarium Controller functionality, please download the EcoZone Vivarium Controller Users Guide.

www.ecozonevivarium.com/support

Setup EcoZone

Setup Controller -> Setup EcoZone



The EcoZone setting provides a quick initial default setup, and starting point for further customized settings. The choice of EcoZone will determine the default Line Modes, as well as the settings for each line mode.

There are 5 EcoZone choices to choose from:

- RainForest** - Warm, humid EcoZone, includes mister
- Desert** - Dry, hot EcoZone, with a basking spot
- Savannah** - A more temperate version of the Desert EcoZone
- Woodlands** - A cooler version of the Rainforest EcoZone
- 4Line Heater** - All 4 AC lines are configured as heaters, using the Rainforest temperature set.

When line modes are changed or selected, the current EcoZone is utilized to determine the default settings for that line mode.

Each time a new EcoZone is selected and saved, all line modes and line settings will be re-written to the defaults for that EcoZone. Do not do this unless you want to reset the unit to it's defaults!

To re-write the defaults, the new EcoZone selected and saved must be different from the current EcoZone. Saving the same / currently selected EcoZone will have no effect on the settings. So if you wish to re-set your current EcoZone to it's defaults, first select a new EcoZone (say, change from RainForest to Dessert), save it, then change BACK to the initial EcoZone (RainFor-

est in this case).

To review the default settings for each EcoZone, refer to the EcoZone Vivarium Controller Users Guide, which can be downloaded from www.ecozonevivarium.com/support.

Setup AC Lines

Setup Controller -> Setup AC Lines

The Setup AC Lines menus allow the line mode to be changed, and the parameters for that line mode.

First set the desired line mode, then review/change the line settings.

Setup Line Mode

Setup Controller -> Setup AC Lines -> Setup AC Line #<val> -> Line Mode # ->

Line Mode	L1
Rainforest	->

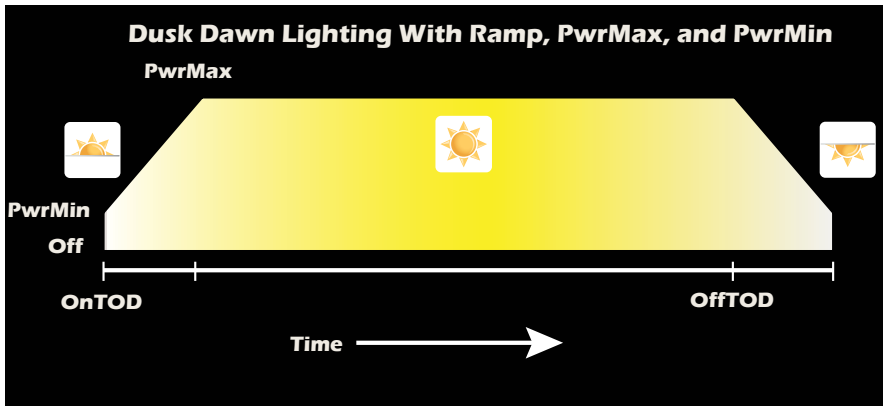
Any AC line can operate in any AC line mode. Each AC line mode has default settings which are determined by the EcoZone.

When an initial EcoZone is selected, a set of AC line modes and defaults are pre-configured. The available line modes and a description of each are provided in the table below.

Lighting Line Modes - Settings

The Lighting line modes (**Dusk/Dawn**, **Basking Spot**, and **Lunar Lighting** modes) have a common set of programmable parameters that are described in the sections that follow. Programmable **Ramp** durations provide Dusk/Dawn simulation. Lighting intensity can be controlled with **Pwr Max** and **Pwr Min** settings.

Lighting Control Profile



The EcoZone Vivarium controller provides advanced control of the lighting parameters on a monthly schedule, for a totally naturalistic vivarium setup.

Lighting OnTOD

```
DskDwn OnTOD L1
May 9:00am ->
```

The Vivarium Controller lighting On Time Of Day (OnTOD) is the time when the AC line will turn from Off to On, or if a ramp is enabled, the time when the lighting ramp-up period from Off to PwrMax begins.

