

SYSTEM OVERVIEW & CONFIGURATION

Firmware 3.3 → 4.1



Please contact Vivid RGB Lighting with any questions or concerns.

718-635-0817 or Support@VividRGBLighting.com



ADS WFI COME

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

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

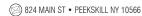


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ADS OVERVIEW



ADS Overview:

The primary function of the Addressable DMX Splitter (ADS) is to split a single DMX universe into separate outputs, with individual control of all the connected pixels, within a small form factor. There are currently three 'flavors' of the ADS: the ADS-MICRO and ADS-SOLO, with external power supplies, and the ADS-MINI, MIDI or MAXI, with integral power supplies and optional waterproof connections for outdoor use. All offer the same functionality but with different features. We can also do custom integrations that meet your exact requirements.

 The ADS-MICRO is designed primarily for one or two output applications, allowing for a unique start address for the attached string(s). The ADS-MICRO includes fuses wired in-line with the power cables. ADS-MICRO is capable of 4 separate outputs, but not fused within the micro enclosure. This might be useful if size is a major concern in your application and you have the ability to fuse in another location. The ADS-MICRO only works with external power supplies.



The ADS-SOLO is a 'full-size' driver with DC power input (5v, 12v or 24v) and up to 4 separate fused outputs. It will drive up to 20 amps of pixels, although reaching this limit is typically not easy given a limit of 170 total pixels per universe. The ADS-SOLO works with an external power supply.

The ADS-MINI, MIDI, or MAXI* are 'full-size' drivers with AC power input and DC low voltage outputs (5v, 12v or 24v), with a Maximum of 4 separate fused outputs. These units will drive up to 20 amps of pixels, although reaching this limit is typically not easy given a limit of 170 total pixels per universe.

Connector options for indoor and outdoor weatherproof installations.

Black is an available option and we can tandem two drivers in one box allowing up to 8 outputs if required.

*The size of the enclosure is determined by the wattage required by the project.





ADS FUNCTION & SYSTEM STATES

Functionality:

The Addressable DMX Splitter (ADS) functions as a DMX signal divider with separate outputs that are consecutively patched. An onboard multi-color status LED provides system status and feedback regarding programming configuration.

Operation is simple, program the number of pixels connected to each output and then set your desired DMX start address for the first pixel.

Each output can have a unique number of pixels and the driver will automatically set the next output to start at the next consecutive DMX address. Example: If output one is set to have 10 pixels, then output 2 would automatically be set to start at the DMX address of pixel 11.

All of the pixels connected to a single ADS driver are controlled consecutively from the DMX start address without breaks.

Version 2.1 firmware [and higher] includes the ability to 'match' outputs, so that the connected strings act identically without using up more DMX channels.

Version 3.1 firmware [and higher] adds the ability to set the pixel type as RGB or RGBW (3 or 4 channels per pixel).

The ADS includes a 'test' mode to allow for system setup and permits checking that pixels work without a DMX controller. This can also function as a 'stand-alone' mode if the included patterns or colors are suitable for your application.

All setup and configuration is done via three numbered rotary switches with simple functions and clear feedback.

We break each step down on the following pages.

As always, if you have any concerns or questions, please feel free to contact us at anytime.

ADS System Status:

The current status of the driver is reported by two LEDs:

- 1> The solid green LED reports power for the processor. If it is not on, then there is a problem with the control fuse or input power.
- 2> A color-changing RGB 'status' LED reports the current system function as follows:

Status LED Color Codes:

Good DMX	•	Steady	Green:	Good DMX received.
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- Bad DMX Steady Red: NO DMX received or DMX cannot be interpreted.
- **Test / Stand Alone** Steady Cyan: One of the test modes is enabled.
- **Program Mode** Steady Purple: Program the number of pixels – changes to blue
 - after 5 seconds. **Output Saved** Steady Blue: The output has been saved.
- No Output to Save Blinking Blue: See next page.
 - Incorrect DMX Blinking Orange: See next page.





ADS SYSTEM STATES & SETUP STEPS



ADS System Status: (Cont.)

- Fast Blinking Blue: Programming of this output is not possible since it does not exist.
 Please choose a different output to program. This is set by Vivid RGB Lighting before the driver ships and is not user configurable.
- Fast Blinking Orange: Switches are incorrect this happens under two conditions:
 - 1> When the DMX start address is too high for the number of pixels programmed. If you have 5 pixels on each output, 20 pixels total, that requires 60 channels of DMX. Setting a start address higher than 450 would cause this error because there are not enough channels left in the universe to control the pixels.
 - 2> When switch 1 is set 6, 7, 8, or 9 (program mode) at power up. This error would indicate that the switch changed since the system was powered down and the system will keep the currently saved settings. This prevents program mode from being entered accidentally and overwriting the current settings.

