Contents

The contents for the WinSIRDS online help are as follows:

WinSIRDS Overview

The WinSIRDS program allows for the creation and storing of **S**ingle **I**mage **R**andom **D**ot **S**tereograms (SIRDS).   These images, which at first sight seem to be nothing more than a random pattern, in reality contain a virtual 3-D image.

Viewing SIRDS is a learned skill.   It is highly recomended that beginners do not attempt to view a SIRDS for the first time on the computer screen.   Rather use the **Print** command under the **File Menu** to obtain a print out of the image, and attempt to see it on paper first.

The key to seeing a Stereogram is the focusing or re-focusing of ones vision.   The basic idea is to look beyond where the image is drawn, as if one were looking at an object twice the distance between the eye and the plane where the Stereogram lies.   A 3-D image should jump out at you, and no 3-D glasses are needed!

Two basic techniches can be used to view a SIRDS. Many SIRDS images contain two dots at the top of the image.   By re-focusing ones vision so that these two dots become exactly three dots, the appropriate focal length is achieved.   Moving ones eyes down should then reveal the hidden image.   Another method that the author of this software finds most useful is to obtain a reflection of ones self by placing the SIRDS behind a piece of glass or some other reflective surface.   Observing ones reflection should achieve the required focal length as well.

You may try this technique on the SIRDS shown below.   This SIRDS was generated from the PYRAMID.RDS file included with WinSIRDS.
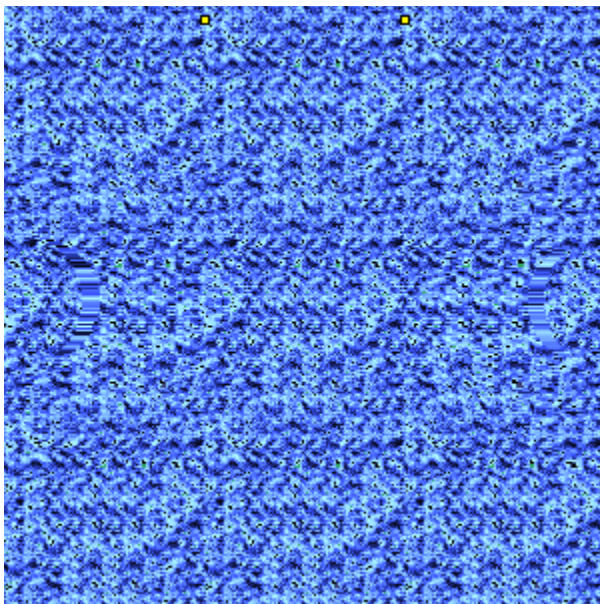
WinSIRDS Buttons

The various Tool Bar buttons and their corresponding functions are outlined in the table below:

Button	Name	Function
1	Move Tool Bar	Moves the Tool Bars position
2	Help	Invokes this Online Help.
3	New File	Opens a new Depth Map Window
4	Open File	Opens graphics files.
5	Save File	Saves graphics files.
6	Copy	Copies the active image to the Clipboard.
7	Paste	Pastes an image from the Clipboard.
8	Print	Prints the active image
9	Zoom In	Zoom in by a factor of 2.
10	Zoom Out	Zoom out by a factor of 2.
11	View Full Screen	Use the full screen to display an image
12	Color Table	Shows bitmap images palette
13	Make SIRDS	Creates a SIRDS from the active bitmap image
14	SIRDS Wizard	Wizard for step by step guided SIRDS creation
15	SIRDS Settings	Invokes the SIRDS Settings Dialog
16	SIRDS Pattern	Invokes the SIRDS Patterns Dialog
17	Stop Process	Stops the current process.
18	Exit	Quits the application.