OnTOD can utilize a unique On Time Of Day value for each month of the year. Enter edit mode, select the month that you want to modify, then select the new OnTOD value, and save the new value.

To modify all 12 months OnTOD at once, as a short-cut, select AllMon (All Months) for the month, select a new OnTOD, and save the setting. The new setting will be applied for all months of the year.

Lighting OffTOD

```
DskDwn OffTOD L1
May 7:00pm ->
```

Off Time Of Day (OffTOD) is the time when the AC line will turn from On to Off, or if a ramp is enabled, the time of day when the ramp-down from PwrMax to Off period begins.

OnTOD can utilize a unique Off Time of Day value for each month of the year. Enter Edit mode, select the Month that you want to modify, then select the new OffTOD, and save the new value.

To modify all 12 months OnTOD at once, as a short-cut, select AllMon (All Months) for the month, select a new OnTOD, and save the setting. The new setting will be applied for all months of the year.

Lighting Ramp



DskDwn Ramp L1
May 45 Min ->

The programmable ramp allows a gradual increase or decrease in the lighting level for a more natural vivarium environment. The ramp is utilized to simulate sunrise/sunset, or for a basking spot, can be used to slowly increase the basking spot intensity up to mid-day highs, then back down again to evenings lows.

The Ramp period is programmable in minutes, from 0 (no ramp) to 240 minutes (4 hour ramp period). During the Ramp time, the lighting intensity will gradually transition from PwrMax to Off, or from Off to PwrMax.

The programmable Ramp time will begin the ramp up or down period at OnTOD, or OffTOD, and will be completely On (to PwrMax setting) or Off after the ramp period has completed.

To DISABLE the ramp function, set the ramp period to 0 minutes. Ramp should be disabled for non-dimmable lighting.

Incandescent and halogen, as well as some Compact Fluorescent lamps, and are dimmable. Standard linear fluorescent lamps, self-ballasted Mercury Vapor lamps (i.e. ActiveHeat UVB, etc.), and Metal Halide are generally not dimmable.

Caution:

Only utilize the programmable RAMP period with dimmable lighting.

If your lamp/lighting is not dimmable, set the Ramp value to 0 Min

Non-dimmable lamps and fixtures will not provide good dimming results, especially below 50% dim level, may not ignite at lower power levels, and/or may flash on/off.

In some cases, attempting to dim non-dimmable lighting may cause damage or reduced life for the lamp or the ballast. If in doubt, consult your lighting or lamp manufacturer.

Like all settings with a Month value, the ramp period can be programmed to a unique value

for each of the 12 months of the year, or can be programmed to a single value using the AllMo shortcut.

When the Ramp value is non-zero (ie ramp time is enabled), using the the manual on/off will provide a “fast” ramp of about 30 seconds to the on or off state. For more information on using manual on/off, refer to section titled **Line 1-4 On/Off**, in the Display Menus section of this document.

Note: Ramp is not utilized in Lunar Lighting mode.

Lighting PwrMax



DskDwn PwrMax L1
May 90% ->

The PwrMax (Power Maximum) value specifies the full-on lighting intensity, which can be varied on a monthly basis.

PwrMax value is specified in percent, 100% is full power, 75% is 3/4 power, etc.

When utilized in DuskDawn and Basking Spot lighting modes, reduced PwrMax levels can be utilized to simulate cooler seasons, cloud cover, or just to reduce the lighting intensity. Adjusting PwrMax in the Lunar Lighting Mode, PwrMax provides the “full moon” lamp intensity.

Caution:

Utilizing PwrMax less than 100% requires a dimmable lighting, such as incandescent, halogen, or dimmable fluorescent fixtures.

Non-dimmable lamps and fixtures will not provide good dimming results, especially below 50% dim level, may not ignite at lower power levels, and/or may flash on/off.

In some cases, attempting to dim non-dimmable lighting may cause damage or reduced life for the lamp or the ballast. If in doubt, consult your lighting or lamp manufacturer.