When the ADS is in Fast Blinking Orange mode, the connected pixels will not work and will not respond to DMX until the switches are changed. Please see the Error Modes on page 14.

Additional status:

If the mode of the driver is changed, then the color of the status LED will change to confirm that the mode was saved:

- Mode 991 RGB Pixel Type Status LED will keep blinking Red, then Green, then Blue
- Mode 992 RGBW Pixel Type Status LED will be solid WHITE
- Mode 993 998 Match mode Status LED will be solid Orange
- Mode 999 Normal mode Status LED will be solid Cyan

The firmware revision number is flashed when the ADS is powered up. It is reported as the first number followed by a brief pause and then the second number. The color of the flashing reports the modes. If the first number flashes **Cyan**, the system is in 'normal' mode, 999. If the first number is flashes **Orange**, one of the match modes is enabled.

If the pixel type is RGB then the 2nd number will be the same color as the first. If the pixel type is RGBW then the 2nd number of the firmware will flash WIIII

See the sections on Pixel Type (page 9) and Match Modes (pages 10 & 11) for more information.

ADS Setup Steps:

Step 1> Program the number of pixels for each output. (pages 6 & 7)

Step 2> Set the start address for the driver. (page 8)

Optional > Use a test pattern mode to light all the pixels in a pattern, (pages 12 & 13)

Optional > Enable or disable the Match Modes. (pages 10 & 11)

Optional > Set the Pixel Type - RGB or RGBW (page 9)







ADS CONTROLS & PROGRAMMING

Hundreds

Tens

Ones

ADS Rotary Switches:

The ADS is programmed entirely through the three numbered rotary switches. We refer to these switches as 1, 2 & 3, where:

- 1 =the Hundreds position
- 2 = the Tens position
- 3 =the Ones position

Switch number 1 (Hundreds) selects the mode of the driver as follows:

- 0-4 = DMX Start Address Mode
- 5 = Test or Stand-alone Mode
- 6 9 = Set/Program Mode

Switch numbers 2 & 3 (Tens & Ones) changes based on the function above.

If switch 1 is in DMX start address mode(0, 1, 2, 3, or 4), these switches behave as expected to set the start address for the tens and ones position.

Note, 499 is the highest start DMX address that can be set.

When in Test mode these switches select the test pattern from 00 -> 99

When set to program mode, switches 2 & 3 set the number of pixels.

<u>Important:</u> While the highest start address for the ADS is DMX 499, the ADS will process all 512 channels.

Due to the RGB/RGBW settings and Match Mode options, Output 4 is limited to a maximum of 90 pixels, if this is a concern, please contact us for alternate solutions.

Step 1> Program the number of pixels per output

Change switch 1 to 6, 7, 8, or 9, to save the number of pixels for an output. As soon as switch 1 enters PROGRAM mode, the status LED turns purple and a 5 second countdown timer is started. Changing any switch to a different number will reset the timer and re-enter PROGRAM mode. When there are no changes to the switches for 5 seconds, the current settings are saved for the selected output. As soon as the setting is saved the status LED turns Blue and all connected pixels will blink twice.

To program output:	Set switch 1 to:
1	6
2	7
3	8
4	9*

If the status LED is blinking fast Blue, then your driver does not have that output, select a different number to program.

^{*} Numbers 991-999 set Pixel Types & Match modes



ADS PROGRAMMING



Key Point: When setting the number of pixels, the time-out function/PROGRAM mode is reset after a change to any switch. If the wrong number of pixels is set by accident, simply change switch 2 or 3 (Tens or Ones) and the system will re-enter PROGRAM mode and start the countdown again!

Example - Set output 1 to 21 pixels:

Action:	Status LED:	Result:
Set Switch 1 to 6	Turns Purple	Program mode entered
Set Switch 2 to 2 Set Switch 3 to 1	Stays Purple	Waiting to Save
No changes for 5 seconds	Turns Blue*	Pixel Count is saved

If the wrong pixel count was saved:

Option 1>	Change Switch 2 or 3 to the correct number	Turns Purple	Program mode entered
	No changes for 5 seconds	Turns Blue*	Pixel Count is saved

Option 2>	Change Switch 1 to 7 and then quickly back to 6	Turns Purple	Program mode entered
	No changes for 5 seconds	Turns Blue*	Pixel Count is saved

^{*}In addition to the status LED turning Blue, all pixels will blink twice to confirm the save.