WinSIRDS Menus

The WinSIRDS application contains the following menus and menu functions:

1) **File Menu**:   This menu contains the standard File Menu items.
2) **Edit Menu**:   This menu contains the Copy and Paste command.   Use these commands to import and export graphic images via the Windows Clipboard.
3) **Graphics Menu**:   This menu contains menu commands to the viewing, and generation of SIRDS.
   a) The Zoom In and Zoom Out commands allow for zooming in and out by a factor of 2.
   b) The Make SIRDS command generates a SIRDS image from an active bitmap image.   See Creating SIRDS.
   c) The Gray Image command renders the active bitmap image as a gray scale image.   Use this option to better understand how selecting the Depth by Brightness option in the SIRDS Settings will affect SIRDS generation.
   d) The SIRDS Settings command allows for user specification of the various parameters that come into play when a SIRDS image is generated.   See SIRDS Settings.
   e) The SIRDS Patterns command allows for user selection of the pattern to be used in generating SIRDS images. .   See SIRDS Patterns.
   f) The Color Table command brings up the current color/depth scheme given the active image.   This color scheme will be used in generating SIRDS when a color bitmap image is to be used and the Depth by Color option in enabled.
   g) The Load Movie, Edit Movie, and Play Movie commands invoke the SIRDS Movie Player and Editor.   See SIRDS Movies.
4) **SIRDS Math Menu**:   This menu the various pre-defined mathematically generated figures available under the WinSIRDS application.   To view the version number of the SIRDMATH.DLL, use the Version command.
5) The **Window** and **Help menus** provide standard commands for these menus.

Creating SIRDS

WinSIRDS provides three methods for the creation of SIRDS. The first method involves the use of colors to assign fields of depth to the resulting SIRDS. The user may then create a bitmap image, selecting colors in the way in which depth levels are to be achieved, and then bring that image into WinSIRDS. For further details, refer to <u>SIRDS from Bitmap Images</u>.

The second method involves the generation of a SIRDS using an existing depth map window. For details on how to create depth maps, see <u>Depth Maps</u>.

The third method involves the use of pre-defined mathematical figures available under the <u>Math SIRDS</u> menu. These figures, in combination with user specified <u>SIRDS Patterns</u> yield some very interesting results. You may also want to review the effect that <u>SIRDS Settings</u> have on the generation of SIRDS.

To see these options work, and to get an idea of the steps involved in creating a Stereogram, you may want to use the <u>SIRDS Wizard</u>.

SIRDS Wizard

WinSIRDS includes a Wizard option providing a simple step by step way to create Stereograms.   If you are a new WinSIRDS user, you may wish to use the Wizard to create your first SIRDS.   In this way you will obtain an overview of the options that you may customize via the SIRDS Settings and the SIRDS Patterns.

The **SIRDS Wizard** will take you through the following steps:

1. First, you may select from Bitmap Image, Depth Map, or Math Library as the source for Stereogram generation.
    If you select one of the first two options, the Wizard will prompt you for a source file name to use.   This requires that a pre-existing file be used.   So that you do not have to create a source file the first time you go through the Wizard, you may use any of the sample files included with WinSIRDS. .   For details on how to create depth maps, see Depth Maps.
    If you select the From Math Library option, the Wizard will display a list of available 3-D figures from the see Math SIRDS library.   Select an image and click OK.

2. Next, the Wizard will prompt you for the dimensions of the final Stereogram.   Here you may specify the width, height, and depth resolution of the final image.   Note that if you are using a bitmap image or a depth map as your source for the Stereogram, the width and height parameters that you specify here have no effect.   Note that this option is also available under the SIRDS Settings.

3. The third step allows you to specify a pattern to be used for the stereogram.   Use the colored Next and Prev buttons to guide you through the available SIRDS Patterns.

4. The final step involves the selection of a scan algorithm to be used in processing the Stereogram image.   The McMahon method is recommended. .   Note that this option is also available under the SIRDS Settings.

SIRDS from Bitmap Images

Bitmap images can be loaded onto WinSIRDS and used to generate stereograms.   This method involves the assignment of depth levels by color definition.   There are two major ways to create stereograms with this method, and which the user may select via the SIRDS Settings options.

The first uses palette entries in a Bitmap image and uses the order of these entries for depth level assignment.   If for instance, the color **Red** is palette number **4** and the color **Blue** is palette entry number **10** in a 16 color palette, then an image using objects of colors Red and Blue will result in a stereogram where the Blue objects will be "higher" in depth, i.e. closer to the viewer, than Red objects.

The second method involves the use of color brightness to determine depth.   With this method brighter colors have "higher" depth, or are in front, of darker colors.   This method lends itself to generation of stereograms from Gray Scale images.

To create a stereogram, simply load the bitmap image, and then select the **Make SIRDS** command, by either clicking on the **Make SIRDS** button on the tool bar, or choosing the command from the **Graphics** menu.

