



EZ-400 Vivarium Controller

Users Guide



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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

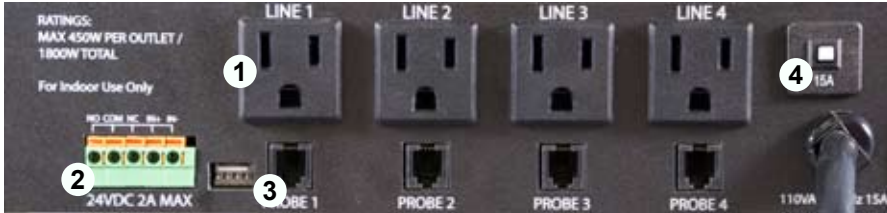
Front Panel



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.

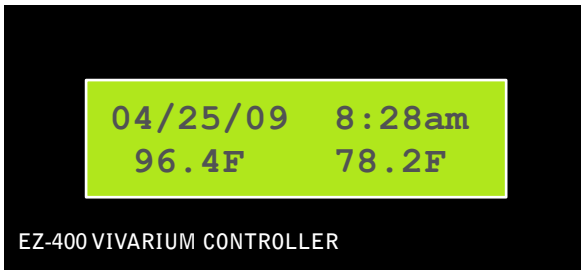
Rear Panel



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 probes
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 for the first 2 temperature probes (probe 1 and 2 by default).

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

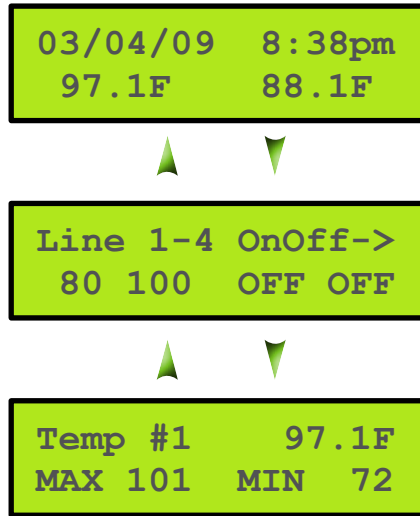
The LCD user interface navigation is controlled thru the four navigation keys on the front panel.

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



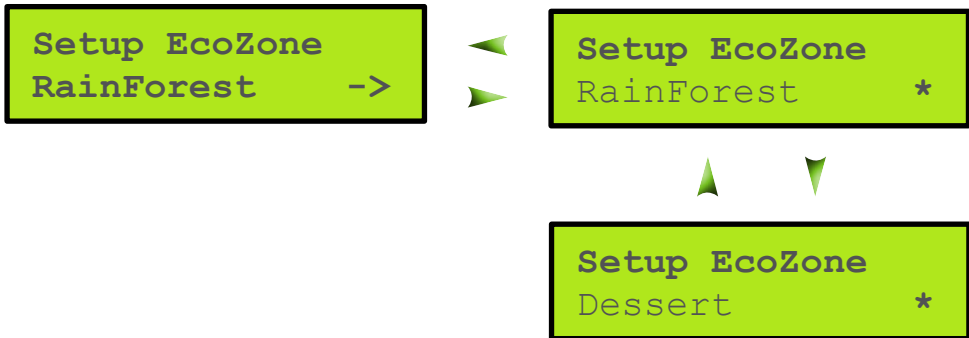
Editing Items

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.

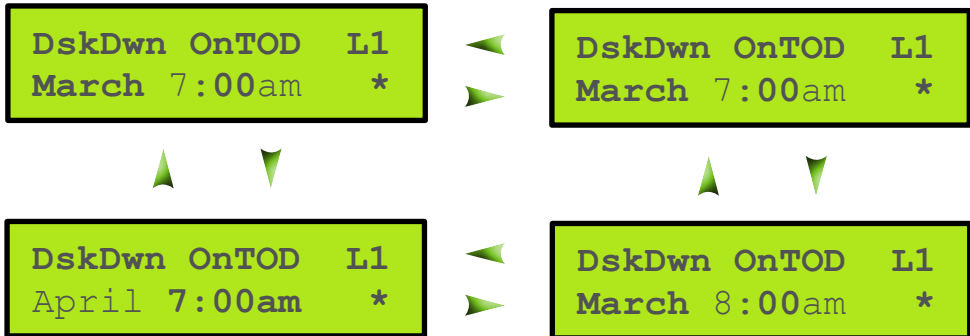
When in edit mode, use the **NEXT/PREV** keys to scroll thru the list, or increment/decrement the flashing value. After the new choice is visible on the display, press the **ENTER** key again to keep

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

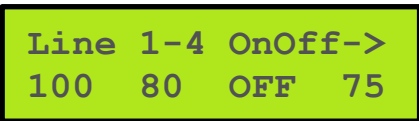
This display will indicate the current AC line setting, either OFF, or the current power level in %.

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 (dimmable lighting), then toggling from on to off will enable a "fast ramp" of about 30 seconds minutes 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

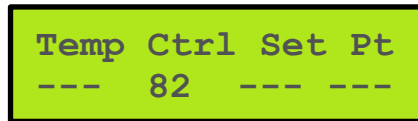
Temperature Control Set Point will display the CURRENT temperature set point in force for AC lines used for heating or cooling, which may differ from the Max or Min set points, if the programmable Ramp feature is being utilized.

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 ---



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.

However, there is a set of default line modes applied for each “EcoZone”, and making the connections to match this will simplify setup. Refer to the table below for these defaults.

EZ400 Default Line / Probe Connections		
EZ-400 Connection	Default Mode	Description
AC Line 1	Dusk Dawn Lighting	Dusk Dawn light is typically the primary “viewing” lighting for the vivarium, on during the day.
AC Line 2	Heater	Vivarium heat source which is controlled by a temperature probe. Typically a ceramic heat emitter, incandescent lamp, under-tank heat map, etc.
AC Line 3	Basking Spot (default for Desert and Savannah EcoZones) Mister (default for Rainforest and Woodlands EcoZones)	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. Mister default is used for Rainforest setups which otherwise might not utilize a basking spot lamp,

EZ400 Default Line / Probe Connections		
EZ-400 Connection	Default Mode	Description
AC Line 4	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>
Probe 1-2	Temperature Probe	<p>Two temperature probe connections are setup by default.</p> <p>Probe 1 is typically used for the Vivarium “hot” end which is thermostatically controlled by a heater, under the basking spot, or other temperature controlled environment.</p> <p>Probe 2 is used to monitor the “cool” end of the vivarium.</p>
Probe 3-4	None (no probe)	<p>Optional temperature probes can be purchased for more temperature monitoring and control.</p>

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 Lighting Intensities and On/Off Times of Day

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

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

7. Modify Default Heating/Cooling Temperatures and High/Low Times of Day

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

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

8. Modify Default Mister Durations and On Times of Day

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

Scroll thru Mister settings for each AC Line #<1-4> where Mister 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, Desert, 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!

The tables below provides a brief description of the available EcoZone selections, and the corresponding Line Mode and related settings. For more information, view the Functional Reference for each Line Mode.

EcoZone Line Mode Defaults			
EZ-400 Connection	Rain Forest, Woodlands	Dessert, Savannah	4-Line Heater
AC Line 1	Dusk Dawn Lighting	Dusk Dawn Lighting	Dusk Dawn Lighting
AC Line 2	Heater	Heater	Heater
AC Line 3	Mister	Basking Spot	Mister
AC Line 4	Lunar Light	Lunar Light	Lunar Light
Probe 1	Temperature Probe #1 (heater control)	Temperature Probe #1 (heater control)	Temperature Probe #1 (heater control #1)
Probe 2	Temperature Probe #2 (Temp display only)	Temperature Probe #2 (Temp display only)	Temperature Probe #2 (Heater #2 control)
Probe 3	None (no probe)	None (no probe)	Temperature Probe #3 (Heater #3 control)
Probe 4	None (no probe)	None (no probe)	Temperature Probe #4 (Heater #4 control)

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 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>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, as they will not light at dim levels < 70% typically.</p>
Heater Control	<p>Vivarium heat source which is controlled by a temperature probe. Typically a ceramic heat emitter, incandescent lamp, under-tank heat mat, etc.</p> <p>Heater Control default settings use proportional control, and 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. Default settings use 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>
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	Lunar light is a low wattage incandescent or led blue/green light source which simulates the moon. The pre-programmed lunar cycle varies on/off time and lamp intensity to simulate the lunar cycle.
Unused / Off	Use this setting to disable an AC line, the line will not turn on.

