VIVID RGB LIGHTING

Vivid Pixel Driver

SYSTEM OVERVIEW
&
CONFIGURATION

This manual covers firmware version 6.055.
Other firmware revisions may be different in subtle ways.
Please contact Vivid RGB Lighting with any concerns.

718-635-0817 or Support@VividRGBLighting.com

Thank you for purchasing Vivid RGB Lighting Products!

We'd like to take a moment and share our efforts to reduce our impact on Earth.

It's a great thing that LED's use electricity very efficiently, but more than that, Vivid RGB Lighting works to reduce our impact on Earth in all aspects of business.

We strive to keep our footprint small and use recycled products as much as possible. We recycle and/or re-use all products in the office and workshop, striving for a zero waste facility.

Our roof has been super insulated and we have 30kW of solar panels installed.
Currently, we produce more electricity than we use, averaging 32 megawatts per year!

Many windows have been replaced with well insulated reproduction windows to maintain the historic character of our 1930's building.

We have plans to become a zero-carbon building by replacing our gas heat & hot water with the highest efficiency heat pumps possible and add another 30kW of solar panels.

We are constantly looking for ways to be better and part of that is the life cycle of what we produce. Our goal is to keep **ALL** of the products and energy that has been used to make our product from polluting the planet.

With that in mind, you might notice the Colorful Recycle logo on drivers, sharing our commitment to this. This effort it NOT limited to our drivers, but to every pixel and every product we ship. Simply call us and let us know, we'll figure out the best way to make it happen. **Good things come to those who do good deeds!**

If your delivery used packing materials that can be reused, think about saving them or donating them. If you have any ideas on how we can further improve, we'd love to hear from you.

Thanks again, and may your colorful world bring smiles to all that see it.

Keep the Color Flowing!

Look for our colorful recycle logo and information on our products:

PLEASE DO NOT THROW THIS DRIVER
OR ANY OTHER VIVID PRODUCT AWAY!

Vivid RGB Lighting is committed to reducing our impact on the planet.
Help us keep Mother Earth healthy. Contact us for details.
Good things come to those who do good deeds!
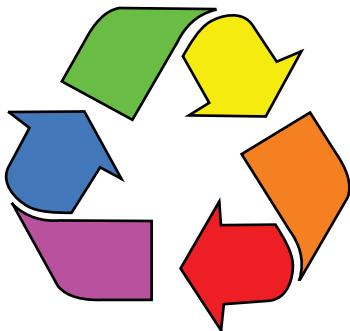
Keep the Color Flowing!

First Steps:

The four basic steps to get to the configuration setup:

1> Provide Power
2> Connect Ethernet Cable
3> Open a Browser Window
4> Enter the IP Address

Housekeeping:

We strongly urge that changes to the IP address of a VPD be written on the IP card included on the VPD.
This will reduce the amount of time required to find it on the network in the future.

VPD Configuration:

All configuration is done via computer thru the web interface. This guide assumes you are able to physically connect the VPD to an Ethernet network and have a basic understanding of Ethernet settings, Ethernet Universe and DMX addresses. **Ethernet troubleshooting can be found at the end of this manual.**

