

DRAFT COPY

Table of Contents

1. Introduction	3
2. System Requirements	3
3. Installation	3
4. Quick Start Example	4
5. General Information	4
5.1 Overview	5
5.2 Menus	5
5.3 Operating Modes	6
6. Pixel Map Mode	6
6.1 Work Grid	6
6.2 Fixture Info Tab	7
6.2.1 Adding Fixtures to the Map	7
6.2.2 Deleting Fixtures	8
6.2.3 Custom Fixtures	9
6.2.4 Dummy Fixtures	10
6.3 Sequence Tab	11
6.3.1 Modifying a Sequence	11
6.4 Pixel List Tab	12
6.4.1 Sending the Map Data to the Versa DRIVE	12
7. Programming Mode	13
8. Versa DRIVE Control Mode	14
8.1 Serial Port	14
8.2 Versa DRIVE Model & Select	14
8.3 Firmware Version	14
8.4 Pixel Count	15
8.5 Output Menu	15
8.6 Image Offset	15
8.7 Brightness Index	15
8.8 Group White Balance	16
9. Contacting Element Labs	17

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1. Introduction

RasterMAPPER™ has three main functions:

- Create a map which defines the relationship between pixels on the video source (your computer screen) and the actual Versa™ TILE panels, tubes, or pixels. After creating the map in RasterMAPPER it is downloaded and stored on the Versa DRIVE.
- Control and adjust the Versa DRIVE parameters as needed.
- Create patterns for use with the Versa DRIVE C1.

2. System Requirements

- Microsoft Windows® 98, 2000, or XP
- 64MB of RAM or greater
- 1024 x 768 display (or larger)
- 600KB of available disk space
- A serial port (RS232) is required to connect the PC to any Versa DRIVE.
- A USB/RS485 adapter is required to connect multiple Versa DRIVE D2s simultaneously.
- Adobe® Reader® must be installed on your PC in order to use the **RasterMAPPER Help** menu item. Reader can be downloaded from www.adobe.com/products/acrobat/readstep2.html

RasterMAPPER has been operated in Macintosh OSX using Virtual PC versions 6 and 7. A USB to Serial adaptor is required.

3. Installation

To install the program, simply double-click on the "SETUP.EXE" file and follow the installation process.

RasterMAPPER can be uninstalled via the "Add or Remove Programs" utility found in the Control Panel.

NOTE: For RasterMAPPER to work correctly, the file "PCOM.DLL" MUST be located in the main RasterMAPPER folder. Do NOT remove or move the file from its installed location.

If you change your screen resolution while using RasterMAPPER, exit and relaunch the program.

4. Quick Start

The following example shows the steps required to create a pixel map for a system of eight 10x10 Versa TILE panels arranged in a wall that is two meters high and four meters wide:

1	3	5	7
2	4	6	8

Refer to the rest of the manual for details on each step.

1. Open a new document and make sure that you are in Pixel Map mode.
2. Choose a fixture from the Fixture Select drop-down menu (i.e. TILE 10x10).
3. Select the **Arrow +** (yellow) tool and click in the grid area to add fixtures.
4. If you placed the fixtures on the grid in the order above, skip to step 5.
Otherwise, select the Sequence tab, press the **Clear ALL** button, and assign the eight fixtures to addresses 0 through 7 using the **Arrow #** (green) tool.
5. Go to the Versa DRIVE Control tab and connect to the drive.
6. Go to the Pixel List tab. The pixel list will be generated automatically.
7. Press **Send** to download the pixel list to the Versa DRIVE.
8. Test to confirm everything is working properly.

5. General Information

RasterMAPPER data files use the file extensions .map, .pat, and .vdc.

- In Pixel Map mode, map files are saved as a .map file for sending to the Versa DRIVE D2. A .map file includes the fixture map, sequence information, and any custom fixtures created for that map.
- In Programming mode, files are saved as a .pat file to be used as a pattern for Versa DRIVE C1.
- When in Versa DRIVE Control mode, files will be saved as a .vdc file to save control parameters for a map you've created. A .vdc file includes group settings, Versa DRIVE controls, and pixel list information created for that map.