Review and Modify Probe Type Defaults

Default probe settings are 2 Temperature probes, in probe connectors 1 and 2. Probe connections 3,4 are disabled.

If additional temperature probes are purchased, enable them in the probes display. Leave unused probe connections to “Disabled” to suppress the display.

Review and Modify Heating/Cooling Parameters

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.

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

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
<p>< Mode> PwrMin L# <Month> <Value> %</p>	<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>
<p>Lunar New Moon L# <month/day/year></p>	<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 Parameters

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

Programmable Timed Mister Parameters	
Parameter Name	Parameter Description
<p>Mist Duration L# <Month> <Value> Sec</p>	<p>Mist duration in seconds.</p> <p>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.</p>

Programmable Timed Mister Parameters	
Parameter Name	Parameter Description
< Mode> OnTOD1 L# <Month> <Time of Day>	First misting time of day. Up to 6 mist times per day can be programmed, per month. At the programmed Time Of Day , the mister will run for the time period specified in Mist Duration . 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 .
< Mode> OnTOD2 L# <Month> <Time of Day>	Same as OnTOD1. There are 6 programmable mist times per day.
< Mode> OnTOD3 L# <Month> <Time of Day>	Same as OnTOD1. There are 6 programmable mist times per day.
< Mode> OnTOD4 L# <Month> <Time of Day>	Same as OnTOD1. There are 6 programmable mist times per day.
< Mode> OnTOD5 L# <Month> <Time of Day>	Same as OnTOD1. There are 6 programmable mist times per day.
< Mode> OnTOD6 L# <Month> <Time of Day>	Same as OnTOD1. There are 6 programmable mist times per day.

Optional Setup Items - I/O, Alarms, and Networking

The EcoZone Vivarium Controller can do more than control Lighting, Temperature, and Humidity.

The I/O interface can be used to monitor input sensors such as a float switch, cage open alarm sensor, etc. The output I/O connector can trigger DC powered devices, such as a 12V strobe used to simulate lightening storm.

Programmable over-temperature alarms can alert and shutdown power in a critical situation.

Networking capability (coming soon with a software update) allows remote management and control, remote alerts, and more.

To get more information on these functions, please refer to the Functional Reference section of this manual.

Function Reference

Use this section to lookup specific EcoZone Vivarium Controller features and functions. All functions and modes are described

Display Menus

Line 1-4 On/Off

```
Line 1-4 OnOff->
100 80 OFF 75
```

```
Line 1-4 OnOff *
100 80 OFF 75
```

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 minutes to go from max power to Off, or from Off to max power.

Temperature Probe Status

```
Temp #1 92.3F
MAX 101 MIN 71
```

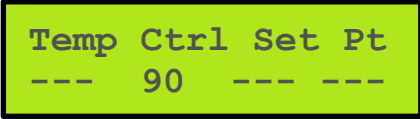
This display provides the current temperature for the indicated, plus the maximum and minimum temperatures, since the last power-up or history clear.

One screen is provided for each enabled temperature probe, up to 4 probes can be enabled. Use the NEXT/PREV keys to move thru the available status screens.

If the probe is disabled, then the screen will not be displayed.

If the probe id enabled, but no probe is present, the display will read ERR (error).

Temperature Control Set Point



Temp Ctrl Set Pt
--- 90 ---

This display indicates the current temperature controller set point, which may be in-between the temp high and temp low set points, if ramp is enabled.

The AC lines are indicated 1-4, left to right. Only AC lines configured for temperature control show a value, other AC lines display --- .

I/O Status



IO Status: IO #1
Out OFF In OPEN

This display indicates the current state of the rear I/O output relay, and the I/O input connector.

The rear panel I/O connector contains 1 set of I/O outputs, and 1 set of I/O input contacts.

The I/O output contacts allow low voltage DC devices to be controlled (switched on or off) using the contacts labelled **NO**, **COMM**, and **NC** (Normally Open, Common, and Normally Closed). When the relay is not energized, the display will read **Out OFF**, and normal contact conditions exist. When the relay is energized, the display will read **Out ON**, and opposite relay contact conditions exist.

More information on the use of the output contacts is provided in the section [Setup I/O Outputs](#).

The I/O input contacts allow the Ez400 controller to read the status of a sensor input, such as a float switch, or a set of alarm contacts (door open/closed indicator, for example), using the 2 input contacts labelled **IN+** and **IN-**. The trigger level for a corresponding action can be programmed for either contact closure, or contact open.

When IN+ is not connected to IN-, the input status display indicates **In OPEN**. When IN+ and IN- are connected together, the status indicates **In CLOSED**.

More information on the use of the input contacts is provided in the section [Setup I/O Inputs](#).

The table below summarizes the contact state for each display indication

I/O Status Definition	
Display	I/O Signal State
IO Status: IO #1 Out OFF	NO (Normally Open) to COM (Common) = Contacts Open NC (Normally Closed) to COM (Common) = Contacts Closed
IO Status: IO #1 Out On	NO (Normally Open) to COM (Common) = Contacts Closed NC (Normally Closed) to COM (Common) = Contacts Open
IO Status: IO #1 In Open	Status indicates that the IN+ to IN- input contacts are not connected together.
IO Status: IO #1 In Closed	Status indicates that the IN+ to IN- input contacts are shorted externally/ are connected together.

Alarm Status

Alarm Status
Temp OK I/O ---

The Ez400 Vivarium Controller supports the use of an alarm, to alert the user to some specific condition, such as an over-temperature condition, or the opening of an enclosure door (input alarm).

The alarm can either provide an audible indicator, or perform some action such as shutting down the lights and heat, or both.

For more information on the use of the alarm, refer to the section titled *OverTemp Alarm Mode* (for over-temp alarm), and *Setup I/O Inputs* (for the input alarm settings).

The table below describes the various Alarm Status displays.

Alarm Status Definition	
Display	I/O Signal State
Alarm Status Temp OK	Temperature is within the programmed alarm limits.
Alarm Status Temp ALM	Alarm active, temperature is outside the programmed alarm limits.

Alarm Status Definition	
Display	I/O Signal State
Alarm Status I/O ---	Input sensor alarm is not in use (disabled)
Alarm Status I/O OK	Input sensor alarm is in use (enabled), no alarm exists
Alarm Status I/O ALM	Input sensor alarm is in use (enabled), an active alarm condition exists

Probe History Clear

Probe History
Max/Min Clear?->

Probe History
Clear Complete

Probe display screens display of Max/Min values for each probe are displayed in the Temperature Status screens, and indicate the maximum and minimum temperatures experienced since the unit was powered on, or the last clear command.

Press ENTER to clear the probe history, after which the new Max and Min values will be recorded from that point on.

Network Address

Network Address:
192.168.1.100

The Ez400 Vivarium controller can be connected to a network, which allows for software updates, as well as the use of the HTTP / Web interface for remote management and control (coming soon).

All devices on a network require a Network Address (also called an Internet Protocol Address, or IP address, for short), in order to be accessible. Typically the Network Address is assigned automatically by a router, which the Ez400 is plugged into, but can also be programmed manually, and if the Ez400 is not connected to a network at all, a default programmed value is used.

In all cases, the value displayed is the current Network Address in use by the Ez400 Vivarium Controller.

Setup Controller



Press ENTER to access the setup menus.

Setup Menu

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 (RainForest in this case).

The sections below summarize the EcoZone defaults for each line.