To access the configuration setup, enter the IP address of the driver into any browser on a computer connected to the same network as the driver. In the event the VPD does not respond to the assumed IP address, please see the end of this guide for information about how to find the current address or set a temporary IP address. (Pages 8 & 9)
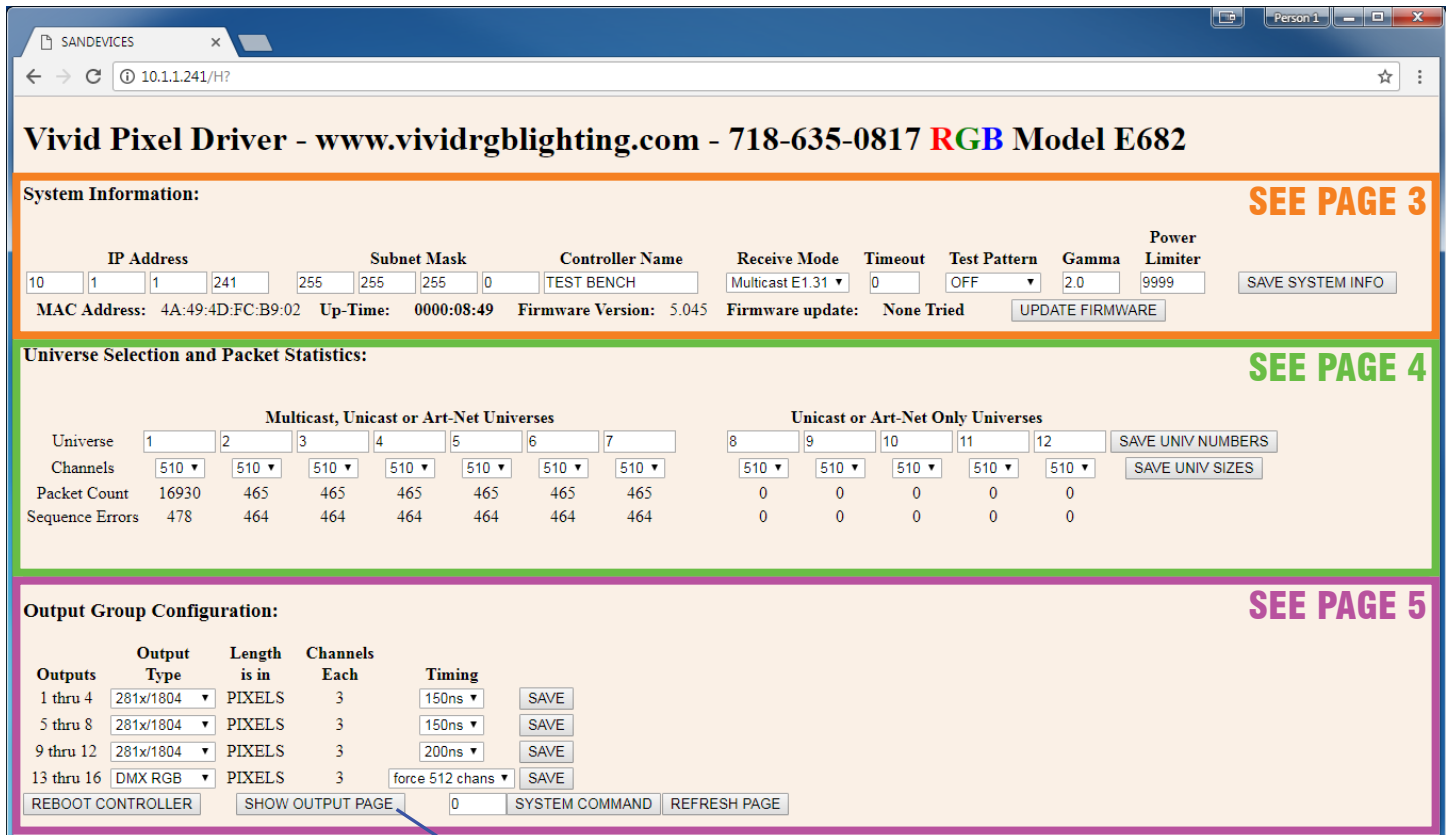
This guide covers firmware version 5 and higher, which have two configuration screens.
The Main or Input Page and the Output Page.

We use the U:DMX nomenclature in this guide, where U = Universe number and DMX = the DMX address.

We break each section down on the following pages.
As always, if you have any concerns or questions, please feel free to contact us at anytime.

Main Input Page:

SEE PAGES 6 & 7 FOR OUTPUT PAGE

System Information:

System Information:

	IP Address			Subnet Mask			Controller Name	Receive Mode	Timeout	Test Pattern	Gamma	Power Limiter	
10	1	1	241	255	255	255	0	TEST BENCH	Multicast E1.31 ▾	0	OFF ▾	2.0	9999	SAVE SYSTEM INFO

MAC Address: 4A:49:4D:FC:B9:02 **Up-Time:** 0000:08:49 **Firmware Version:** 5.045 **Firmware update:** None Tried UPDATE FIRMWARE

The fields on this page are saved with the SAVE SYSTEM INFO button

Saving Information:

Save buttons work 'per line'.
Data that has changed in lines other than the save button will not be saved.