Lighting PwrMin



DskDwn PwrMin L1
May 10% ->

Lighting Power Minimum (PwrMin) value specifies the lowest lighting power level before or after turning Off. Unlike PwrMax, which specifies the max power level The PwrMin level is utilized with the Lighting Ramp .

Lunar New Moon



The **Lunar New Moon** setting is only available for the **Lunar Light** line mode. When the AC line mode is programmed for **Lunar Light** line mode, the **Lunar New Moon** setting allows the 29.53 day lunar cycle to be synchronized to any desired regional lunar cycle.

Program the new moon date as desired, and the 29.53 day lunar cycle will be calculated from that date forward. The default Lunar New Moon date is 8/1/08, which corresponds to the northern hemisphere.

Do not program the Lunar New Moon date to a date in the future, or else the lunar cycle will not work!

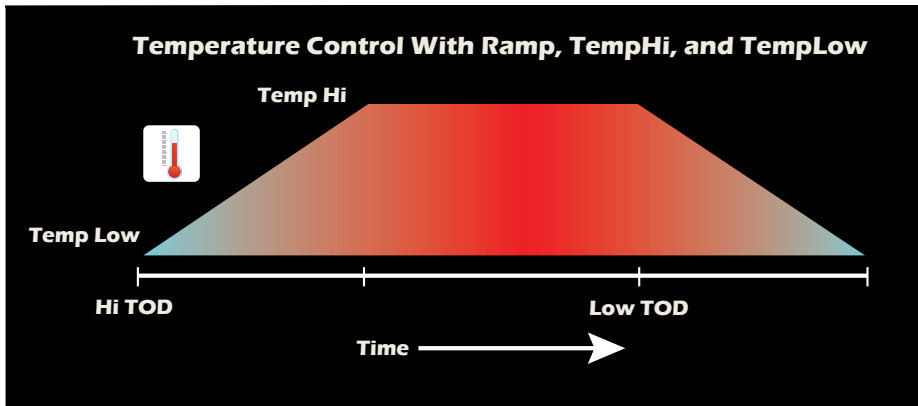
Temperature Control Line Modes - Settings

Temperature control line modes include **Heater** and **Cooling Fan** controllers. Either controller mode can be programmed for proportional or on/off control. A unique feature of the EcoZone Vivarium Controllers is the use of a timed programmable Ramp for temperature control.

A typical proportional temperature controller will transition immediately from night mode to daytime mode, with full power applied to move as quickly as possible to the daytime temperature. This method is not realistic, where in nature a more gradual warming would occur from sunrise, till high-noon and mid day.

The EcoZone Vivarium temperature controller Ramp feature allows the temperature to be gradually increased from the low to high over a specified period of time. During that time, the temperature set point is modified in even increments from the low to high set points. At any time, the current temperature set point can be viewed from the Temperature Control Set Point (**Temp Ctrl Set Pt**) menu.

Temperature Control Profile



The monthly scheduling capabilities allow full control of ramp time (**Ramp**), temperature set points (**Temp Hi**, **Temp Low**) and day/night times (**Hi TOD**, **Low TOD**), allowing total naturalistic vivarium control with seasonal variation.

The temperature controlled AC line programmable parameters are described in the sections that follow.

Temp Hi

```
Heat Temp Hi L2
May      85 DegF->
```

This is the high temperature set point, sometimes referred to as the “daytime temperature” for temperature controllers with a night drop feature.

The Temp Hi set point goes into effect at the **Temp Hi TOD** (Temperature High Time of Day). If a temperature ramp is programmed, the temperature set point will be gradually increased over the ramp period until temperature high is reached.

A unique **Temp Hi** value can be programmed for each month of the year. Use the **AllMo** (All Month) month selection as a short-cut to save a single temperature setting across all 12 months.

Temp Low

```
Heat Temp Low L2
May      75 DegF->
```

Temp Low is the low temperature set point,

utilized to provide a nighttime temperature drop. The Temp Low set point goes into effect at Temp Low TOD (Temperature Low Time of Day). If a temperature ramp is programmed, the temperature set point will be gradually decreased over the ramp period, starting at Low TOD until temperature high is reached.

A unique **Temp Low** value can be programmed for each month of the year. Use the **AllMo** (All Month) month selection as a short-cut to save a single temperature setting across all 12 months.