You cannot open existing data files into RasterMAPPER directly from your desktop or a folder. You must first launch RasterMAPPER, then use the **Open** menu command (or button) to open your data file.

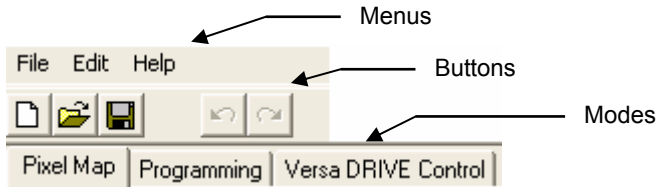
Once saved, the name of the current file will appear in the title bar to the right of "RasterMAPPER".

In order for the **RasterMAPPER Help** menu item to work, the file RMhelp.pdf (the same as this manual) must be in the same folder as the RasterMAPPER.exe program file. The RasterMAPPER installer automatically installs the RMHelp.pdf file into the program's root folder. If you move or delete the RMHelp.pdf file, RasterMAPPER will not be able to find it.

Adobe® Reader® must be installed on your PC in order to use the **RasterMAPPER Help** menu item. Reader can be downloaded from www.adobe.com/products/acrobat/readstep2.html.

5.1 Overview

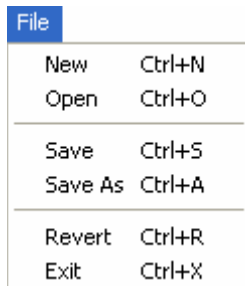
The illustration below shows the main features and areas of the program while in Pixel Map mode:



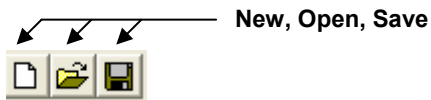
5.2 Menus

RasterMAPPER has three menus that are always available: **File**, **Edit** and **Help**.

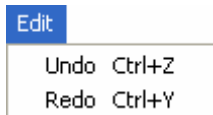
File Menu:



The File menu options include **New**, **Open**, **Save**, **Save As**, **Revert**, and **Exit**. The three commonly used menu commands for opening and saving files are duplicated as buttons:



Edit Menu:



The Edit menu features **Undo** and **Redo** which both become active 'arrow' icons (to the right of the 'save' icon) within the **Pixel Map** tab.



Help Menu:

RasterMAPPER Help will launch a copy of this manual in Adobe Acrobat. In order for this to work, the file RMhelp.pdf must be located in the same folder as the RasterMapper.exe program file. See the "Installation" section for more details.

About RasterMAPPER will display a dialog box that includes the current version number of the software.

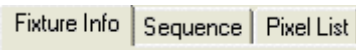
5.3 Operating Modes

RasterMAPPER has three different operating modes: Pixel Map, Programming and Versa DRIVE Control. These are represented by the three main tabs in the upper left corner of the program.

6. Pixel Map Mode

All the Versa DRIVE models require a pixel map that defines the relationship of the pixels in your source video to the pixels in the Versa TILE or Versa TUBE system. The Pixel Map mode is used to create this map. Once the map is created, it is sent to the Versa DRIVE D2 or saved for use on a Versa DRIVE C1.

The Pixel Map mode includes three tabs: Fixture Info, Sequence, and Pixel List.



6.1 Work Grid

The **Work Grid** is the large gray area used to build the pixel map.

The origin (0,0) of the work grid is the upper lefthand corner. The X axis is horizontal and the Y axis is vertical. Positive X and Y values are to the right and below the origin, respectively.

In the toolbar, there are several optional features: Grid Snap (X, Y), Overlap, Zoom, and Load Background Image.



Grid Snap sets how many pixels a fixture will snap to when placed. By adjusting the value and checking the Snap box, fixtures will snap to a certain space when placed on the work grid. The Snap option is always checked when starting a new map and the default value for X and Y is 5. To remove, simply uncheck the Snap box.

By default, fixtures are not allowed to be placed on top of each other. When the **Overlap** feature is checked, fixtures may be placed on top of each other on the grid.