After updating a field, you can click the save button or use the enter key to save the information in the same line as the field you are editing.

After every save operation the web page should re-load and display the proper information.

If invalid data is entered in a field, when the page refreshes, it will show a default value that is valid. You will have to re-enter and re-save the data.

The UPDATE FIRMWARE button can be used to update the firmware from a PC. Should an update be needed, please contact Vivid RGB Lighting to get the software and firmware files needed.

IP Address & Subnet Mask:
Enter the desired IP Address and Subnet Mask.
The new address and subnet mask will take effect after restarting.
You can restart the driver right on the main page of the configuration setup with the button at the bottom of the page, or cycle the power to the unit.
Unless you have a very large system, a subnet mask of 255.0.0.0 is acceptable. This allows the driver to accept all packets when only the first number of the IP address matches.

Driver Name:
Enter a name to help identify this Driver.

Receive Mode:
Enter the mode to match the type of data you are sending.
Artnet, Multicast E1.31 or Unicast E1.31 (sACN). If this driver will process more than 7 universes of data, you MUST use Artnet or Unicast E1.31.

Timeout:
Enter the number seconds to wait after losing input data before turning the lights off.
Use zero (0) to leave the last look until data is restored or the driver is reset / power cycled.

Test Pattern:
Select the mode you would like. For normal operation, it should be off.
Chase test patterns are processor intensive and may prevent the web page from loading, it might take several tries to get a response.

Gamma:
Enter a value from 1.0 to 3.0. 1.0 is the default for 8bit color depth.
For pixel types or string lengths with fast frame rates, it is possible to extend the low end dimming levels by interleaving levels. Pixels with slow frame rates automatically ignore this setting. If you are unsure of what setting to use, 2.0 is a good place to start.

Power Limiter:
Enter a value from 100 to 9999. Use 9999 to turn this feature off.
If your power supply is under sized for the load attached, this function can limit the brightness to keep the total load under a certain amount. Vivid RGB Lighting typically provides power supplies for full load, so the default of 9999 can be used.

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Universe Selection:

Universe Selection and Packet Statistics:

	Multicast, Unicast or Art-Net Universes							Unicast or Art-Net Only Universes					
Universe	1	2	3	4	5	6	7	8	9	10	11	12	SAVE UNIV NUMBERS
Channels	510 ▼	510 ▼	510 ▼	510 ▼	510 ▼	510 ▼	510 ▼	510 ▼	510 ▼	510 ▼	510 ▼	510 ▼	SAVE UNIV SIZES
Packet Count	16930	465	465	465	465	465	465	0	0	0	0	0	
Sequence Errors	478	464	464	464	464	464	464	0	0	0	0	0	

Setting Universe 'Slots':
The driver has 12 universe slots which can be assigned to any universe number. The Output Page is where the universe slots are assigned to an output.
The configuration will show the universe number but remember if the universes on the Input Page are changed, the outputs assigned to that slot will match that change.
As an example, if the 2nd universe slot was changed from 20 to 25, any outputs that were set to 20 will now automatically be 25.

Setting Channels (Universe Size):
This controls the number of channels to use when an output uses channels from more than one universe.
Examples:
> Universe 1 set to
        510 Channels
> Output 1 set to:
         171 pixels @ DMX 1:1
In this case the last pixel would be patched to DMX 2:1 and ending at DMX 2:3. Channels 511+512 are skipped and the last pixel is assigned to the beginning of the next universe 'slot'. Typically this is how pixels are patched.
If Universe 1 is set to 512 Channels, then the last pixel would receive it's data from both universes 1 & 2. So the last pixel would be patched as follows:
Red = 1:511
Green = 1:512
Blue = 2:1

The following fields are saved with the SAVE UNIV NUMBERS button.