RainForest EcoZone Defaults

EcoZone Setting Defaults - RainForest (Jan-June)								
Line Num	Line Mode	Setting	Jan	Feb	March	April	May	June
1	Dusk/ Dawn	OnTOD	7:00am	7:00am	7:00am	6:45am	6:30am	6:00am
		OffTOD	6:30pm	6:45pm	7:00pm	7:30pm	8:00pm	8:30pm
		Ramp	45 min	45 min	45 min	45 min	45 min	45 min
		PwrMax	70%	75%	80%	85%	90%	100%
		PwrMin	10%	10%	10%	10%	10%	10%

EcoZone Setting Defaults - RainForest (Jan-June)									
Line Num	Line Mode	Setting	Jan	Feb	March	April	May	June	
2	Heater Control	Temp Hi	85	85	85	85	85	90	
		Temp Low	75	75	75	75	75	80	
		Hi TOD	9:00am	9:00am	9:00am	9:00am	9:00am	8:30am	
		Low TOD	2:30pm	2:00pm	2:00pm	2:00pm	3:00pm	3:30pm	
		Ramp	180 min	180 min	150 min	150 min	120 min	120 min	
		Control Probe	Probe #1						
		Prop Power	Prop Power Medium						
		Hysterisis	Hysterisis +/- 2 Deg						
3	Timed Mister	Mist Duration	30 Sec	30 Sec	30 Sec	30 Sec	30 Sec	30 Sec	
		On TOD1	9:00am	9:00am	9:00am	9:00am	9:00am	8:30am	
		On TOD2	Off	Off	Off	Off	Off	Off	
		On TOD3	Off	Off	Off	Off	Off	Off	
		On TOD4	Off	Off	Off	Off	Off	Off	
		ON TOD5	Off	Off	Off	Off	Off	Off	
		ON TOD6	Off	Off	Off	Off	Off	Off	

EcoZone Setting Defaults - RainForest (Jan-June)

Line Num	Line Mode	Setting	Jan	Feb	March	April	May	June	
4	Lunar Light	On TOD	6:00pm	6:00pm	6:00pm	6:00pm	6:00pm	6:00pm	
		Off TOD	6:00am	6:00am	6:00am	6:00am	6:00am	6:00am	
		New Moon	08/01/08						
		Pwr Max	75%	75%	75%	75%	75%	75%	
		Pwr Min	0 %	0 %	0 %	0 %	0 %	0 %	

EcoZone Setting Defaults - RainForest (July - December)

Line Num	Line Mode	Setting	July	Aug	Sept	Oct	Nov	Dec
1	Dusk/ Dawn	OnTOD	6:00am	6:00am	6:00am	6:00am	6:00am	6:30am
		OffTOD	9:00pm	9:00pm	8:00pm	7:30pm	7:00pm	6:30pm
		Ramp	45 min	45 min	45 min	45 min	45 min	45 min
		PwrMax	100%	100%	90%	80%	75%	75%
		PwrMin	10%	10%	10%	10%	10%	10%

EcoZone Setting Defaults - RainForest (July - December)									
Line Num	Line Mode	Setting	July	Aug	Sept	Oct	Nov	Dec	
2	Heater Control	Temp Hi	95	90	85	85	85	85	
		Temp Low	85	80	75	75	75	75	
		Hi TOD	8:30am	8:30am	9:00am	9:00am	9:00am	9:00am	
		Low TOD	3:30pm	3:30pm	3:00pm	2:30pm	2:00pm	2:00pm	
		Ramp	120 min	120 min	150 min	165 min	180 min	180 min	
		Control Probe	Probe #1						
		Prop Power	Prop Power Medium						
		Hysterisis	Hysterisis +/- 2 Deg						
3	Timed Mister	Mist Duration	30 Sec	30 Sec	30 Sec	30 Sec	30 Sec	30 Sec	
		On TOD1	8:30am	8:30am	9:00am	9:00am	9:00am	9:00am	
		On TOD2	Off	Off	Off	Off	Off	Off	
		On TOD3	Off	Off	Off	Off	Off	Off	
		On TOD4	Off	Off	Off	Off	Off	Off	
		ON TOD5	Off	Off	Off	Off	Off	Off	
		ON TOD6	Off	Off	Off	Off	Off	Off	

EcoZone Setting Defaults - RainForest (July - December)									
Line Num	Line Mode	Setting	July	Aug	Sept	Oct	Nov	Dec	
4	Lunar Light	On TOD	6:00pm	6:00pm	6:00pm	6:00pm	6:00pm	6:00pm	
		Off TOD	6:00am	6:00am	6:00am	6:00am	6:00am	6:00am	
		New Moon	08/01/08						
		Pwr Max	75%	75%	75%	75%	75%	75%	
		Pwr Min	0%	0%	0%	0%	0%	0%	

Desert EcoZone Defaults

EcoZone Setting Defaults - Desert (Jan-June)								
Line Num	Line Mode	Setting	Jan	Feb	March	April	May	June
1	Dusk/ Dawn	OnTOD	7:00am	7:00am	7:00am	6:45am	6:30am	6:00am
		OffTOD	6:30pm	6:45pm	7:00pm	7:30pm	8:00pm	8:30pm
		Ramp	45 min	45 min	45 min	45 min	45 min	45 min
		PwrMax	70%	75%	80%	85%	90%	100%
		PwrMin	10%	10%	10%	10%	10%	10%

EcoZone Setting Defaults - Desert (Jan-June)									
Line Num	Line Mode	Setting	Jan	Feb	March	April	May	June	
2	Heater Control	Temp Hi	85	85	85	85	85	90	
		Temp Low	75	75	75	75	75	80	
		Hi TOD	9:00am	9:00am	9:00am	9:00am	9:00am	8:30am	
		Low TOD	2:30pm	2:00pm	2:00pm	2:00pm	3:00pm	3:30pm	
		Ramp	180 min	180 min	150 min	150 min	120 min	120 min	
		Control Probe	Probe #1						
		Prop Power	Prop Power Medium						
		Hysterisis	Hysterisis +/- 2 Deg						
3	Basking Spot	On TOD	9:00am	9:00am	9:00am	9:00am	9:00am	8:30am	
		Off TOD	2:30pm	2:00pm	2:00pm	2:00pm	3:00pm	3:30pm	
		Ramp	180 Min	180 Min	150 Min	150 Min	120 Min	120 Min	
		PwrMax	70%	75%	80%	85%	90%	100%	
		PwrMin	10%	10%	10%	10%	10%	10%	
4	Lunar Light	On TOD	6:00pm	6:00pm	6:00pm	6:00pm	6:00pm	6:00pm	
		Off TOD	6:00am	6:00am	6:00am	6:00am	6:00am	6:00am	
		New Moon	08/01/08						
		Pwr Max	75%	75%	75%	75%	75%	75%	
		Pwr Min	0 %	0 %	0 %	0 %	0 %	0 %	

EcoZone Setting Defaults - Desert (July - December)									
Line Num	Line Mode	Setting	July	Aug	Sept	Oct	Nov	Dec	
1	Dusk/ Dawn	On TOD	6:00am	6:00am	6:00am	6:00am	6:00am	6:30am	
		Off TOD	9:00pm	9:00pm	8:00pm	7:30pm	7:00pm	6:30pm	
		Ramp	45 min	45 min	45 min	45 min	45 min	45 min	
		PwrMax	100%	100%	90%	80%	75%	75%	
		PwrMin	10%	10%	10%	10%	10%	10%	
2	Heater Control	Temp Hi	95	90	85	85	85	85	
		Temp Low	85	80	75	75	75	75	
		Hi TOD	8:30am	8:30am	9:00am	9:00am	9:00am	9:00am	
		Low TOD	3:30pm	3:30pm	3:00pm	2:30pm	2:00pm	2:00pm	
		Ramp	120 min	120 min	150 min	165 min	180 min	180 min	
		Control Probe	Probe #1						
		Prop Power	Prop Power Medium						
		Hysterisis	Hysterisis +/- 2 Deg						

EcoZone Setting Defaults - Desert (July - December)									
Line Num	Line Mode	Setting	July	Aug	Sept	Oct	Nov	Dec	
3	Basking Spot	On TOD	8:30am	8:30am	9:00am	9:00am	9:00am	9:00am	
		Off TOD	3:30pm	3:30pm	3:00pm	2:30pm	2:00pm	2:00pm	
		Ramp	120 Min	120 Min	150 Min	165 Min	180 Min	180 Min	
		PwrMax	100%	100%	90%	80%	75%	75%	
		PwrMin	10%	10%	10%	10%	10%	10%	
4	Lunar Light	On TOD	6:00pm	6:00pm	6:00pm	6:00pm	6:00pm	6:00pm	
		Off TOD	6:00am	6:00am	6:00am	6:00am	6:00am	6:00am	
		New Moon	08/01/08						
		Pwr Max	75%	75%	75%	75%	75%	75%	
		Pwr Min	0%	0%	0%	0%	0%	0%	

Woodlands EcoZone Defaults

EcoZone Setting Defaults - Woodlands (Jan-June)									
Line Num	Line Mode	Setting	Jan	Feb	March	April	May	June	
1	Dusk/ Dawn	On TOD	7:00am	7:00am	7:00am	6:45am	6:30am	6:00am	
		Off TOD	6:30pm	6:45pm	7:00pm	7:30pm	8:00pm	8:30pm	
		Ramp	45 min	45 min	45 min	45 min	45 min	45 min	
		PwrMax	70%	75%	80%	85%	90%	100%	
		PwrMin	10%	10%	10%	10%	10%	10%	
2	Heater Control	Temp Hi	85	85	85	85	85	90	
		Temp Low	75	75	75	75	75	80	
		Hi TOD	9:00am	9:00am	9:00am	9:00am	9:00am	8:30am	
		Low TOD	2:30pm	2:00pm	2:00pm	2:00pm	3:00pm	3:30pm	
		Ramp	180 min	180 min	150 min	150 min	120 min	120 min	
		Control Probe	Probe #1						
		Prop Power	Prop Power Medium						
		Hysteresis	Hysteresis +/- 2 Deg						