Hi TOD

```
Heat Hi TOD   L2
May    9:00am ->
```

At **Hi TOD** (Hi Temperature Time of Day), the **Temp Hi** set point is in effect. If a temperature ramp is enabled, the programmable temperature ramp-up period begins at **Hi TOD**.

A unique **Hi TOD** value can be programmed for each month of the year. Use the **AllMo** (All Month) month selection as a short-cut to save a single temperature setting across all 12 months.

Low TOD

```
Heat Low TOD   L2
May    2:00pm ->
```

At **Low TOD** (Low Temperature Time of Day), the **Temp Low** set point is in effect. If a temperature ramp is enabled, the programmable temperature ramp-down period begins at **Low TOD**.

A unique **Low TOD** value can be programmed for each month of the year. Use the **AllMo** (All Month) month selection as a short-cut to save a single temperature setting across all 12 months.

Ramp

```
Heat Ramp      L2
May    150 Min ->
```

Temperature **Ramp** allows a gradual, natural vivarium warm-up or cool-down period to be programmed, for better environmental simulation.

Ramp sets the programmable temperature ramp-up from Temp Low to Temp Hi, or ramp-down period from Temp Hi to Temp Low. The ramp period will begin at **Hi TOD** (for ramp-up to Hi TOD) and Low TOD (for ramp-down to **Low TOD**), and the ramp period is specified in minutes.

Over the ramp period, the temperature set point is modified in even, uniform increments so

that the final temperature set point will be reached at the end of the ramp period.

A unique **RAMP** value can be programmed for each month of the year. Use the **AllMo** (All Month) month selection as a short-cut to save a single temperature setting across all 12 months.

At any given time, you can view the current temperature set point on the LCD screen menu **Temp Ctrl Set Pt**. Viewing this display during the ramp up/down period will indicate the current temperature set point in the ramp cycle, which will be between the Temp Hi and Temp Low programmed values.

To disable the temperature ramp, set the ramp period to 0 Minutes. The temperature set point will change immediately to the final value.

Seasonal Transition



The Ez400 temperature control mode supports a programmable **Season Transition** which will gradually transition the temperature set point from the prior month temperatures to the current month temperatures over a programmable number of days. This mode is especially useful for

entering or exiting brumation, where for example a temperature transition of 10 degrees over 10 days can occur automatically, at 1 degree per day.

When the Season Transition for the current month is set to 1, that month's programmed temperature set point will take effect on the 1st of the month with no delay. When the Season Transition Days is set > 1, the temperature set point for the month will change gradually each day, from the prior month set point to the new month set point, in even increments over the programmed number of days. This continues over the programmed Season Transition number of days > 1, till the new month set point is reached.

For example, if the March temperature Set Point Hi is 70 degree and April Set Point Hi is 85 degrees, and Seasonal Transition for April is set to 15, then starting April 1st, the temperature set point will be increased by 1 degree each day, transitioning from 70 degrees, till on April 15th, the new set point of 85 degrees is reached. After April 15th the final month temperature of 85 degrees will remain for the remainder of the month.

The seasonal transition setting will transition both the daytime and nighttime temperature set points, from prior month setting to the new month setting.

To disable the Seasonal transition feature, set the Seasonal Transition days to 1 Day. Then the new month settings will take place on the 1st of each month without delay.

The current temperature set point can be viewed on the **Temp Ctrl Set Point** display menu

Control Probe

```
Heat Control L2
Probe #1 ->
```

Each temperature controlled AC line can be programmed to utilize one of the 4 temperature probes.

The selected probe must also be “enabled” in the probe setup menu, and the probe itself must be plugged in, for the temperature controller to func-

tion.

As a safety measure, if the configured control probe is dis-connected, or if the probe is not enabled, the temperature controller will shut off.

Control Prop Power

```
Heat Control L2
Prop Power Med->
```

Control Prop Power allows the temperature controller to be configured for proportional mode or on/off mode.

There are 5 settings: **Off, Low, Med, Hi, XHi.**

Off - Temperature Controller will utilize On/Off mode instead of proportional control mode.