Universe:
Enter the desired universes for the driver.
The driver will accept any valid universe number from 1 to 32,768.
Depending on the receive mode, you have either 7 or 12 universes available to use.
Do not duplicate universe numbers and do not leave any universe field blank. If a driver only needs to receive 2 universes of data, assign an unused universe number to the other universe slots. By unused, we mean a universe that will not have any data being sent on the network - notice in the image above that universes 8-12 have 0 packets counted. Those universes are "unused".

The following fields are saved with the SAVE UNIV SIZES button.

Channels:
Enter number of channels USED on a universe.
This can be a bit confusing, but typically only 510 channels are used with RGB pixels and it is the standard setting. If you are using RGBW pixels or have patched channels 511 & 512, then that universe should be set to 512.
NOTE: Changing these values AFTER configuring the outputs WILL change the output patch. It is best to make sure these values are set properly first. Always check the output patch after setting or changing these values.

The following fields are for information only. This data is updated every time the web page refreshes. To force an update, use the REFRESH PAGE button at the bottom of the page.

Packet Count:
Reports the number of packets or frames received on a universe. Depending on your console, idle universes, with no channels changing, typically update once a second. You can see in the image above, that universe 1 receives a huge number of packets, and universes 2 - 7 are idle. Universes 8 -12 are have no data being sent.

Sequence Errors:
Errors report missed or skipped packets. It is typical to have these. They are usually the result of the processor being busy with web page updates and it may increase every time the web page is refreshed. It may or may not produce a visible jump or flicker in the outputs, depending on how fast the data is being processed.

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Output Groups & Functions:

Output Group Configuration:

Outputs	Output Type	Length is in	Channels Each	Timing	
1 thru 4	281x/1804 ▾	PIXELS	3	150ns ▾	SAVE
5 thru 8	281x/1804 ▾	PIXELS	3	150ns ▾	SAVE
9 thru 12	281x/1804 ▾	PIXELS	3	200ns ▾	SAVE
13 thru 16	DMX RGB ▾	PIXELS	3	force 512 chans ▾	SAVE

REBOOT CONTROLLER	SHOW OUTPUT PAGE	0	SYSTEM COMMAND	REFRESH PAGE

Output Groups:

The drive processor works in 4 separate 'boxes' that can each drive a different pixel type. Each of these boxes drives 4 outputs. In most cases an entire VPD only drives one type of pixel, however we have the flexibility to drive multiple pixel types from one box.
Use the Output Page to set the options for each individual output.

The following buttons should be self-explanatory:
REBOOT CONTROLLER will reboot the driver. During the reboot, the lights could freeze, flicker or turn off. If data is being received after startup is complete, the lights should turn on automatically. A reboot typically takes 5 to 10 seconds.

SHOW OUTPUT PAGE will open the Output Configuration Page. The Output Page is where the settings for each individual output are changed and saved.

REFRESH PAGE refreshes the web page. This behaves similar to a "home" button on a web page, clearing information from the address string and reloading with current data from the processor.

The following fields are saved with the SAVE button on **each line** in the Group Configuration.

Output Type:

Select the Output Type for the product connected to the output group.
Vivid RGB Lighting products use DMX RGB & 281x/1804.
For Ribbon X1 & X3, set the pixel type to 281x/1804.
For all other products set the pixel type to DMX RGB.
The other pixel types are not covered by this guide, please contact us for more information.

Length is in: (Information only)
Reports the way that length field is interpreted on the output page.
Typically this is pixels, however some Output Types are in channels.

Channels Each: (Information only)
The number of channels used in each pixel. RGB pixels are 3 channel each. RGBW pixels are 4 channels each. Channels are 1 channel each.

Timing:
Select a value suitable for the products.
The options in the timing field change depending on the pixel type that is selected.
For 281x/1804 the timing can be almost any value. If the Ribbon X1 or X3 are flickering, it may require a different speed. Typically we recommend 250ns.
For DMX the options are 'Normal' or 'Force 512 chans'. Vivid RGB Lighting products should work with either, although we recommend 'Normal'.