The **Zoom** drop down menu can be used to move from 8 % to 400 % within the grid. At 100 %, each Versa TILE or Versa TUBE pixel is a 5x5 pixel square on the work grid. At 8 %, each tile or tube pixel is 1 to 1.

Load Background Image... is used for building fixtures over existing images. To load a background, click on the button and select a .bmp image file. Once the image is loaded, fixtures may be placed over the background.

The Background Image can be toggled on and off by checking or unchecking the Display Pixel Image File box.

6.2 Fixture Info Tab

The Pixel Map section is divided into three areas. Fixture Info is the first step in the process of creating a map.

To the right of the control tabs are Work Grid tools and the Fixture Select menu:



The **Arrow** (white) tool is used for selecting and moving objects. When selected, a fixture will turn blue.

The **Arrow +** (yellow) tool is used for adding and removing fixtures. Right-clicking with this tool prompts you to delete the selected fixture.

The **Arrow #** (green) tool is used to address fixtures. By default, fixtures are automatically addressed as they are placed on the Work Grid, but the addresses can be modified by using this tool.

The **Hand** tool is used for moving the entire work grid.

Fixture Select is a drop down menu that displays standard fixtures (i.e. Versa TILE/TUBEs) or user-defined custom fixtures.

6.2.1 Adding Fixtures to the Map

The **Arrow +** tool is used to add fixtures to the map. To add a fixture, simply follow these steps:

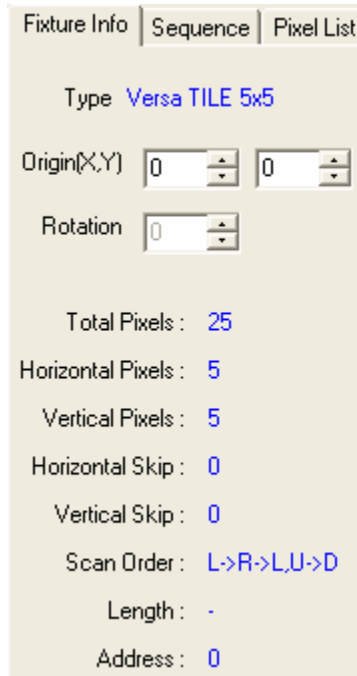
1. Choose a fixture from the drop down menu.
2. Move the tool to a position on the grid and click to place a fixture.
3. An icon representing that fixture will appear on the grid and information relating to that fixture will appear on the lefthand sidebar.

Fixtures can be moved around the grid after they have been placed.

- Use the **Arrow** tool and click and drag to move the fixture to its desired location
- Use origin (X,Y) up and down buttons
- Enter X,Y values directly into the fields and press enter

The Versa TUBE and other custom linear fixtures will appear on the grid with a green dot at one end and a yellow dot at the other end. The green dot is pixel #1 and is used to position the line. The yellow dot is used to control rotation.

The Fixture Info tab displays a fixture's parameters. Most of the information cannot be adjusted within the tab but is useful for quick reference.



Fixture Type will show the name of a selected fixture. This is useful when many custom fixtures are being used. The list of coordinates under **Origin (X,Y)** is automatically generated when you place the fixture. This list is the order of the pixels as defined by the **Start (X,Y)** values and the **Scan Order**. Adjust the coordinates by moving the fixture or by using the plus/minus arrow buttons in the sidebar.

Rotation is used with the Versa TUBE. The number reflects the angle of the fixture in the grid. The rotation is set by clicking on the yellow dot at the end of a tube. The tube will move around the green central point. This can be adjusted by moving the fixture or by using the plus/minus arrow buttons in the sidebar.

Horizontal Pixels and **Vertical Pixels** define the overall number of pixels in the fixture.

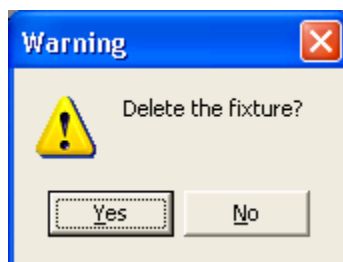
Horizontal Skip and **Vertical Skip** define the offset between adjacent pixels in the fixture.