Math SIRDS

WinSIRDS includes a library of 3-D math figures that can be used to generate Stereograms.   Each math figure contains a virtual 3-D depth map that is created when one of the figures is selected either through the **Math SIRDS** menu, or in the SIRDS Wizard.   These figures, in combination with user specified SIRDS Patterns yield some very interesting results.   You may also want to review the effect that SIRDS Settings have on the generation of SIRDS.

SIRDS Movies

One of the innovations that WinSIRDS introduces is the annimation of SIRDS.   Animation can be achieved a set of frames or images which although similar, deviate enough from one another so that when played in sequence, a moving SIRDS can be generated.   Editing and making a SIRDS movie involves two main steps: first the generation of SIRDS frames, and secondly the arrangement of these frames in a user defined sequence.

The generation of SIRDS frames can be achieved in the WinSIRDS application through one of the two methods that can be employed in Creating SIRDS.   Simply load the color bitmap image(s) and make SIRDS from them, or use the See SIRDS Settings displacement parameters to achieve the desired motion.

The placement of frames is to be done in the Movie Editor and Player.   Selection of **the Edit Movie** command under the **Graphics** menu, will invoke the Movie Editor and Player in edit mode.   You may then use select the various frame SIRDS images, and assign them a frame number with the **Set Frame** button.   Once this process has been completed, give the movie file a name, and press the **OK** button.   It is that simple!

To play the movie simply select the **Play** ▶ button.   If you selected the Loop option in the movie editor, the movie will continue to play until the **Stop** ✋ button is pressed.   You may also play the movie one frame at a time with the **Play 1 Frame** ⚑ button, or you may re-edit the movie with the **Edit Movie** 🎬 button.

SIRDS Settings

SIRDS Settings can be customized thru the **SIRDS Settings** command under the **Graphics** menu.   The following table describes the various user definable settings that may employed toward the generation of SIRDS.

Setting	Description	Math SIRDS Only
Width & Height	Dimensions of the resulting SIRDS image.	X
Gap Value	Affects the resulting depth levels. A default value of 100 is recommended.	
Horizontal displacement	Allows for displacement in the X-axis direction. Use to generate SIRDS movie frames.	X
Vertical displacement	Allows for displacement in the Y-axis direction. Use to generate SIRDS movie frames.	X
Angular displacement	Allows for angular displacement only for certain. Use to generate SIRDS movie frames.	X
Zmax & Zmin	These two settings determine the resolution in depth (along the z-axis). Increasing the difference between these two figures, will in turn increase the resolution in depth.	
Markers	Enable this option if you want the two dots at the top of the resulting SIRDS.	
Use Open Bitmap	Enable this option if you want to use the currently open and active image as the pattern for the resulting SIRDS.	X
Depth by Color	Use this option to use the order of colors within a given palette as the depth level.	
Depth by Brightness	Use this option to use the brightness of a given color as the depth level.	
SIRDS Scan Method	Select between Left-To-Right, McMahon, and Feutch scanning algorithms for the best SIRDS quality.	
Restore Defaults	Restore the SIRDS settings to their respective defaults.	

For further details refer also to SIRDS Settings Overview.

SIRDS Settings Overview

A powerful way to customize stereogram generation with WinSIRDS is through <u>SIRDS Settings</u> option, under the **Graphics** menu.   While we will not discuss all of the customizable parameters available to the user (please refer to the program's help file), we will make mention of the most salient parameters here.

Perhaps the most important SIRDS setting is the selection from three major stereogram generation algorithms.   Through the use of these algorithms, the user is allowed to chose which method gives way to the best looking stereogram.

The first method, **Left-to-right** is simple, and probably the fastest in most systems.   It works best for simple low depth images, but it tends to distort high depth images.

The second method, **McMahon**, named after the author is the first of two "center-to-edge" algorithm.   Without going into the math involved in this method, we shall simply say that it provides, for most applications, the least distortion on the edges.

The third method, **Feutch**, also named after the author is the other "center-to-edge" algorithm, that while not providing the same quality on the edges, tends to be faster than **McMahon**, although not significantly.   Some users, and the author, have also noticed that images created with **Feutch** can be viewed differently depending on how the users focuses his/her vision.

Also available through the <u>SIRDS Settings</u>, is the assignment of dimensions.   Dimensions define the resulting stereogram size in pixels, and are applicable to Math SIRDS and Depth Map images.   Note that stereograms generated from loaded bitmap images will have dimension equal to the original image.