The SYSTEM COMMAND button
Issues custom commands to the processor.
Vivid RGB Lighting does not recommend entering any numbers in this field without direct instruction. Entering a system command will over-write all the values in the setup and all of the current information will be lost.
Zero is the default and leaving it in the field will not make any changes.

Output Configuration Page:

#	Type	Length		Color Order	Start Address Univ	Chan	End Address Univ	Chan	Rev	First Group	Other Groups	Dimmer	
1	281x/1804	42	Pixels	RGB ▾	1 ▾	1	1	126	☐	0	1	100% ▾	SAVE
2	281x/1804	42	Pixels	RGB ▾	1 ▾	127	1	252	☐	0	1	100% ▾	SAVE
3	281x/1804	42	Pixels	RGB ▾	1 ▾	253	1	378	☐	0	1	100% ▾	SAVE
4	281x/1804	42	Pixels	RGB ▾	1 ▾	378	1	503	☐	0	1	100% ▾	SAVE
5	DMX RGB	42	Pixels	RGB ▾	2 ▾	1	2	126	☐	0	1	100% ▾	SAVE
6	DMX RGB	42	Pixels	RGB ▾	2 ▾	127	2	252	☐	0	1	100% ▾	SAVE
7	DMX RGB	42	Pixels	RGB ▾	2 ▾	253	2	378	☐	0	1	100% ▾	SAVE
8	DMX RGB	42	Pixels	RGB ▾	3 ▾	379	3	504	☐	0	1	100% ▾	SAVE
9	DMX RGBW	42	Pixels	RGBW ▾	3 ▾	1	3	168	☐	0	1	100% ▾	SAVE
10	DMX RGBW	42	Pixels	RGBW ▾	3 ▾	127	3	294	☐	0	1	100% ▾	SAVE
11	DMX RGBW	42	Pixels	RGBW ▾	3 ▾	253	3	420	☐	0	1	100% ▾	SAVE
12	DMX RGBW	42	Pixels	RGBW ▾	3 ▾	379	4	36	☐	0	1	100% ▾	SAVE
13	DMX stand	42	Channels		4 ▾	1	4	42	☐	0	1	100% ▾	SAVE
14	DMX stand	42	Channels		4 ▾	127	4	168	☐	0	1	100% ▾	SAVE
15	DMX stand	42	Channels		4 ▾	253	4	294	☐	0	1	100% ▾	SAVE
16	DMX stand	42	Channels		4 ▾	379	4	420	☐	0	1	100% ▾	SAVE

SHOW MAIN PAGE

The fields on this page are saved with the SAVE button on **each line**. Fields not on the same line as the save button will revert to the previously saved value.

Understanding Universe 'Slots':
Technically you are not selecting a universe on this page, you are selecting which universe "SLOT" to use. If you change the universes on the Input Page, these will automatically update to match. For example, if the 2nd universe slot was changed from 20 to 25 on the Input Page, any outputs that were set to 20 will now automatically be 25.

Consecutive Patching:
If you want one output to follow the next, the Start Channel number should be ONE higher than the end channel of the output it is to follow. Example:
Output 1 ends on channel 126, Output 2 would start on channel 127.

#: (Information only - this can not be changed)
The output number of the driver card. If your driver has less than 16 outputs, we have configured the web interface to match the configuration of the output cables. If you have any problems with the output number not matching the output cable of your diver, please contact Vivid RGB Lighting.

Length:
Enter a number from 1 to 1000. Use Zero to turn an Output Off.
The number is the number of Pixels or Channels connected to the Output.
Note that longer strings of pixels have slower refresh rates and very long strings might have noticeable flicker or update artifacts. We recommend setting outputs to start and end in the same universe - ie, do not start an output at 2:401 and end at 3:12. The length of an output can be longer than the string that is connected without any problems.

Color Order:
Select the color order for the Pixels. All Vivid RGB Lighting Products are RGB.
This could be useful if your controller is programmed with a different color order and you would like to have the VPD translate it. Trial and error is the fastest way to find the right one.

Start Address - Universe:
Select the start universe number for the output.
The list of universes to pick from is set on the Main Input Page.