NOTE: If a value greater than 0 is used, the Versa DRIVE does not average the skipped pixels, it simply ignores them.

Scan Order defines the order in which the pixels are connected internally in the fixture.

6.2.2 Deleting Fixtures

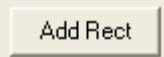

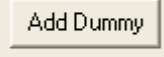
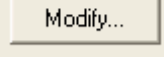
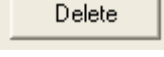
To **Delete** a fixture, select the **Arrow +** tool and right-click on the fixture. A prompt will appear asking you if you wish to delete the fixture. Select **Yes** to delete.



6.2.3 Custom Fixtures

The **Edit/Add...** option allows the user to choose to modify or create a fixture.

There are five choices in the Edit/Add option:

	Adjusts the size of a fixture
	Adds a single line as a fixture
	Adds a dummy fixture
	Modifies an existing fixture
	Deletes an existing fixture

The **Add Rect** button brings up a setup dialog box. The number of horizontal pixels and vertical pixels must be entered.

The **Add Line** button brings up the option to add a single line as a fixture. Choose a name, then adjust the LED Total number, and then adjust the length. After clicking OK, you will be able to choose the line from the Fixture Select Menu and place it on the grid.

Select an existing fixture to modify by clicking on the fixture and pressing the **Modify...** button. You can modify the fixture name, size, skip, scan order, and outline color.

- **Name** can be modified for different groups or unique fixture designs.
- **Size** can be modified to adjust the number of horizontal and vertical pixels in a fixture.
- **Horizontal** and **Vertical Skip** can be used to skip a pixel within the fixture when it's placed on the work grid. Instead of having 5 consecutive pixels in a standard 5x5, you could have 5 pixels skipping one pixel in between.
- **Scan Order** defines the direction and order in which the pixels are connected. A specific scan order might be used in order to run a system of standard Versa TILE which have been installed sideways or in a floor application where the requirements of the installer may not reflect the requirements of the programmer.

Examples of standard scan orders ...

For all 5x5 panels the scan order is represented as L -> R -> L, Up -> Down.

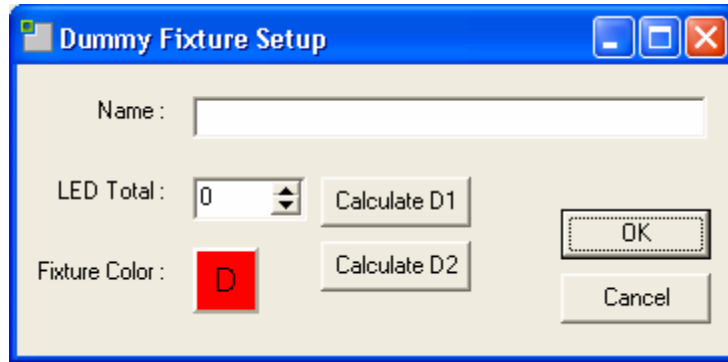
For all 10x10 panels the scan order is represented as R -> L -> R, Up -> Down.

- **Outline Color** can be used to distinguish between two similar looking fixtures or to allow the programmer to more easily recognize groups within a map. To create different outline colors for the same size fixtures, simply add a new fixture to the fixture select menu and adjust the outline color.
- **Delete** a fixture type by selecting the fixture from the menu and pressing the **Delete** button.

6.2.4 Dummy Fixtures

On a Versa DRIVE D2, each Serial port will output to 2048 total pixels. On a D1, the output will be up to 1024 total pixels. In order to use multiple outputs, it may be necessary to create Dummy Fixtures to fill in the unused pixel space.

