3DWin

There are a couple of stereo 3D display modes widely used around the world. The "Interlaced" display is one of the popular modes, which support LC shutter glasses to view "Interleaved" images on the PC. Unfortunately, Windows environment doesn't offer "Interlaced" display mode for LC shutter glasses in general. Don't worry! With 3DWin, it can help you to set the Windows display to interlaced mode without much effort. Currently, 3DWin can only support Windows3.1/95/98.

1 Principle of Stereo Vision

Due to binocular parallax, we can get stereo depth perception. The left-eye image and the right-eye image, which are split from a stereoscopic image, generate a parallax for both eyes. The brain will naturally fuse the left and right images into a stereo visual perception with depth information.

2 Set Up 3D Mode

Normally, people use computers in non-interlaced display mode. For viewing "Interleaved" images, however, we have to set the computer display to interlaced mode. The 3DWin provides a shortcut for setting the Windows system to interlaced display mode.

2.1 3DWin

Once you finish 3DWin setup, you can easily start 3DWin by double clicking the ▦ icon. Then, you will see its operating window as follows:
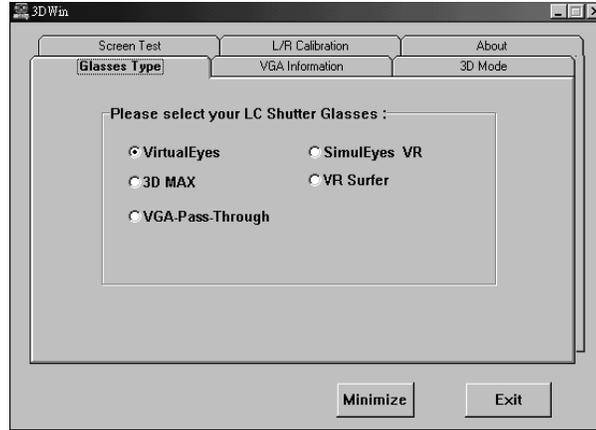
1

Figure 2.1

2.2 Operation Guide

All functions of **3DWin** are very easy to use. With 3DWin, you can easily switch your Windows display between interlaced and non-interlaced modes. Its functions and operations are described as follows.

2.2.1 Glasses Type:
–Select your current LC Shutter Glasses Type

 The LC shutter glasses from different manufacturers have their own specifications and usage. **3DWin** supports several popular models of LC shutter glasses, including VirtualEyes, SimulEyes VR, 3D Max, VR Surfer, etc. The first step for entering the stereoscopic world is to select the LC shutter glasses you are going to use.

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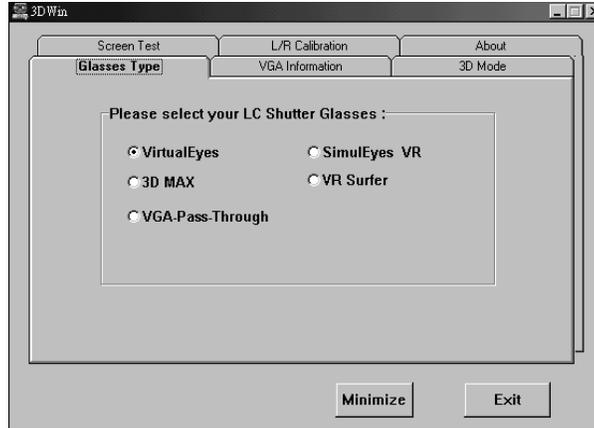
Basically, 3DWin supports those LC shutter glasses which use the PC's VGA port, rather than RS-232 port, printer port, or other control interfaces.
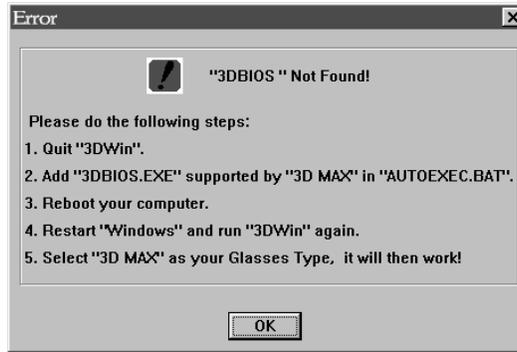
In addition to choosing the Glasses Type in 3DWin, if you are going to use either SimulEyes VR or 3D Max, please follow the instructions shown below.