EcoZone Setting Defaults - Woodlands (Jan-June)								
Line Num	Line Mode	Setting	Jan	Feb	March	April	May	June
3	Timed Mister	Mist Duration	30 Sec	30 Sec	30 Sec	30 Sec	30 Sec	30 Sec
		On TOD1	9:00am	9:00am	9:00am	9:00am	9:00am	8:30am
		On TOD2	Off	Off	Off	Off	Off	Off
		On TOD3	Off	Off	Off	Off	Off	Off
		On TOD4	Off	Off	Off	Off	Off	Off
		ON TOD5	Off	Off	Off	Off	Off	Off
		ON TOD6	Off	Off	Off	Off	Off	Off
4	Lunar Light	On TOD	6:00pm	6:00pm	6:00pm	6:00pm	6:00pm	6:00pm
		Off TOD	6:00am	6:00am	6:00am	6:00am	6:00am	6:00am
		New Moon	08/01/08					
		Pwr Max	75%	75%	75%	75%	75%	75%
		Pwr Min	0 %	0 %	0 %	0 %	0 %	0 %

EcoZone Setting Defaults - Woodlands (July - December)									
Line Num	Line Mode	Setting	July	Aug	Sept	Oct	Nov	Dec	
1	Dusk/ Dawn	On TOD	6:00am	6:00am	6:00am	6:00am	6:00am	6:30am	
		Off TOD	9:00pm	9:00pm	8:00pm	7:30pm	7:00pm	6:30pm	
		Ramp	45 min	45 min	45 min	45 min	45 min	45 min	
		PwrMax	100%	100%	90%	80%	75%	75%	
		PwrMin	10%	10%	10%	10%	10%	10%	
2	Heater Control	Temp Hi	95	90	85	85	85	85	
		Temp Low	85	80	75	75	75	75	
		Hi TOD	8:30am	8:30am	9:00am	9:00am	9:00am	9:00am	
		Low TOD	3:30pm	3:30pm	3:00pm	2:30pm	2:00pm	2:00pm	
		Ramp	120 min	120 min	150 min	165 min	180 min	180 min	
		Control Probe	Probe #1						
		Prop Power	Prop Power Medium						
		Hysterisis	Hysterisis +/- 2 Deg						

EcoZone Setting Defaults - Woodlands (July - December)									
Line Num	Line Mode	Setting	July	Aug	Sept	Oct	Nov	Dec	
3	Timed Mister	Mist Duration	30 Sec	30 Sec	30 Sec	30 Sec	30 Sec	30 Sec	
		On TOD1	8:30am	8:30am	9:00am	9:00am	9:00am	9:00am	
		On TOD2	Off	Off	Off	Off	Off	Off	
		On TOD3	Off	Off	Off	Off	Off	Off	
		On TOD4	Off	Off	Off	Off	Off	Off	
		ON TOD5	Off	Off	Off	Off	Off	Off	
		ON TOD6	Off	Off	Off	Off	Off	Off	
4	Lunar Light	On TOD	6:00pm	6:00pm	6:00pm	6:00pm	6:00pm	6:00pm	
		Off TOD	6:00am	6:00am	6:00am	6:00am	6:00am	6:00am	
		New Moon	08/01/08						
		Pwr Max	75%	75%	75%	75%	75%	75%	
		Pwr Min	0%	0%	0%	0%	0%	0%	

Savannah EcoZone Defaults

EcoZone Setting Defaults - Savannah (Jan-June)									
Line Num	Line Mode	Setting	Jan	Feb	March	April	May	June	
1	Dusk/ Dawn	On TOD	7:00am	7:00am	7:00am	6:45am	6:30am	6:00am	
		Off TOD	6:30pm	6:45pm	7:00pm	7:30pm	8:00pm	8:30pm	
		Ramp	45 min	45 min	45 min	45 min	45 min	45 min	
		PwrMax	70%	75%	80%	85%	90%	100%	
		PwrMin	10%	10%	10%	10%	10%	10%	
2	Heater Control	Temp Hi	85	85	85	85	85	90	
		Temp Low	75	75	75	75	75	80	
		Hi TOD	9:00am	9:00am	9:00am	9:00am	9:00am	8:30am	
		Low TOD	2:30pm	2:00pm	2:00pm	2:00pm	3:00pm	3:30pm	
		Ramp	180 min	180 min	150 min	150 min	120 min	120 min	
		Control Probe	Probe #1						
		Prop Power	Prop Power Medium						
		Hysteresis	Hysteresis +/- 2 Deg						

EcoZone Setting Defaults - Savannah (Jan-June)									
Line Num	Line Mode	Setting	Jan	Feb	March	April	May	June	
3	Basking Spot	On TOD	9:00am	9:00am	9:00am	9:00am	9:00am	8:30am	
		Off TOD	2:30pm	2:00pm	2:00pm	2:00pm	3:00pm	3:30pm	
		Ramp	180 Min	180 Min	150 Min	150 Min	120 Min	120 Min	
		Pwr Max	70%	75%	80%	85%	90%	100%	
		Pwr Min	10%	10%	10%	10%	10%	10%	
4	Lunar Light	On TOD	6:00pm	6:00pm	6:00pm	6:00pm	6:00pm	6:00pm	
		Off TOD	6:00am	6:00am	6:00am	6:00am	6:00am	6:00am	
		New Moon	08/01/08						
		Pwr Max	75%	75%	75%	75%	75%	75%	
		Pwr Min	0 %	0 %	0 %	0 %	0 %	0 %	

EcoZone Setting Defaults - Savannah (July - December)									
Line Num	Line Mode	Setting	July	Aug	Sept	Oct	Nov	Dec	
1	Dusk/ Dawn	On TOD	6:00am	6:00am	6:00am	6:00am	6:00am	6:30am	
		Off TOD	9:00pm	9:00pm	8:00pm	7:30pm	7:00pm	6:30pm	
		Ramp	45 min	45 min	45 min	45 min	45 min	45 min	
		PwrMax	100%	100%	90%	80%	75%	75%	
		PwrMin	10%	10%	10%	10%	10%	10%	
2	Heater Control	Temp Hi	95	90	85	85	85	85	
		Temp Low	85	80	75	75	75	75	
		Hi TOD	8:30am	8:30am	9:00am	9:00am	9:00am	9:00am	
		Low TOD	3:30pm	3:30pm	3:00pm	2:30pm	2:00pm	2:00pm	
		Ramp	120 min	120 min	150 min	165 min	180 min	180 min	
		Control Probe	Probe #1						
		Prop Power	Prop Power Medium						
		Hysterisis	Hysterisis +/- 2 Deg						
3	Basking Spot	On TOD	8:30am	8:30am	9:00am	9:00am	9:00am	9:00am	
		Off TOD	3:30pm	3:30pm	3:00pm	2:30pm	2:00pm	2:00pm	
		Ramp	120 Min	120 Min	150 Min	165 Min	180 Min	180 Min	
		PwrMax	100%	100%	90%	80%	75%	75%	
		PwrMin	10%	10%	10%	10%	10%	10%	

EcoZone Setting Defaults - Savannah (July - December)									
Line Num	Line Mode	Setting	July	Aug	Sept	Oct	Nov	Dec	
4	Lunar Light	On TOD	6:00pm	6:00pm	6:00pm	6:00pm	6:00pm	6:00pm	
		Off TOD	6:00am	6:00am	6:00am	6:00am	6:00am	6:00am	
		New Moon	08/01/08						
		Pwr Max	75%	75%	75%	75%	75%	75%	
		Pwr Min	0%	0%	0%	0%	0%	0%	

Setup Date & Time

Setup Controller -> Setup Date & Time

**Setup
Date & Time** ->

Select to enter the date and time setup menus.

The current date/time is saved across power cycles, up to several days. However, when the unit is powered off, the date and time is not updated, so the time and date may need to be re-set after

an extended power-off period.

Setup Date

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

Setup Date
04/25/09 ->

The date is required to control the monthly EcoZone Vivarium schedules. Press ENTER to edit/setup the date.

Setup Time

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

Setup Time
8:28am ->

Press ENTER to edit/setup the time.

Setup Probes

Setup Controller -> Probes



Select to enter probe setup options. Up to 4 temperature probes can be enabled, and each enabled probe will provide a temperature display screen in the display menus.