To add a dummy fixture, select the **Arrow +** tool and choose **Edit/Add...** from the drop down fixture menu. Then press the **Add Dummy** button. The **Add Dummy** dialog box has three features:



- **Name** is how the fixture will appear on the fixture select drop down menu
- **LED Total** is the number of remaining pixels needed to reach 2048 or 1024.
If using a D1, press **Calculate D1**.
If using a D2, press **Calculate D2**.
The number calculated is the total amount of remaining pixels needed to fill in the unused output space. Once the dummy fixture is added, you should be able to use the next Versa DRIVE output.
- **Fixture Color** changes the color of the dummy fixture.

6.3 Sequence Tab

Once all of the fixture icons are placed on the work grid, you must define the sequence in which they are addressed. To start, click on the Sequence tab:

Address	Fixture
0	0
1	1
2	2
3	3
4	4
5	5
6	6
7	7

Clear ALL Show Address

The **Address** column is automatically filled in by RasterMAPPER. It contains a list of numbers that starts at "0" and equals the total number of fixture icons that have been placed on the work grid. In the above example, there would be 8 fixture icons on the work grid, represented by addresses "0" through "7" in the Address column.

The **Sequence** determines the order the pixels are output from the Versa DRIVE.

6.3.1 Modifying a Sequence

Individual fixtures are assigned an address as they are added to the grid. Addresses may be changed but the simplest method is to place the fixtures on the grid in the same order you have connected your panels.

The Sequence tab includes:

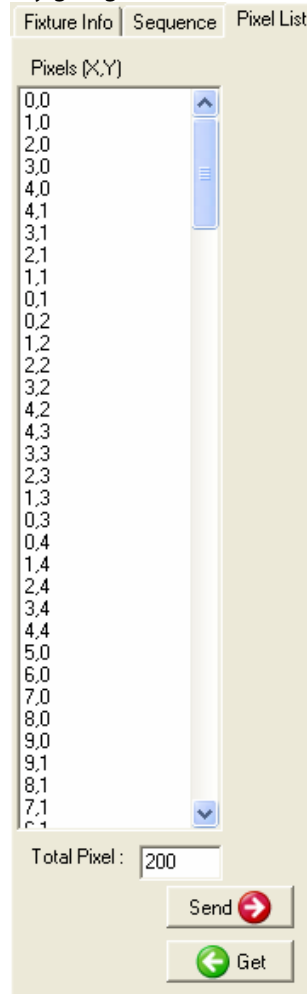
- **Clear ALL** removes all address and sequence information from the fixtures. After clicking **Yes** on the prompt, the fixtures will turn red to note their lack of addressing. To address them, click on the **Arrow #** tool and then click on each fixture. If you do them in order, they will be addressed in the correct order. When a fixture has been addressed, it will turn white.
- **Show Address** reveals the address numbers in the center of each fixture on the work grid.
- **Hide Address** appears when the address numbers are displayed. Clicking on this button hides the numbers.

To change the address of one fixture, select the **Arrow #** tool and right-click on the fixture you want to change. A prompt will appear asking for an address number. Once a new number is entered, the address of the fixture, along with the others, will be updated accordingly.

NOTE: In RasterMAPPER, your first fixture will be addressed as 0, but the panel should always be addressed as 1.

6.4 Pixel List Tab

Once the map has been created and the sequence defined, this information is used to generate a Pixel List, which is then sent to the Versa DRIVE. Start by going to the Pixel List tab:



When the Pixel List tab is selected the coordinates of all the fixtures in the map will be collected in a single list. The Total Pixel display at the bottom of the tab verifies that the list contains the correct number of pixels.

6.4.1 Sending the Map Data to the Versa DRIVE

To send information:

- Connect your computer to the Versa DRIVE using the Versa DRIVE Control tab.
- Press the **Send** button under the Pixel List tab to transfer your map to the Versa DRIVE via the RS232 connection. This process typically takes a few seconds.

NOTE: When sending pixel maps larger than 2,000 pixels, the status bar at the bottom of the main window may read **Time Out** even when the data is successfully sent.

It is possible to verify that the correct data has been sent using the **Get** button in the Pixel Count section of the Versa DRIVE Control mode. This number should be the same as the total number of pixels that you sent to the Versa DRIVE.