Note: When switching between programing outputs, it is possible to change the switches in any order, but we recommend changing switch 1 first, as changing 2 or 3 first will enter PROGRAM mode again and if you take longer than 5 seconds to set the correct number of pixels, the wrong number of pixels for an output might be saved. Although, it is very fast and easy to correct this!

Helpful feature - Patch Configuration Display:

To assist in identifying outputs and setting the correct number of pixels, when PROGRAM MODE is activated the driver will light the current set number of pixels in a solid color. The patch display reflects the mirror mode, so you might not see all the colors shown. See the Match Mode Chart (Page 10) for details. This configuration is also displayed in MODE 500:

> Output 1 in Red Output 2 in Green Output 3 in Blue Output 4 in Yellow

When programming, the lighted pixels change in real time as you adjust the number, so you can see immediately as you make changes.

Please note, that the ADS will not show you if you have set more pixels than you have connected to an output, but using this feature makes it easy to adjust and match the number of pixels. Just watch for pixels light up or turn off as the numbers is changed.







ADS DMX ADDRESS

Step 2> Set the start address

After the number of pixels per output has been set above, change switch 1 (Hundreds) to the desired DMX start address, followed by switch 2 & 3.

Once the driver has exited programming mode, the Status LED will report the status of the DMX data input.

- · Steady Green: Good DMX received.
- Steady Red: Either NO DMX received or DMX that cannot be interpreted.
- Fast Blinking Orange: DMX address incorrect this happens for two conditions:
 - 1> When the selected DMX start address is too high for the number of pixels programmed. If you have 5 pixels on each output, 20 pixels total, that requires 60 channels of DMX. Setting a start address higher than 450 would cause this error because there are not enough channels left in the universe to control the pixels.
 - 2> At startup, if the settings on the rotary switch 1 is set to program mode indicating that the switches changed since the system was powered down. This prevents program mode from being entered accidentally and overwriting the current settings.

The ADS will process all DMX channels, but the highest possible DMX start address is 499.

Step 3> Make them Blink!

At this point the driver is fully programmed and should respond to your DMX input data. If things are not working as expected, please check the troubleshooting section on the next pages or give us a call.

DMX Termination

Depending on the hardware configuration of your ADS driver may have a built-in DMX Terminator that can be turned on or off via a small switch located directly below the rotary switches. Typically the ADS is configured with only an input connector, so we ship the ADS with the terminator in the ON position.

Operation Notes

- 1> When a slow rainbow test mode is enabled, it can take up to 10 seconds for the driver to recognize a change on the switches. This is to prevent visible glitches in the rainbow fades.
- 2> At first power up, the status LED blinks the loaded firmware revision as two numbers with a pause in between. The color of the LED indicates if a Match Mode is enabled. Cyan for Normal mode, Orange if a Match Mode is enabled.
- 3> The highest possible DMX start address is 499. The ADS will listen to the entire DMX data stream, but it is not possible to have the start address above 499.
- 4> Output 4 is 'limited' to 90 pixels.





ADS PIXEL TYPE & MODES



Setting the Pixel Type

The ADS will drive both RGB & RGBW pixels. This only affects the math that controls the data splitting to each output, it does not change the DMX data in anyway. If you are using RGBW fixtures, you must still send RGBW data from your control system.

To enable RGB mode, set the Switches to 991. After 5 seconds the Status LED will blink Red, Green, Blue, confirming that the setting was saved.

To enable RGBW mode, set the Switches to 992. After 5 seconds the Status LED will turn WHITE, confirming that the setting was saved.

Stand-Alone / Test Modes

Setting the switches to numbers between 500 - 599 will enable some basic internal stand-alone programs to run. These programs can be used to test pixels without controller or run the pixels for simple installations. The ADS can be left in these modes and when powered up, the ADS will play the programs after boot up is complete.

The status LED will be solid Cyan when a test mode is enabled.

Please refer to the chart on pages 12 & 13 for the patterns. Note that some numbers are not programmed and they will not turn the pixels on.

Special Modes

The ADS has a couple of Special Modes that are used for troubleshooting.

MODE 000: This mode disables the splitter function, ignores the pixel count settings and sends the full universe of incoming DMX Data to all the outputs.

MODE 500: This displays the 'patch' settings. See Helpful Feature on page 7.

MODE 599: Reports the DMX statistics to the RS232 port. A usb dongle is required to access this information. Please contact Vivid RGB Lighting for details.