- SimulEyes VR:

  If you are using SimulEyes VR on Windows 95, then please move the Taskbar from the bottom side to the upper side of the Windows desktop in order to prevent the WLC (White Line Code) from being covered by the Taskbar. Without this WLC, the SimulEyes VR can't function correctly. Actually, 3DWin will automatically generate the WLC for SimulEyes VR when you select SimulEyes VR as your LC shutter glasses.

- **3D MAX**：

  When you select 3D MAX as your LC shutter glasses you may see the following message:

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```
Error                                          [X]

        ⚠     "3DBIOS " Not Found!

     Please do the following steps:
     1. Quit "3DWin".
     2. Add "3DBIOS.EXE" supported by "3D MAX" in "AUTOEXEC.BAT".
     3. Reboot your computer.
     4. Restart "Windows" and run "3DWin" again.
     5. Select "3D MAX" as your Glasses Type,  it will then work!

                        [  OK  ]
```

If this message appears:

(1) Please make sure your 3D MAX control card is firmly plugged into the computer.

(2) Please add 3DBIOS.EXE, which is a program supplied by 3D MAX, into AUTOEXEC.BAT. Then, reboot the computer and restart Windows and continue the 3DWin setting procedure.

2.2.2 Information:
   –Show VGA card information for you

3DWin automatically detects the configuration and setting of your display adapter, and then decides whether your VGA card is supported by 3DWin.
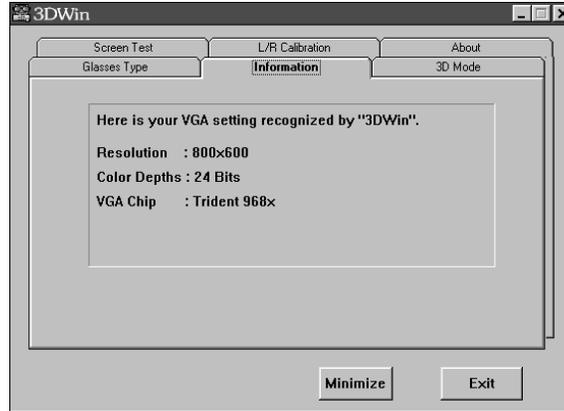
Figure 2.2

2.2.3 3D Mode :
  –Enable Interlaced display mode

The main function of **3D Mode** is to enable interlaced display mode for Windows. If your VGA card is supported by 3DWin, you can activate this function.
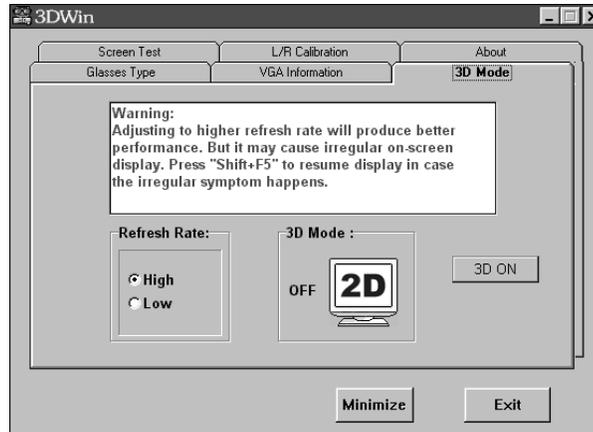

Figure 2.3

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1. Select Refresh Rate:

According to your VGA setting, 3DWin offers you three options of refresh rate settings, High, Low and System. The actual refresh rates depend on your VGA card and its resolution and color depth. The approximate range of the High refresh rate is 110Hz~125Hz, while the range of the Low refresh rate is approximately 80Hz~100Hz. With the System option**,** the interlaced refresh rate is raised 1.0~2.0 times **(**around 60Hz~170Hz**)** above the current system refresh rate. Unlike High and Low options, the System option specifies an interlaced refresh rate that will vary with different Windows refresh settings. Therefore, according to your requirements and monitor specifications, you may select a suitable setting for your display. If your monitor can accept more than **120Hz** refresh rate, you may want to select **High** or **System** to get a flicker-free view with LC shutter glasses.
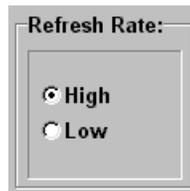
Figure 2.3.1