Start Address - Channel:
Enter a number from 1 to 512, of the DMX address of the first pixel for that output.
Note that if the universe is set to 510 channels on the Input Page, then channels 511 and 512 will be automatically mapped to the next universe.

Output Configuration Page:

#	Type	Length		Color Order	Start Address Univ	Chan	End Address Univ	Chan	Rev	First Group	Other Groups	Dimmer	
1	281x/1804	42	Pixels	RGB ▾	1 ▾	1	1	126	☐	0	1	100% ▾	SAVE
2	281x/1804	42	Pixels	RGB ▾	1 ▾	127	1	252	☐	0	1	100% ▾	SAVE
3	281x/1804	42	Pixels	RGB ▾	1 ▾	253	1	378	☐	0	1	100% ▾	SAVE
4	281x/1804	42	Pixels	RGB ▾	1 ▾	378	1	503	☐	0	1	100% ▾	SAVE
5	DMX RGB	42	Pixels	RGB ▾	2 ▾	1	2	126	☐	0	1	100% ▾	SAVE
6	DMX RGB	42	Pixels	RGB ▾	2 ▾	127	2	252	☐	0	1	100% ▾	SAVE
7	DMX RGB	42	Pixels	RGB ▾	2 ▾	253	2	378	☐	0	1	100% ▾	SAVE
8	DMX RGB	42	Pixels	RGB ▾	3 ▾	379	3	504	☐	0	1	100% ▾	SAVE
9	DMX RGBW	42	Pixels	RGBW ▾	3 ▾	1	3	168	☐	0	1	100% ▾	SAVE
10	DMX RGBW	42	Pixels	RGBW ▾	3 ▾	127	3	294	☐	0	1	100% ▾	SAVE
11	DMX RGBW	42	Pixels	RGBW ▾	3 ▾	253	3	420	☐	0	1	100% ▾	SAVE
12	DMX RGBW	42	Pixels	RGBW ▾	3 ▾	379	4	36	☐	0	1	100% ▾	SAVE
13	DMX stand	42	Channels		4 ▾	1	4	42	☐	0	1	100% ▾	SAVE
14	DMX stand	42	Channels		4 ▾	127	4	168	☐	0	1	100% ▾	SAVE
15	DMX stand	42	Channels		4 ▾	253	4	294	☐	0	1	100% ▾	SAVE
16	DMX stand	42	Channels		4 ▾	379	4	420	☐	0	1	100% ▾	SAVE

SHOW MAIN PAGE

The fields on this page are saved with the SAVE button on each line. Fields not on the same line as the save button will revert to the previously saved value.

Quick Tip:
The enter key will send the save command for the same line as the one you are modifying. Useful if you are only changing one parameter.

About Grouping:
Grouping reduces the number of Input channels needed to control a length of pixels by mapping a single input/control pixel to multiple physical pixels.

End Address - Universe & Channel: (Information only)
Shows the Universe and Channel number for the last DMX channel used on that output.
This number is calculated based on the following formula:
Length x Channels per pixel (from the main page) + Start Address.

Note for standard 3 channel pixels, if an output starts in one universe and end in the next, it is critical that your channels per universe is set properly on the first page.
See 'Setting Channels (Per Universe)' on page 4.

Reverse:
Check this box to reverse the patch for that output.
When an output is reversed, the first pixel will be the last physical pixel in the run.

First Group:
Enter a number from 0 to 99. The default is 0.
Used to align groups when parallel runs of pixels do not physically line up. Typically used with ribbon strips mounted in odd shapes and different physical start points.
When used, the first input pixel will drive multiple physical pixels at a different number than the 'other groups'.

Other Groups:
Enter a number from 1 to 'Length of that output'. The default is 1.
The minimum number is 1 and the maximum number has to be less than the length of the output. For Example, if the length is set to 50 pixels, then the group can't be 51 pixels.
If the First Group is field is set to Zero, then the first group will match this setting.

SHOW MAIN PAGE opens the main Input page. UNSAVED CHANGES WILL BE LOST.

VIVID RGB LIGHTING

VPD Troubleshooting:

If your reading this page, then you are having trouble connecting to the web browser interface.