Firmware releases

- 1.0: Initial Beta July 2019
- 1.1 & 1.2: Initial Testing & feature implementation.
- 1.3: First release September 2019
- 1.5: Added new hardware December 2019
- 1.6: Fixed bug with bad data January 2020
- 2.1: Added Matching May 2021
- 2.3: New DMX engine May 2021
- 2.3B: Matching Mode Corrections & Misc. updates June 2021
- 3.1: RGBW Mode added August 2021
- 3.2: User Options for RGB / RGBW added Options 991 & 992 -September 2021
- 3.3: Updates & fixes to RGB & RGBW modes -September 2021
- 3.5 & 3.6: Updates & fixes
- 3.7: Fixed bug when saving RGB/RGBW modes July 2023
- 4.1: Updated MBB, Break and MAB DMX Timings for new pixels July 2023

Known issues:

The connected lights can blink erratically when in programming mode or waiting to save.







ADS MATCH MODES

Match Modes

The ADS has some extended functionality with the use of "match" modes. Matching an output means that the outputs have the same start point - but not necessarily the same endpoint!

There are 6 match options + normal. The modes are set by the same method as programming mode for any of the outputs: Enter the number you would like, and wait 5 seconds. After 5 seconds, the Status LED will change and confirm the mode.

- If the LED turns **Orange**, then one of the Mirror Modes is enabled.
- If it turns Cyan, then Normal Mode is enabled.

These colors are also reflected when the firmware number is flashed at startup.

To help with getting the correct settings, when a match mode number is selected, the strings will light to match the pixel count and match pattern, with the 'matched' output displaying in the same color as the primary output at 25% brightness.

Match Modes still use channels contiguously, nothing is skipped. As an example, in mode 994, the first pixel on output 3 would be the next "logical" pixel after the last pixel on output 1.

Match Mode detailed example:

Using the following settings:

Output 1 set to 10 pixels Output 2 set to 12 pixels

Output 3 set to 20 pixels Output 4 set to 30 pixels

MODE 995 enabled:

Outputs 1&2 are matched Outputs 3&4 are matched.

In this case, the first pixel on Outputs 1&2 will behave identically (match) and the first pixel on outputs 3&4 will match.

However, it is important to note that the matched output can have a different number of pixels than the 'primary'. In this case above, the first 10 pixels of output 2 will match output 1, BUT the last two pixels of output 2 will match the first two pixels of output 3. There maybe cases when this is useful, but if you want the strings to be fully independent, then output 1 must be set to have 12 pixels.

If you have any questions about match mode, please give us a call.



ADS TROUBLESHOOTING



Match Mode Chart:

This list shows how the match pattern for each mode.

The strings shown in the same color behave the same.

The 'primary' output is illuminated at 100% brightness and the matched output is illuminated at 25% in the colors shown in this chart:

Mode	Status	Description	Result:
993	•	Outputs 1, 2 & 3 are consecutive, Output 4 matches Output 3	1 • • • • • • • • • • • • • • • • • • •
994	•	Outputs 1, 3 & 4 are consecutive, Output 2 matches Output 1	2 · · · · · · · · · · · · · · · · · · ·
995	•	Outputs 1 & 3 are consecutive, Output 2 matches Output 1, Output 4 matches Output 3	1 • • • • • • • • • • • • • • • • • • •
996	•	Outputs 1 & 2 are consecutive, Output 3 matches Output 1, Output 4 matches Output 2	1 • • • • • • • • • • • • • • • • • • •
997	•	Outputs 1 & 4 are consecutive, Outputs 2 & 3 match Output 1	1 • • • • • • • • • • • • • • • • • • •
998	•	Outputs 1 & 2 are consecutive, Outputs 3 & 4 match Output 2	1 • • • • • • • • • • • • • • • • • • •
999	•	Normal Mode / Disable Matching	1 • • • • • • • • • • • • • • • • • • •

Important: Matching only aligns the start channels of an output, it does not limit the number of pixels on that output. Depending on your configuration, it is possible to have pixels on one string overlap the pixels on the next string. Please see the example on page 10.