7. Programming Mode

1. Create map as described in chapter 6.
2. Click on the Programming tab.
3. Click the Open Source Button.

A standard Windows dialog box will appear.

You can import either .BMP files (individual frames) or .AVI movies. The limit is 100,000 frames per pattern.

- a. BMPs will appear individually in the Frame List
- b. AVIs will appear as a single item in the Frame List

NOTE: Microsoft Windows will only allow you to import a maximum of 999 frames at a time.

NOTE: A Microsoft Windows quirk prevents multiple file (i.e. multiple BMP frames) from being imported in the expected order. The last file that you click on in the "Open" dialog box will always appear first in the list. To overcome this issue, note the following example:

To import files 1.BMP through 10.BMP in order:

- i. Click on 10.bmp
- ii. Shift-Click on 1.bmp (this will select all the files between 10.bmp and 1.bmp)
- iii. Click "Open"
- iv. The files will appear in the FILE List starting with 1.bmp and ending with 10.bmp

NOTE: If the imported frame dimensions are larger than the existing map dimensions, any extra pixels will be disregarded. If the imported frame is smaller than the map, the extra mapped pixels will be black for that frame.

4. If there are existing frames in the list, the Open Source Button will append the new files to the end of the list.
5. The Insert Frame button will insert any new frames before the currently selected frame.
6. The Delete Frame button will delete any selected frames.
7. The Delete All button will delete everything in the Frame List.
8. Press the Play button to preview your pattern.
Depending on the pattern size and number of frames, this may not playback in real-time.
If a specific frame is selected in the Frame List, the pattern will begin playing from that point.
9. Press the ESC (escape) key to pause the movie at any point.
10. When the pattern is complete, press Export to CF to create a .CFF file. This is the format that is required on the CF card by the Versa DRIVE C1.
 - a. Name the file and press Save.
Note, for the file to work properly on the C1, the first three characters must be digits 001 through 255. The rest of the characters can be anything. For example: *017redstripes.cff*
 - b. In the next dialog box (Set Program Parameters) set the desired value for frames per second (F/S) – normally this would be 30.
 - c. Press OK
11. Copy the resulting .cff file to a Compact Flash (CF) card.
12. Put the CF card into a C1. The C1 only reads the file directory on the CF card when it is first turned on, so power cycle the C1 if necessary to recognize the new patterns on the CF card.

Saving .PAT files

In the Programming Mode, the Frame List can be saved as a .PAT file.

Existing .PAT files can be opened instead of importing new frames with the Open Source or Import Frame buttons.

8. Versa DRIVE Control Mode

This mode provides control over many of the Versa DRIVE's parameters. A value set in the various boxes can be sent to the Versa DRIVE using the **Send** button or retrieved by using the **Get** button.

NOTE: Many of these parameters can also be set directly on Versa DRIVE using its control buttons and LCD display. Please see the Versa DRIVE user manual for details.

Make sure that RasterMAPPER is set up to communicate with the type of processor you are using. Select D1 to provide legacy support of older Versa DRIVE processors.

While in the Versa DRIVE Control Mode, the file Open and Save buttons are used for .vdc files only. The parameters in the Versa DRIVE Control Mode are not stored as part of the project (.map) file.

8.1 Serial Port

The Serial Port should be set to whatever port you are using on your PC, usually COM1.

- Change ports and press the **Connect** button.
If the selected port is not available, a dialog box will appear stating "Open COMM PORT failed."
If the selected port is available, the interface display in the status bar at the bottom of the program window will display the current port.

The **Baud** rate should be set to 19200. Other speeds are not currently supported.

8.2 Versa DRIVE Model & Select

Select which Versa DRIVE Model will be receiving your map: D1 or D2. The Versa DRIVE type should be displayed on the front of the drive. **NOTE:** In order for the panels to receive the proper information, the Versa DRIVE type must be adjusted on each buffer board to match the Versa DRIVE being used.

In configurations with multiple Versa DRIVE processors, the Versa DRIVE Select has added importance. Processors can be divided into groups to aid in larger installations.