Note: If you want to switch back to non-interlaced mode in 3DWin, click the 3D Off button.

2. Convert Display Mode:

(1) As shown in Figure 2.3.2 below, before clicking the **3D ON** button, the 3D Mode icon indicates 2D display mode as follows:

Figure 2.3.2

(2) When you click the 3D ON button, the screen will be converted into interlaced mode right away. The 3D Mode icon will then indicate interlaced display mode.

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Note: 1. *If your monitor displays irregularly with the 3D Mode on, like two squeezed screens (upper and lower ones), or nothing displayed, then you need to press Shift+F5 keys to resume your VGA setting. In this case, please try the Low refresh rate option. If it still does not work, you may need to upgrade your monitor to one that can accept higher interlaced refresh rates.*

2. *The Shift+F5 keys can also be treated as a Hot-Key to toggle the 3D Mode as long as 3DWin is running.*

3. *If your VGA card isn't listed in section 2.3, you should consult its user's manual to set up its interlaced display mode. A Windows utility to set its refresh rate is normally supported by the VGA card vendor. The refresh rate could be set from 40Hz to 50Hz, or 87Hz, or just Interlaced mode. After you set the refresh rate to the recommended setting as above, the VGA will automatically change to interlaced mode for Windows just like the 3D Mode is activated in 3DWin. Also, if you are using SimulEyes VR, don't forget to select SimulEyes VR as your Glasses Type in 3DWin to generate a WLC (White Line Code) for it to work well with Windows.*

4. *Please don't try to change your Windows display settings while 3DWin is running. In other words, you need to choose VGA settings like resolution and color depth, before starting 3DWin.*

5. *When the 3D Mode is switched on, please don't click the Exit button or close the 3DWin unless you want to disable the 3D Mode; when 3Dwin exits, the Windows display mode will resume.*

6. *Please disable the screen saver when the 3D Mode is on, otherwise the Interlaced display mode, set by3DWin, will be disabled when the screen saver is activated by Windows.*

7. *If you are using Tseng Labs VGA cards (i.e. ET4000, ET6000), then please set its*

refresh rate to 60Hz with its setup utility before starting 3DWin. Then select High refresh rate in 3DWin to get better performance.

2.2.4 Screen Test:
> **–Test "3D Mode" screen**

When the 3D Mode is switched on, please put on your LC shutter glasses to view the stereoscopic testing picture in 3DWin, which is shown below. You should get **stereo perception** and confirm whether the 3DWin settings are correct.
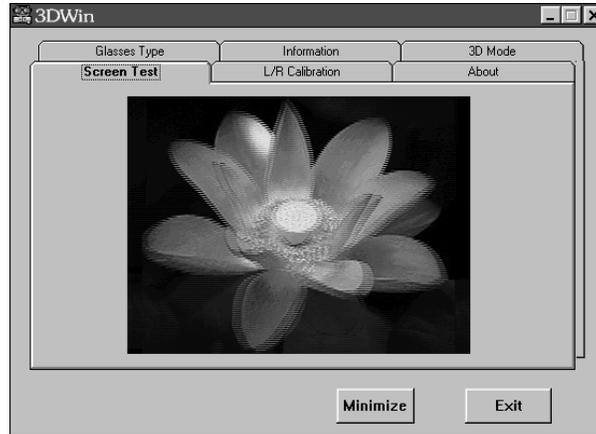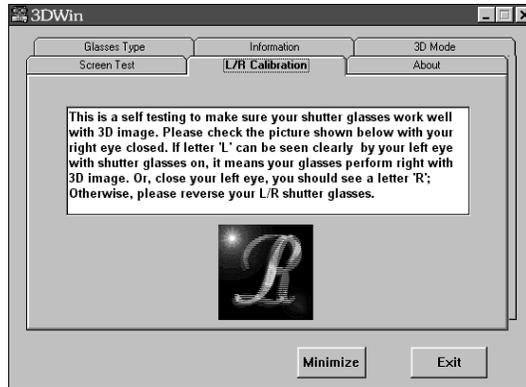

Figure 2.4

2.2.5 L/R Calibration
> **–Calibrate Left/Right LC Shutter Glasses**