Unused probe locations should be disabled.

Setup Probe Type

Setup Controller -> Setup Probes -> Setup Probe #<val> -> Probe Type # ->



Two probe type options are: **Temp Probe**, and **Disabled**.

Two temperature probes are setup by default, in probe locations 1 and 2. Disabled probes will not be displayed in the probes menus.

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 # ->



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.

EcoZone AC Line Operating Modes

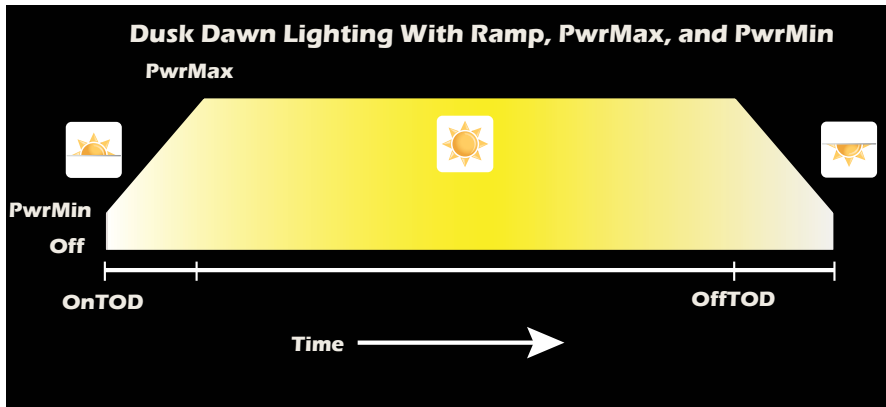
Line Mode Name	Line Mode Description
Dusk/Dawn	<p>Dusk/Dawn light is the primary “viewing” lighting for the vivarium, on at dawn, off at dusk.</p> <p>Default Dusk/Dawn lighting settings use dimming to provide a gradual ramp up in the morning (sunrise simulation) and ramp down in the evening (sunset simulation), 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>Please see the website for more information on dimmable lighting, www.ecozonevivarium.com.</p>
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, as they will not light at dim levels < 70% typically.</p>

EcoZone AC Line Operating Modes	
Line Mode Name	Line Mode Description
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 default settings use proportional control, and 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. Default settings use 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>
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>
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>
Unused / Off	<p>Use this setting to disable an AC line, the line will not turn on.</p>

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!

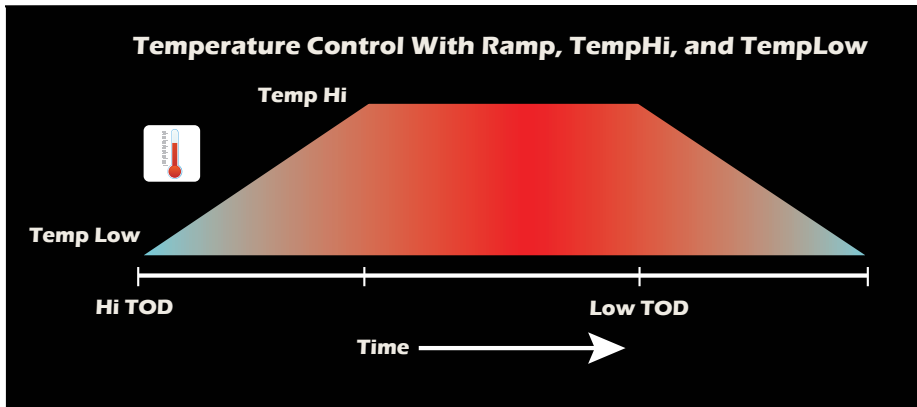
Temperature Control Line Modes - Settings

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 tem-

perature 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 **AlMo** (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.

Control Probe



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

function.

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



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 Hysterisis 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 program-

mable hysterisis 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 Hysterisis has no effect.

Timed 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.

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 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.

Setup Input/Output

The EcoZone Vivarium I/O interface allows the monitoring and control of low voltage devices.

The I/O Output is an isolated, dry relay contact, which is normally open, common, and normally closed. Example output control devices include a DC powered strobe/flasher (used for lightning/storm simulation), or a the relay output contacts can be used to trigger an audible alarm on power fail, for example.

The I/O input uses low voltage to sense an input contact open or closed state. Typical uses include use of a float switch to sense water level in a reservoir, or using a magnetic contact switch to indicate an cage door open left open, etc.

The I/O input can be programmed to trigger on either contact closure or contact open, and on a trigger, an audible alarm can be activated, or the AC line power can be shut down.

Look for additional I/O interface functionality in upcoming software releases. If you have a feature suggestion for a future EcoZone Controller software release, please contact support@ecozonevivarium.com

Setup Output Mode

Setup Controller -> Setup Input/Output -> Setup I/O Outputs -> Output Mode O1 ->

Output Mode	O1
Manual	->

The following output modes are currently supported:

Flasher**Manual****Unused / Off**

In any output mode, during the On period, the I/O output relay will be energized, and the Normally Open contact set will be CLOSED, while the Normally Closed contact set will be OPEN.

Caution:

I/O Output Relay Contacts are rated at 24V, 2A maximum. Exceeding this rating can damage your EcoZone Vivarium controller.

Never, ever connect any I/O relay output contact to a 110/120 VAC line power source!!

Fire or shock hazard can occur!

Output Mode Flasher - Settings

Flasher output mode operates much like a programmable mister, with a programmable On Time of Day (**On TOD1** - **On TOD6**), and a programmable on duration in seconds.

Connection to a DC powered flasher/strobe can simulate a lightening storm during the On period.

Please see the support resources pages of www.ecozonevivarium.com for more information on how to connect an I/O flasher for lightening simulation.

Flasher Dur

```
Flash Dur      01
May           5 Sec ->
```

Flasher Dur (Flasher Duration) determines the “on” time of the output contacts. Flasher Duration is programmed in seconds.

A unique **Flasher Dur** 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.

Flasher On TOD1 -- Flasher On TOD6

```
FlashOn TOD1  01
May          10:00am ->
```

Flasher On TOD (Flash On Time of Day) is the time of day where the flasher will fire, for the programmed **Flaser Duration**. Up to six flashing periods can be set per day, by programming the appropriate Flasher On Time of Day, indicated on

the LCD display as **Flasher On TOD1 - Flasher On TOD6**.

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

A unique **Flasher 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.

Output Mode Manual - Settings

Manual output mode simply programs the **OnTOD** (On Time of Day) and **OffTOD** (Off Time of Day), up to 6 per day, and allows full flexibility to the I/O usage. Each On Time of Day has a corresponding Off Time of Day

OutManOnTOD1 -- OutManOnTOD6



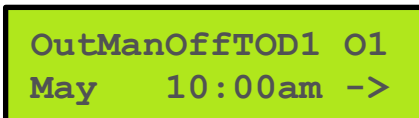
OutMan OnTOD1 O1
May 10:00am ->

Programs the I/O Output **On TOD** (On Time Of Day). When the On Time of Day is reached, the relay will be energized, until the next Off Time of Day is reached.

Up to 6 On Time of Day values can be specified, indicated on the LCD display as **OutMan OnTOD1 - OutMan OnTOD6**. Any unused output times should be programmed to "off".

A unique **OutMan OnTOD** 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.

OutMan OffTOD1 -- OutMan OffTOD6



OutMan OffTOD1 O1
May 10:00am ->

Programs the I/O Output **OffTOD** (Off Time Of Day). When the Off Time of Day is reached, the relay will be de-energized, until the next **OnTOD** (On Time of Day) is reached.

Up to 6 Off Time of Day values can be specified, indicated on the LCD display as **OutMan OffTOD1 - OutMan OffTOD6**. Any unused output times should be programmed to "off".

A unique **OutMan OffTOD** 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.

Output Mode Unused / Off

If the I/O output is unused, use this setting to place all I/O output OnTOD in the off state.

Setup Input Mode

Setup Controller -> Setup Input/Outputs -> Setup I/O Inputs -> Input Mode I1->

```
Input Mode   I1
Trigger      ->
```

Input modes can be used to trigger an alarm or some other activity.

In any input mode, the input trigger can be based on either contact closure (the default), or the contacts open.

The following input modes are currently supported:

Alarm - Audible and/or shutdown when the input contacts close/open

Trigger - I/O Output on/off or AC lines switch off when the input contacts close/open

Unused / Off

Input Alarm Mode - Settings

I/O input alarm mode allows an input contact closure or contact open condition to trigger an alarm event. The alarm event action can be either an audible alarm, or the alarm state can shut down the AC line power, or both events can occur.