One last worthy of mention parameter is the "Depth Resolution", defined by zmax and zmin.   This parameter may be used to best process low, medium, and high depth resolution images.   The lower resolution settings will result in a more pronounced difference among adjacent depth levels.   Higher resolution settings will have the opposite effect.

SIRDS Patterns

Normally SIRDS are generated from random-dot patterns in which colors for dots are selected at random.   A more recent innovation in WinSIRDS, however, allows the user to select from a set of pre-loaded patterns.   By using the **SIRDS Patterns** command under the **Graphics** menu, the user may choose from any of these patterns.   The resulting SIRDS image will then have this pattern as its base, producing some very pleasing results.

WinSIRDS ships with 20 GIF patterns which should be located under the SIRDSPAT subdirectory of the WINSIRDS home directory.   These pattern files are named pat00.gif thru pat19.gif.

The user is free add new patterns with the following procedure:

1) Open a bitmap image file of dimensions greater than or equal to 100 x 100.
2) Open the SIRDS Patterns dialong window.
3) Press the Add button, and the new pattern should be added and displayed.
4) The resulting pattern will be a clipped square section of 100 x 100 from the source image.

Note: For best effect, the pattern must give the impression of continuity at the boundaries.   Also, the SIRDS patterns will work best with a Gap Value of 100. (See See SIRDS Settings).

SIRDS Scan Method

There are various ways to scan a horizontal line on an image to generate a SIRDS. WinSIRDS implements three of these methods.   While there are others, these were selected for overall speed.

1)   Left-To-Right: This is the traditional algorithm.   While fast and simple, this method yields distortion on the right hand side of the image.
2)   McMahon: This method is the result of an algorithm developed by Paul McMahon and documented in "The Emperors New Clothes".
3)   Feutch: This method is one of two implemented by Fred Feutch, and documented in a program called RDSGEN.C.

Experiment with these scan methods to see which results in the best quality for your particular application.

Depth Maps

WinSIRDS allows the user to generate and edit a depth map for the custom generation of SIRDS images.   Shapes of varying depths and sizes can be created using the depth map tools.   A sample depth map file called PYRAMID.RDS is provided as an example.

To create a new depth map, use the File-New menu command (or press the New File button).   A new depth map window will appear.   Note that the dimensions of a new depth map are determined by the image width and height specified in the See SIRDS Settings.

To generate a SIRDS from a depth map, activate the depth map window, and select the Make SIRDS command.   Note that SIRDS generation from a depth map may take longer than normal (using other methods).

To generate a depth map, the user may employ any of the available See Depth Map Tools Depth Map Tools on the tool bar, located on the left hand side of the screen.   These tools provide the functionality needed to generate and edit various types of Depth Objects.

Depth Map Tools

The tables below outlines the various depth map tools and buttons with their respective functions.

Tool	Tool Name	Tool Function
	Select	Select by clicking on an object
	Move	Move an object by clicking and dragging
	Get Level	Get the level for a given object
	Set Level	Set the level for a given object
	Text	Create a Text object
	Line	Create a Line object
	Curve	Create a Curve object
	Squared Box	Create a squared corner Box object
	Rounded Box	Create a rounded corner Box object
	Polygon	Create a Polygon object
	Circle	Create a Circle object

Button	Button Name	Button Function
	Assign Level	Assign the current active depth level
	Move Up	Move an object up in the depth map order
	Move Down	Move an object down in the depth map order
	Delete	Delete the selected object from the depth map
	Duplicate	Duplicate the selected object
	Font	Select the active font for text object creation

Depth Objects

Depth objects are components of a depth map.   Objects may be one of the following: Text, Line, Curve, Rounded Box, Squared Box, Polygon, or Circle.   These various shapes may be assigned depth levels.   When the Make SIRDS command is invoked, WinSIRDS will generate a stereogram using the depth information assigned to the various depth objects within a depth map.

Example: To generate a depth map with a background depth equal to 0 and a circular shape of depth equal to 8, first execute the File-New menu command.   Then, select a depth level of 8 using the Assign Level button, select the Circle tool, and draw a large circle over the entire area.   Finally, execute the Make SIRDS command. The resulting SIRDS should be a circle slightly elevated over the background.