To group the Versa DRIVES:

1. Click on the drive numbers to group.
2. Choose a Group Select letter.
3. Press the Store Group button.

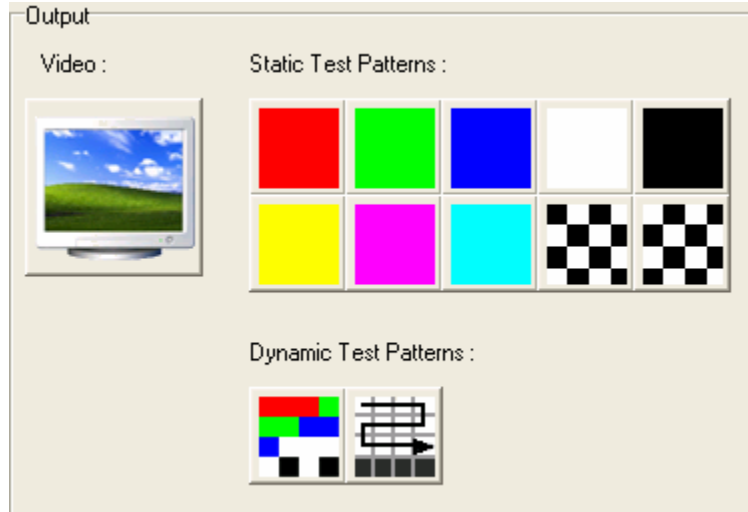
8.3 Firmware Version

When you press the **Get** button, Firmware Version shows the current firmware version and revision date from the Versa DRIVE.

8.4 Pixel Count

Pixel Count is the number of pixels in the Versa DRIVE's current Pixel List. It's a quick way to confirm that you have sent the correct size Pixel List to the Versa DRIVE.

8.5 Output



Output is where the test of your mapping and addressing is done. The menu offers the choice between DVI **Video** input, ten **Static Test Patterns**, and two **Dynamic Test Patterns**.

- **Static Test Patterns** include several solid colors and two checkerboard designs.
- **Dynamic Test Patterns** are moving test patterns that are useful when testing individual pixels on a Versa TILE panel.
- **Video** is a test using a valid DVI connection.
The best example would be using the top-left hand corner of the computer screen in Video test mode. If the mouse is moved over that area, the pixels of the mouse should scroll across the Versa TILE panels.

NOTE: The two Dynamic Test Patterns can only be used with the D2 Versa DRIVE.

8.6 Image Offset

The Image Offset values shift the entire map horizontally and vertically. The screen origin is at the upper left hand corner. Positive Horizontal values shift the map to the right. Positive Vertical values shift the map down.

This function can be very useful for quickly shifting the mapped area to avoid window title bars, menu bars, or for aligning the map with any specific area on the screen.

8.7 Brightness Index

Brightness Index should (or can) be set to 10. On the Versa DRIVE control page it is possible to get the existing brightness setting from the Versa DRIVE and to send new information to the Versa DRIVE using the **Get** and **Send** buttons. The value can be typed in or adjusted plus or minus using the arrows.

8.8 Group White Balance

The Group White Balance values can be changed for some or all of the pixels in the system by setting start and end points for the RGB values. It's also sometimes helpful to set the white balance for a group of fixtures for a consistent display.

1. Adjust the starting and ending address of a group.
2. Adjust the RGB values.
3. Click on the button to incorporate the group into the list.
4. Delete these values by clicking on the or buttons.

NOTE: Setting the White Balance values to their maximum values (63, 63, 63) may result in over-driving the LEDs in the fixture. Over-driving can shorten the lifespan of LEDs. Please consult the manual for the fixtures being used or contact Element Labs for the proper White Balance values.

9. Contacting Element Labs

www.elementlabs.com
info@elementlabs.com

Element Labs, Inc.

9421 Neils Thompson Drive
Austin, TX 78758 USA

+1 512 491 9111 tel
+1 512 491 9122 fax

Element Labs GmbH

Lindener Str. 15
D-38300 Wolfenbüttel
Germany

+49 5331 905660 tel
+49 5331 905661 fax