Input Alarm Mode Action

```
InputAlmMode I1
Audible      ->
```

On an input alarm event, various actions can be programmed to occur. In any case, on an alarm event, the LCD display will indicate an alarm event.

actions on an alarm event:

Audible - Buzzer will sound on an alarm event


Shutdown - AC lines will shut down on an alarm event

Audible+Shutdown - Audible alarm sounds and AC lines shut down

The input alarm mode can perform the following

None/Disabled - No action, but the I/O alarm status will still be displayed

Input Alarm Trigger Level



Input Alarm I1
Closed Trigger->

The input alarm trigger level indicates whether the alarm condition will be determined either by input contact closure (default), or an open contact situation.

Closed Trigger - I/O input Alarm is active when I/O input contacts are closed

Open Trigger - I/O input Alarm is active when I/O input contacts are open

Input Trigger Mode - Settings

I/O input trigger mode allows an input contact closure or open condition to trigger an action on the EcoZone Vivarium Controller. The trigger action is the Ez400 Vivarium Controller event selection that will occur on an input contact closure or open condition. The input trigger level selects whether the event should occur on contact closure, or when the contacts are open.

Input Trigger Action



Input Trigger I1
Output On ->

On an I/O input trigger event, various actions can be programmed to occur. Input trigger mode can perform the following actions on an I/O input event:

Output On - I/O output contacts will be energized on an input trigger event
Output will remain on as long as the I/O input is active

Output Off - I/O output contacts will be de-energized on an input trigger event
Output will remain on as long as the I/O input is active.

Lines 1-4 Off - AC lines will be shut down / turned off on an input trigger event
AC lines will remain on as long as the I/O input is active

None/Disabled - No action

Input Trigger Level



The I/O input trigger level indicates whether an input trigger event will occur either by input contact closure (default), or by an open contact situation.

Setup Network

Setup Controller -> Setup Network ->



The EcoZone Ez400 Vivarium Controller Network Setup menus allow the vivarium controller to be connected to an Ethernet Local Area Network. Network connection is necessary for performing a Software Update, and also allows remote monitoring, control, and alerts (in an upcoming Ez400

software release).

IP Address Mode

Setup Controller -> Setup Network -> IP Address Mode ->



All devices on a network must have an Internet Protocol address, or IP address as it is called.

In most cases, the IP address of connected devices (like computers, printers, and also the Ecozone Vivarium Controller) is provided automatically by

a router device, using the DHCP (Dynamic Host Configuration Protocol).

The use of DHCP by the device to obtain the IP address information is referred to as **IP Address Mode Automatic**, and is the EcoZone Vivarium Controller default, and most common method used for network connectivity. However, some advanced network setups are required to manually configure the IP address information for connected devices. Thus the EcoZone Vivarium controller supports two IP address modes, Automatic and Manual.

In *automatic IP mode (IP Address Mode Automatic)*, when the EcoZone Vivarium controller powers up, it will search for a router in the network it is connected to, in order to obtain the IP address, Subnet Mask, and Default Gateway information required for network connectivity. If

for any reason the EcoZone Vivarium controller cannot find the router to assign the IP address information, a set of defaults will be used.

In *manual IP mode (IP Address Mode Manual)*, the user must program the IP Address, Subnet Mask, and Default Gateway address. Manual IP mode is sometimes utilized for devices which are accessed remotely over the internet, in order to ensure that the IP address will always be known in advance.

In either case, the current in-use EcoZone Vivarium Controller Network IP address information can be displayed in the **Network Address: 192.168.1.100** display menu.

IP Address Mode Automatic

In *automatic IP mode (IP Address Mode Automatic)*, the EcoZone Vivarium Controller will receive it's IP address from the network router when it is powered up.

For the EcoZone Vivarium controller to locate and communicate with the router, it must be connected to the router thru a wired or wireless Ethernet network. If the EcoZone Vivarium controller cannot find the router to assign the IP address information, a set of defaults will be used.

The default assigned IP address used if the router is not reachable in automatic mode, is shown below.

IP Address	192.168.1.100
Subnet Mask	255.255.255.0
Default Gateway	192.168.1.1

IP Address Mode Manual

IP Address Mode Manual is sometimes used in more specialized network setups, especially where remote access to the device is required. However the IP address information assigned must be correct for the device to successfully communicate on the network, so requires some specialized knowledge of IP networking.

Manual Mode is especially useful in cases where the Ez400 Vivarium Controller is to be accessed from outside the local network (i.e. from over the www / internet). In these cases a manual IP address may be assigned to ensure that the IP address of the device is a fixed, known value at all times. Note that external access of a local device from the internet also requires special settings in the router (also referred to as the gateway or firewall) to allow excess, so the manual IP address is just one element of this configuration.

Manual Mode requires each of the following parameters to be set per your networking requirement.

Note:

The following menus are only available when the IP Address Mode is set to Manual

Manual Mode IP Address



IP Address
192.168.1.100 >

The IP address must be “reachable” on your network. This means that all devices share a common “base” address, usually the first 3 fields, while the 4th field must be unique for every device on the network.

Typical private-network IP addresses are usually of the format 192.168.1.xxx or 192.168.0.xxx. Every device on an IP network must have a unique IP address.

Manual Mode Subnet Mask



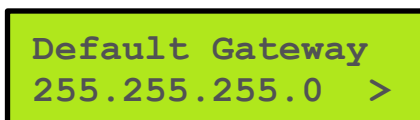
Subnet Mask
255.255.255.0 >

The Subnet Mask determines the “Range” of the variable portion of the IP address, and is used by the network router and network devices like the Ez400 Vivarium Controller to determine how to reach / communicate with other devices.

The Subnet Mask fields with a value of 255 indicate the portion of a network IP address that is “fixed” for the local network, while the fields with a value of 0 indicate the portion of the network IP address that is variable, and assigned to unique numerical values for each device on the network.

Most private network IP addresses use the default value of 255.255.255.0

Manual Mode Default Gateway



Default Gateway
255.255.255.0 >

The default gateway is the address of the router (i.e. gateway), which is used by a network connected device to reach outside the local, private network (for example, to send data outside to the www/internet). Typical private networks reserve the first IP address in the range for the default

gateway. For example, a network with the base address of 192.168.1.xxx would reserve

192.168.1.1 for the default gateway (router), while a network with the base address of 192.168.0.1 would reserve the address 192.168.0.1 for it's default gateway.

Setup Unit Misc

Setup Controller -> Setup Unit Misc ->



This configuration sub-menu covers various Ez400 unit level parameters, like temperature display units, system level alarms, and the like. Refer to the sections below for a description of each configuration item.

Temp Units

Setup Controller -> Setup Unit Misc -> Temp Units ->



The Ez400 Vivarium Controller can display temperature in either Degrees Fahrenheit or Degrees Celsius. The default is Degrees Fahrenheit. When the temperature units are changed from Degrees Fahrenheit to Degrees Celcius (or vice-versa), the temperature configuration

settings will be converted to/from the previous units to the new units. This temperature conversion is a mathematical process that can introduce some small rounding error, so it is a good idea to re-verify temperature settings after changing the temperature units.

After changing the temperature units, you must power-cycle the Ez400 Vivarium Controller.

Note:

*After changing the temperature display units from Fahrenheit to Celsius (or vice-versa), you must **POWER CYCLE** the Ez400 Vivarium controller to ensure that all display and control parameters are synchronized with the new, converted values!*

Available Temperature Display Units Choices:

Deg Fahrenheit

Deg Celsius

OverTemp Alarm

Setup Controller -> Setup Unit Misc -> OverTemp Alarm ->

OverTemp Alarm
110 DegF ->

The Ez400 includes a programmable over-temperature alarm. If ANY temperature probe exceeds the alarm threshold, the specified action (audible alarm, AC line shutdown, etc.) will occur.

OverTemp Alarm Mode

Setup Controller -> Setup Unit Misc -> OverTemp Alarm ->

OvrTemp AlrmMode
Audible+Shtdwn->

When an OverTemp alarm condition occurs, a specified action (or no action) can be programmed to occur.

Available OverTemp Alarm actions are described below.