Use this setting if the temperature controller cannot operate in a dimmed/reduced power state. Otherwise, proportional temperature control provides more natural control.

Low, Med, Hi, XHi - Temperature controller proportional control power setting. The default is Med (Medium Power), and works for most vivarium enclosures.

If the temperature / heating device is small compared to the vivarium size, or if the vivarium is not well insulated, using a higher power setting will help the vivarium to achieve the temperature set point.

Conversely, if the heating/cooling element is powerful compared to the vivarium size, using a lower setting will help prevent temperature over-shoot or under-shoot.

Control Hysteris

```
Heat Control L2
Prop Power Med->
```

When a temperature controller is set to On/Off (Control Prop Power = Off), Control Hysteris is programmed to prevent rapid cycling on/off of the temperature controller. The temperature

controller will heat or cool only when the temperature exceeds the set point by the programmable hysteresis value.

Note:

Control hysteresis is only functional in on/off (non-proportional) temperature control mode.

When the temperature controller is programmed for proportional mode (Control Prop Power = Low - XHi), Control Hysteresis has no effect.

Mister and Auto-Mister Line Mode - Settings

The timed mister allows up to 6 programmable misting times per day.

At each misting time of the day, the mister will run for the programmed Mist Duration.

Any of the 6 misting times can be disabled by setting the misting Time of Day to Off.

The Auto Mister can provide misting cycles triggered by low humidity. The humidity check interval is programmable in minutes, from 1 to 240 minutes, and controlled by Rh set point.

Misting parameters are programmable to unique values for each month of the year, allowing a rainy and drier seasonal cycle for more naturalistic vivarium control.

Mist Duration

Mist Duration L3
May 30 Sec ->

The **Mist Duration** is programmed in Seconds, and is programmable from 0 to 295 seconds, in 5 second increments.

A unique **Mist Duration** value can be programmed for each month of the year. Use the

AllMo (All Month) selection as a short-cut to save a single temperature setting across all 12 months.

Mist Control Interval

Mist Control L3
Intrvl 180Min ->

The **Mist Control Interval** is programmed in Minutes, and is programmable from 0 to 240 minutes.

The Mist Control Interval is used in Auto-Mist mode to determine the rate at which the control-

ler will check the humidity and run a misting cycle if the humidity is low. When a misting cycle is triggered due to low humidity, the mister will run for the programmed Mist Duration, and stop. The process will repeat again with a humidity check after the next Mist Control Interval

has elapsed.

Mist On TOD<1-6>



Mist On TOD1 L3
May 9:00am ->

Mist On TOD (Mist On Time of Day) is the time of day where the mister will run, for the programmed **Mist Duration**. Up to six misting periods can be set per day, by programming the appropriate Mist On Time of Day, indicated on the LCD display as **Mist On TOD1 - Mist On TOD6**.

If any particular **Mist On TOD** value is set to **Off** instead of a time of day value, then that misting period will be disabled.

A unique **Mist On TOD** value can be programmed for each month of the year. Use the **AllMo** (All Month) selection as a short-cut to save a single temperature setting across all 12 months.

Software Update Procedure

New features, functions, and bug-fixes are easily provided by software updates to the EcoZone Vivarium Controller.

Updating the software involves connecting the EcoZone Vivarium controller to an Ethernet network, downloading both the PC-based **Flash Loader Client** application `Flash Loader_Client.exe`, and downloading the .hex programming file `Ez400_v<version>.hex`. Please note that as of this writing, the Flash Loader Client application, required to perform the update, is only available for Windows computers (sorry Mac and Linux users, but hopefully we can address this in a future release).

Once network connectivity is confirmed and the files are downloaded, the Ez400 Vivarium Controller must be power-cycled to enter software update mode, and the **Flash Loader Client** application is launched to perform the update.

Please download and review the detailed instructions contained in the EcoZone Vivarium Controller Users Guide, which can be obtained from the EcoZone Vivarium website:

www.ecozonevivarium.com/support

Review all software update instructions in the EcoZone Vivarium Controller Users Guide before proceeding with the update steps!