When your LC shutter glasses are synchronized with the monitor via VGA video signal, you may need to toggle the left/right synchronization of the LC shutter glasses. Otherwise, your left eye will see the right-eye image and vice versa. This "pseudo stereo" condition will diminish the quality of perceived stereo depth. In order to make sure your LC shutter glasses work correctly with **Virtual Gallery Demo**, **L/R Calibration** provides a very simple way to check whether your LC shutter glasses need to be toggled.

Figure 2.5

1. Make sure the 3D Mode is switched on, and put on your LC shutter glasses.

2. Please view the testing picture in the bottom of **L/R Calibration.** Your left eye should view the letter "L" while your right eye is closed. And vice versa, your right eye should view the letter R with your left eye closed.

3. If not, you need to toggle the left/right synchronization of your LC shutter glasses. If you are using VirtualEyes, push the toggle switch button located at the upper-left side of the glasses frame. For the others, you need to refer to the user's manual of your LC shutter glasses.

4. If you are using SimulEyes VR, 3DWin automatically generates **WLC (White Line Code)** for VR Show! and you can ignore this calibration procedure. But if you use SimulEyes VR with applications other than VR Show!, 3DWin also offers you a software toggle: just press the Ctrl+R keys to toggle left/right synchronization.

5. The **Ctrl+R** keys will also toggle left/right synchronization if you are using **3D MAX**.

Note: *The L/R Calibration function is designed only for those stereoscopic images which are produced by i-Art "3D Maker" program. That is, the left-eye image of stereoscopic images is placed in even scan-lines, and the right-eye image is in odd scan-lines. The L/R*

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Calibration is not suitable for 3D applications with a different arrangement of left-eye and right-eye images.

2.3 VGA Cards Supported by 3DWin

To enter the 3D stereoscopic world, 3DWin can help you configure the Windows display to interlaced mode. Before starting 3DWin, you have to make sure your VGA card is in the compatibility list shown below. Since VGA technology is changing very rapidly, there are new products every several months. The compatible VGA cards listed below are easily obtainable and are the most popular ones in the market. The list is subject to change without any notice. If there is any change, there will be an update diskette inside this package. Or, you may freely download the updating program from the URL address http://www.iart3d.com.

According to different VGA specifications and settings, the refresh rate of interlaced mode will also differ. In other words, not all VGA cards listed here can support **High** refresh rate **(**around **110Hz~125Hz)** for interlaced display.