Audible - Buzzer will sound on an alarm event

Shutdown - AC lines will shut down on an alarm event

Audible+Shutdown - Audible alarm sounds and AC lines shut down

None/Disabled - No action, but the overtemp alarm status will still be displayed

Main Display Set - Date / Season

Main Display Set
Date ->

This option will allow the main LCD display menu to show the relative season instead of the date. By default, the date is displayed on the main display. Alternately the display will map the date to a "season", and the season name will be displayed as shown below:

EcoZone Month to Season Mapping		
Season Name	Season Description	Month of the Year
MidWintr	Mid Winter Season	January

EcoZone Month to Season Mapping		
Season Name	Season Description	Month of the Year
EndWintr	Late Winter Season	February
BegSprng	Early Spring Season	March
MidSprng	Mid Spring Season	April
EndSprng	Late Spring Season	May
BegSummr	Early Summer Season	June
MidSummr	Mid Summer Season	July
EndSummr	Late Summer Season	August
BegFall	Early Fall Season	September
MidFall	Mid Fall Season	October
EndFall	Late Fall Season	November
BegWintr	Early Winter Season	December

Selecting Season in place of Date, will display the Season Name instead of the date, on the main display, as shown below.

BegFall	9:17am
72.3F	88.1F

Main Display Set ProbeA / ProbeB

Main Display Set ProbeA P1 Temp->

The Main Display shows the current temperature status of 2 temperature probes.

By default, this is probe #1 in the left-hand display location (ProbeA), and probe #2 in the right-hand probe display location (ProbeB).

However, the displayed probe can be changed in either ProbeA or ProbeB location via this menu. Select the probe number P1 - P4 for each display location.

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 review the detailed instructions below before beginning the update procedure, and check the ecozone vivarium website for new releases and additional information.

Steps for EcoZone Controller Setup

Before you begin, please review the summary and detailed procedures for updating Ez400 Vivarium Software. The steps are summarized below.

Step1: Verify the Ez400 Network Connectivity

These steps allow you to verify the IP address of the Ez400 Vivarium controller, and that it is connected to the network.



Network Address:
192.168.1.100

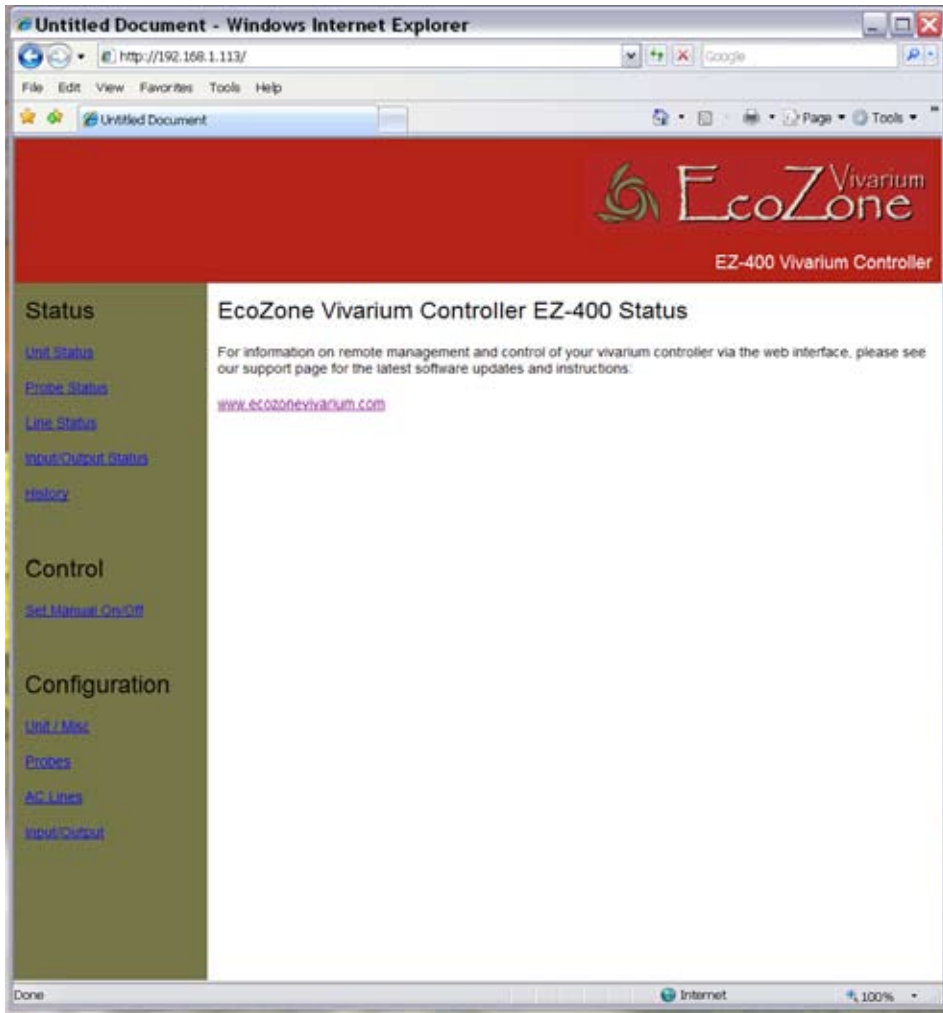
Verify your specific Ez400 unit IP address before you begin by checking the Network Address LCD display.

You should see something like the example, but your specific Ez400 IP address may differ.

To verify your Ez400 Vivarium Controller is connected and reachable on the network,

open a web browser (internet explorer, Firefox, etc.), and type the Ez400 IP address into the address bar.

If the network connection is good, you should see something like that below:



Step2: Download the Flash Loader and Programming Files

Two download items are required for the software update. These are the Flash Loader Application, and the Ez400.hex programming file.

To download these files, navigate your web browser to the EcoZone Vivarium website support page <http://www.ecozonevivarium.com/support> , to locate and download the necessary program files.

Download the 2 necessary files to your PC desktop, or other convenient location where you can easily locate them:

Flash Loader Client: Flash Loader_Client.exe

Ez400 programming file: ez400_<version>.hex
<version> is a numerical field that indicates the SW version downloaded.

Step3: Place the Ez400 Unit into Software Update Mode

Place your Ez400 Vivarium Controller into Software Update Mode by power-cycling the Ez400 Vivarium Controller while holding the **BACK** key.

Once the Ez400 Vivarium Controller has entered software update mode, you will see the following on the LCD display:



```
SW Updater v1.00
192.168.1.100
```

Note that the actual IP address on your device may differ from that above!

Note:

To EXIT software update mode and return the “normal” running mode, Power-cycle the Ez400 Vivarium controller while holding the ENTER key.

Warning:

Only exit software update mode if the software update has **not** started, as indicated by the “progress” indicator of the Flash Loading Facilitator application.

If the Flash Update procedure has proceeded to the “Update Firmware” step, you must complete the process from beginning to end. Attempting to exit an in-process update may render your Ez400 unit inoperable!

Step4: Launch the Flash Loader Client Application

Click the *Flash Loader Client* icon to launch the previously downloaded Flash Loader Client application **Flash_Loader_Client.exe** from your desktop, or your download location.

**Note:**

The Flash Loader Client application is downloaded from the EcoZoneVivarium website along with the Ez400 programming file.

The Flash Loader Client application, required to update the Ez400 Vivarium Controller software, is only supported on the PC.

Sorry, MAC and Linux users. Hopefully we can address this issue in a future release.

Step5: Connect to the Ez400 Vivarium Controller

Inside the *Flash Loader Client* window, type the Ez400 unit **IP address** as viewed on the front panel LCD screen, then click on the Connect to Server button.



After connecting to the Ez400 unit successfully, you will see the message Connection Established in the Status Window portion of the Flash Loader Client application. Also, the Upgrade Firmware button will no longer be greyed out.



Step6: Update the Firmware

Inside the *Flash Loader Client* window, click the **Update Firmware** box. When prompted, select the previously downloaded *ez400_<version>.hex* file for update.



Step7: Wait for Update Completion

Wait for the download to complete, DO NOT power cycle. The Ez400 Vivarium controller will reboot automatically when the update is completed.

As the Ez400 unit updates, the progress indicators on the LCD screen will increase. See the example below.

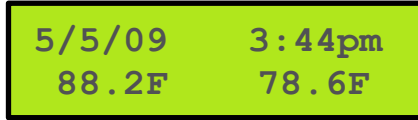
Ez400 Unit Update in Progress DO NOT DISTURB:



After the update is complete, the Ez400 unit will restart automatically, and the unit

will display the main screen.

Ez400 Unit Update Completed, After Restart:



Warning:

Do not disturb the unit power during an in-process software update, as indicated by the Progress indicator on the front panel LCD display. Once the update is complete, the unit will restart automatically.

Removing power while a software update is in-process update may render your Ez400 unit inoperable!

If this situation occurs, try performing a power-cycle while holding the BACK key to re-enter software update mode, to re-enter Software Update Mode.