ADS CODE CHART

Switch #:	Function / Pattern: State			is LED:	
Normal DMX Input Mode:					
000	Send input DMX to all outputs without splitting Green I			DMX OK	
000 → 499	Operate Normally at	the Start address set.		Red NO	DMX
Test patterns	& Stand-Alone mo	ode functions:			
500		Output 1 in Red	Output 3 in I Output 4 in Y		
501 → 510	All Pixels in White, fr	om 5% to 100%			
511 → 539	Solid colors - refer to	the chart on the right			
540 → 549		fade- all pixels the same color 60 Seconds / loop \rightarrow 549 = F	astest		Cyan
550 → 569	For Future				Oyan
570 → 573	White Marquee Chas	e - Slow to Fast			
574	For Future				
575 → 578	White Marquee Chase with Fade - Slow to Fast				
579 → 598	For Future				
599	DMX statistics (TBD)				
Programming	<u>:</u>				
6 x x	Program Output 1	Where xx = the number of pix	kels on the o	utput.	
7 x x	Program Output 2	The maximum number of pixe			Purple
8 x x	Program Output 3	99. After setting the rotary switches, wait 5 seconds, when the status LED turns Blue , the		Blue	
901 → 990	Program Output 4	output is saved.	, ,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,		
991	Set RGB Pixel Type (3 Channel Mode)	Status LED	Blinks	R, G, B
992	Set RGBW Pixel Type (4 Channel Mode)*		Wiffe		
993	Outputs 1, 2 & 3 are	consecutive, Output 4 = 3			
994	Outputs 1, 3 & 4 are	consecutive, Output 2 = 1			
995	Outputs 1 & 3 are co	onsecutive, Output 2 = 1, Ou	tput 4 = 3		0
996	Outputs 1 & 2 are co	onsecutive, Output $3 = 1$, Ou	tput 4 = 2		Orange
997	Outputs 1 & 4 are co	onsecutive, Outputs 2 & 3 =	1		
998	Outputs 1 & 2 are co	onsecutive, Outputs 3 & 4 =	2		
999	Normal Mode / Disal	ole Matching			Cyan

^{*}To check if the system is in 3 or 4 channel mode, cycle the power. If the 2nd digit of the firmware number is flashed in white, then the system is set for RGBW mode.









Solid Color Chart:

Percentage of each color

#	Red	Green	Blue	Color:
511	100			Red
512	100	5		Red
513	100	25		Orange
514	100	50		Orange
515	100	75		Yellow
516	100	100		Yellow
517	75	100		Yellow
518	50	100		Lime
519	25	100		Lime
520	5	100		Green
521		100		Green
522		100	5	Green
523		100	25	Sea foam
524		100	50	Sea foam
525		100	75	Sea foam
526		100	100	Cyan
527		75	100	Cyan
528		50	100	Sky Blue
529		25	100	Sky Blue
530		5	100	Blue
531			100	Blue
532	5		100	Blue
533	25		100	Purple
534	50		100	Purple
535	75		100	Magenta
536	100		100	Magenta
537	100		75	Magenta
538	100		50	Pink
539	100		25	Pink



ADS NOTES

Error Modes

If any error mode is active, DMX output to the lights is disabled until the error is cleared and a valid start address is set.

All the lights are flashing Purple

This indicates you are trying to save an invalid configuration. The main way that this would happen is when you try to save all four outputs to zero pixels. When the last output is set to zero pixels, the system will prevent you from saving and flash the strings purple. The only way to exit this error is to enter a valid DMX start address and wait for the system to reset to the previous patch. At this point you can restart saving the outputs in your desired configuration, avoiding the point where all outputs are set to zero at the same time.

The status LED is flashing Blue.

This happens when there is no physical output to set. If you enter "910", the system checks to see if output #4 is present, if not, then the LED will flash blue to let you know that it is not possible to save. Numbers 991 through 999 will still work to enable RGB/RGBW and/or matching modes.

The LED is solid Red

This means that there is no DMX being received. Or the DMX is not valid.

The LED is flashing Orange

This happens under two conditions:

- 1> When the DMX start address is too high for the number of pixels programmed. If you have 5 pixels on each output, 20 pixels total, that requires 60 channels of DMX. Setting a start address higher than 450 would cause this error because there are not enough channels left in the universe to control the pixels.*
- 2> When switch 1 is set 6, 7, 8, or 9 (program mode) at power up. This error would indicate that the switch changed since the system was powered down and the system will keep the currently saved settings. This prevents program mode from being entered accidentally and overwriting the current settings.

Errors should automatically clear once the switches are changed to new number. If the status LED continues to report an error after changing the number, the new number may also be invalid. Switching to 000 or 001 should clear any errors and load the last valid patch information. If it does not, then a power cycle maybe needed.

Be sure to note the color the status LED on power up, Cyan flashes indicate normal, independent outputs, Orange flashes indicate that one of the Match Modes is enabled. WHITE indicates RGBW mode is enabled.

*If you see this error when set at address 001, the total of all the string lengths exceed 170 pixels. Use a match mode to reduce the total individually controlled pixels. If you see this error when using a match mode, check that the match mode is correct for your configuration needs.



ADS NOTES



NOTES:	



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