S3 Series

Resolution Colors	640x480	800x600	1024x768
S3 Trio32/64, S3 765 Trio64V+, S3 775 Trio64V2			
256	✔	✔	✔
32K/64K	✔	✔	✔
16M	✔	✔	✔
S3 325 ViRGE, S3 375 ViRGE/DX, S3 357 ViRGE/GX2 AGP 1x			
256	✔	✔	✔

	640x480	800x600	1024x768
32K/64K	✔	✔	✔
16M	✔	✔	✔
S3 86C864/866/868/964/968/928PCI			
256	✔	✔	✔
32K/64K	✔	✔	✔
16M	✔	✔	✔

Tseng Labs Series

Resolution *Colors*	*640x480*	*800x600*	*1024x768*
ET4000/W32/W32I/W32P			
256	✔	✔	✔
32K/64K	✔	✔	✔
16M	✔	✔	
ET6000			
256	✔	✔	✔
32K/64K	✔	✔	✔
16M	✔	✔	✔

Trident Series

Resolution *Colors*	*640x480*	*800x600*	*1024x768*

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Trident 8800/8900			
256	✔	✔	✔
32K/64K	✔	✔	
16M	✔		
Trident 9000/9420/9440			
256	✔	✔	✔
32K/64K	✔	✔	
16M	✔	✔	
Trident 938x/9660/9680/9685/968x			
256	✔	✔	✔
32K/64K	✔	✔	✔
16M	✔	✔	✔
Trident 9750 AGP 1x/9850 AGP 2x			
256	✔	✔	✔
32K/64K	✔	✔	✔
16M	✔	✔	

Cirrus Logic Series

Resolution Colors	640x480	800x600	1024x768
CL-GD5422/5424/5426/5428/5430/5434			
256	✔	✔	✔
32K/64K	✔	✔	
16M	✔	✔	
CL-GD5440			
256	✔	✔	✔

	640x480	800x600	1024x768
32K/64K	✔	✔	✔
16M	✔	✔	✔
CL-GD5446			
256	✔	✔	✔
32K/64K	✔	✔	✔
16M	✔		
CL-GD5462/5464/546x			
256	✔	✔	✔
32K/64K	✔	✔	✔
16M	✔	✔	✔

ATI Series

Resolution *Colors*	*640x480*	*800x600*	*1024x768*
ATI Mach64			
256	✔	✔	✔
32K/64K	✔	✔	✔
16M	✔	✔	✔
ATI264VT2/GT2			
256	✔	✔	✔
32K/64K	✔	✔	✔
16M	✔	✔	✔
ATI 3D Rage			
256	✔	✔	✔
32K/64K	✔	✔	✔
16M	✔	✔	✔

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Intel

Resolution Colors	640x480	800x600	1024x768
i740			
256	✔	✔	✔
32K/64K	✔	✔	✔
16M	✔	✔	✔

SiS Series

Resolution Colors	640x480	800x600	1024x768
SiS 6205/6215/6225			
256	✔	✔	✔
32K/64K	✔	✔	✔
16M	✔	✔	✔
SiS 6326AGP			
256	✔	✔	✔
32K/64K	✔	✔	✔
16M	✔	✔	✔

Nvidia Series

Resolution Colors	640x480	800x600	1024x768
RIVA128			
256	✔	✔	✔

	640x480	800x600	1024x768
32K/64K	✔	✔	✔
16M	✔	✔	✔
RIVA128/ZX			
256	✔	✔	✔
32K/64K	✔	✔	✔
16M	✔	✔	✔

Matrox Series

Resolution / Colors	640x480	800x600	1024x768
MGA1064 PCI/AGP			
256	✔	✔	✔
32K/64K	✔	✔	✔
16M	✔	✔	✔
MGA2064 PCI/AGP			
256	✔	✔	✔
32K/64K	✔	✔	✔
16M	✔	✔	✔
MGA2164 PCI/AGP			
256	✔	✔	✔
32K/64K	✔	✔	✔
16M	✔	✔	✔

Note: 1. When you use LC shutter glasses from manufacturers other than i-Art VirtualEyes, 3DWin may not function correctly with all of the VGA cards listed above.

2. *If you are using SiS VGA card, we recommend that you change the settings of the mouse cursor or the mouse motion in the control panel before running 3DWin. Do not use the default settings.*

3. *If you are using Matrox VGA card, we recommend that you set your monitor refresh rate to 60Hz and change the settings of the mouse cursor or the mouse motion in the control panel before running 3DWin. Do not use the default mouse setting.*

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