If this does not work, then the unit must be returned to EcoZoneVivarium for re-programming.

Networking the Ez400

Overview

The Ez400 Vivarium Controller networking capability allows support for advanced features and functionality, such as unit setup and monitoring via a web browser. With an appropriate network and router firewall setup, you can access the Ez400 from a remote location via the World Wide Web.

The networking functionality in the first software release is limited to a simple Web demo, and the ability to perform software updates. Please check the EcoZoneVivarium website support page, www.ecozonevivarium.com/support for the availability of software updates with new networking functionality enabled.

The sections that follow provide information on connecting your Ez400 unit to a network, navigating the web interface, and enabling secure remote access to your Ez400 Vivarium Controller.

Network Connection

The Ez400 front mounted Network connector is used for the physical network connection to an Ethernet network. This connection would typically be plugged into a router or ethernet switch.

Network devices require an Internet Protocol Address (IP address) for connectivity. In most cases, the IP address and related information is provided by the router/gateway device, via a function called Dynamic Host Configuration Protocol, or DHCP. On power-up, the Ez400 Vivarium Controller uses the DHCP protocol to search for a router to provide the address information.

Alternately the IP address information can be manually configured. Manual IP address configuration is a special case and requires more networking knowledge, but is commonly used for device which are accessed remotely, to ensure that the IP address never changes.

For more information on IP address configuration on the Ez400 Vivarium Controller, please refer to the section on Network Setup in the functional reference.

Wireless networking can be utilized with an external ethernet-WiFi adapter. Please see the www.ecozonevivarium.com website for more information on ethernet-Wifi adapters which can be utilized with the Ez400 Vivarium Controller.

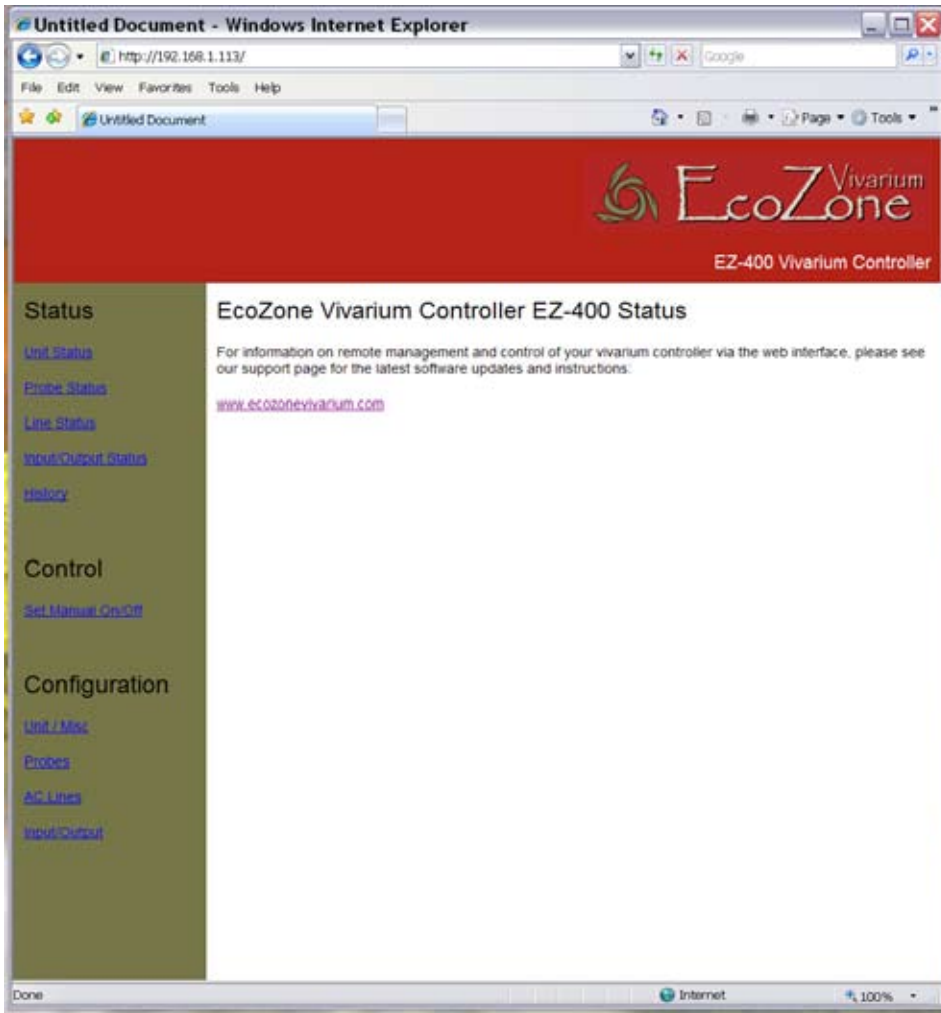
Web Interface

The web interface is the primary portal into the Ez400 Vivarium Controller, for setup and management from a computer, or any device with a web browser.

Use of the web interface can provide easy access to setup, provide remote access, and enables future advanced features such as remote e-mail and text alerts, etc.

The web interface is implemented today as a demo only to test network connectivity.

A future software release will expose the full Ez400 Vivarium Controller functionality via the web interface, along with secure login access for security when the Ez400 device is accessed via the internet.



Remote Access

Secure remote access to the EcoZone Vivarium Controller is possible using the Web Interface. The web interface, combined with a fixed IP address and appropriate router configuration, allows access to the Ez400 Vivarium controller access from anywhere in the world via the internet.

Enabling remote access to the Ez400 requires the steps described here. Some details will be dependent on your specific network setup, and what type of router is in use. There is a lot of information on the web, and a good place to start is the supplier of your specific router device. When useful “howto” articles are uncovered, we will post them to the EcoZone Vivarium “resources” page under “remote access links”, so also check there for more information.

Excellent link for general networking and remote access tutorials (as well as networking device reviews)

<http://www.myhomeserver.com/>

Remote Access Steps

The sections below provide basic information on remote access to the Ez400 Vivarium Controller via the internet. More detailed information will be provided once the Web Interface software release is available.

Setup the Ez400 Vivarium Controller for Fixed IP Address

Most networks use a network router to automatically discover and setup device IP addresses for network connectivity. The protocol is called DHCP (Dynamic Host Control Protocol). The default Ez400 Vivarium Controller network setup uses this mode to automatically get it's IP address information from a router. In the Ez400 Vivarium Controller LCD interface, it is **IP Address Mode Automatic** in the Ez400 Vivarium controller **Setup Network** -> menus.

This method is easy and convenient, but each time the Ez400 Vivarium controller is power-cycled, there is a chance that it may obtain a different IP address than what was obtained previously. Especially in the case of a power failure, where the router as well as the Ez400 Vivarium Controller have lost power.

Since knowing the Ez400 device IP address is an integral part of allowing network access, assigning a manual/fixed IP address to the device will mitigate this issue.

The link below provides an excellent tutorial on determining an available fixed/manual IP address.

Use this method to determine an available IP address, and configure it on the Ez400 Vivarium Controller.

Skip the steps related to the Home Media Server.

http://www.myhomeserver.com/?page_id=20

Determine your WAN (remote) IP Address

The router which connects your private network to the internet has an external address that is visible externally. This address is called the WAN IP address, and is usually assigned automatically by the Service Provider of internet service, communicating directly to the router or DSL or Cable Modem device.

Do not confuse this address with the PRIVATE IP addresses used in the private portion of the network. Private addresses typically use the IP range 192.168.xxx.xxx, and are not accessible directly over the internet.

The easiest way to determine this address is to check the router, DSL, or Cable Modem setup.

The network-assigned IP address will be visible in the WAN setup or status screens. Note that if the router or cable/dsl modem is power cycled, the WAN IP address could change.

another way is to use an external tool or site to display your WAN IP address information. Since the WAN IP address is exposed to the internet every time you launch a web browser to surf the internet, there are several web pages or tools that can provide this information to you.

One such tool is provided in the link below.

Browsing to this webpage, will display your WAN IP in a status box:

<http://www.mywanip.com/>

Enable your router / firewall to forward inbound HTTP or HTTPS requests to the Ez400 Vivarium Controller

Normally inbound requests to access local IP devices like the EcoZone Vivarium Controller are blocked by the router or firewall device. Also the private IP addresses aren't remotely visible in any case.

Thus specific network setup procedures are required to detect external HTTP or HTTPS access to the EcoZone Vivarium Controller, and to forward these to the device.

<http://www.wikihow.com/Set-up-Port-Forwarding-on-a-Router>