If you can see the driver card, there is a single red LED that reports the status of the web server, it should normally be ON.

In the event that the web configuration page does not load with the expected IP address, there are three possible problems:

> 1> The VPD & Computer are not on the same network
> 2> It is not the correct IP address
> 3> The webserver on the VPD is off

1> The VPD & Computer are not on the same network

The VPD requires an IP address that is on the same physical network and the same IP address network that you are using to drive the system. The IP address and subnet mask settings that must be configured properly. The relationship between the IP address and the subnet settings is important. The VPD is set to a subnet mask of 255.0.0.0 which means it will listen to any IP address as long as the first number matches. As an example, the computer can have an IP address of 10.34.45.90 and as long as the VPD has an IP address of 10.x.x.x. it will receive the packets. HOWEVER, if the computer has a subnet mask of 255.255.255.0 THEN the first THREE digits of the IP address must match - if they don't then the web-server will never load because the computer is ignoring the data. The last digit of the IP address must be unique for every device on a system - the computer and the VPD must NOT have the same IP address.

Some Example Settings:

A#, B# & C# must match. x can be any number between 2 & 254.

	VPD Settings		Lighting Control Settings	
	IP	Subnet	IP	Subnet
Concept:	A#.x.x. x	255. 0 . 0 . 0	A#.x.x. x	255. 0 . 0 . 0
Example:	10 . 2 . 3 . 241	255. 0 . 0 . 0	10 . 1 . 1 . 30	255. 0 . 0 . 0
Concept:	A#. B#. C#. x	255. 0 . 0 . 0	A#. B#. C#. x	255.255.255. 0
Example:	10 . 2 . 3 . 4	255. 0 . 0 . 0	10 . 2 . 3 . 40	255.255.255. 0

We do not recommend using the number '1' for the last number of the IP address to prevent conflicts with the default IP address of many devices.

Web page Errors:
The firmware is written to give priority to lighting data and because of this browsers may return a timeout or refresh error. This is expected behavior. Waiting a few more seconds should resolve it automatically.
If not, then using the browser button to refresh the page will send a new request to the processor.
Note that when the driver is in a test pattern, it is also generating the lighting data so the errors maybe more frequent and in some cases may take several attempts. We suggest leaving the test pattern off if you are configuring many settings.

VPD Troubleshooting (cont.)

2> <u>You do not know or do not have the right IP address.</u>

To find the current IP address, open the cover and find the button labeled "Program" on the main driver card. While watching the red and green LEDs, press and hold the program button, release the button after the LEDs blink one time. After a brief pause, the red and green LEDs will blink out the IP address as follows:

Green LED = Position/Digit - it stays on while the red LED blinks
Red LED = Number

Example:

Green LED is ON while the red LED blinks five times = 5
Zero = a green flash without a red blink

Note - All 12 numbers of the IP address are reported.

An IP address of 10.1.1.171 is reported as 010.001.001.171

To force a specific TEMPORARY IP address:
Press and hold the program button, release after the number of blinks matching the IP address you want:

2 Blinks = 2.2.2.2
3 Blinks = 10.10.10.10
4 Blinks = 169.254.74.73
5 Blinks = 192.168.0.206
6 Blinks = 192.168.1.206

After setting a temporary IP address, you must login to the web interface and save a new IP address, or the driver will revert to the previously saved IP address after the next reset or power cycle. Please note that the computer must be on the same network as the temporary IP address. See item #1 above.

3> <u>Webserver is off:</u>

The RED LED on the PCB board next to the Ethernet connector (there is only one red LED) indicates the status of the webserver. If it is off, the webserver is off. A simple power cycle of the system should restore the webserver to normal operation.

If you do not have access to the unit and would like to try to find the unit on the network, you can try programs that will scan a network. We use a free program called Angry IP scanner. www.angryip.org

Last resort...

If you got to this page and things still are not working, please call us - anytime:

718-635-0817

If you have any comments or concerns, please call or write.
We are always working to make our products better!

Support@VividRGBLighting.com

Here are some handy lines to make any notes you want to remember for next time:

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