

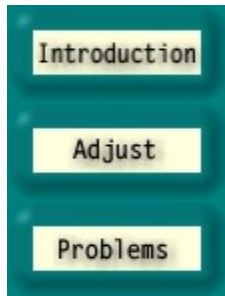
Introduction

Adjust

Problems

# **ELSA** 3D REVELATOR

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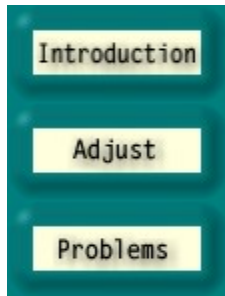
## Introduction to the ELSA 3D Stereo Settings

The ELSA 3D Stereo driver (patent pending) lets you experience almost all Microsoft Direct3D-compatible 3D software in three dimensions, with different angles of view for each eye. The effect is especially exciting for 3D games, but is also valuable for visualization and 3D modelling.

Because 3D applications access the 3D graphics driver in different ways, the ELSA Stereo Settings allow you to customize and save settings specific to each application. Your 3D stereo experience will almost always be optimal.

Occasionally, it is possible that for some applications, graphics errors occur, or the three-dimensional effect cannot be achieved. This is a characteristic of that particular 3D application that we cannot influence. To date, the only applications we have found that cannot not support the 3D stereo effect are: Microsoft Flight Simulator 98™, MotoRacer™ (MotoRacer 2™ works), F22 Air Dominance Fighter™ und Falcon 4.0™.

When you run a 3D application, the database is searched for settings specific to this application. If the application is not found, default parameters are loaded. Once you have saved the settings in an application, you are free to change them at any time in Display Properties under 'ELSA Stereo'.



## Settings for the 3D Stereo Effect

### ■ DirectX Version

Please note that DirectX 6.0, or a more recent version must be installed. Otherwise, only the picture for the left eye can be correctly displayed.

### ■ Refresh Rate

The refresh rate should be set as high as possible, in order to avoid noticeable flicker due to the shutter effect. To set the refresh rate, first set the desired resolution (e.g. 640x480 pixels). Then, on the Control Panel under Display Properties, set the refresh rate to the highest possible value. Ideally, the refresh rate should be between 120 and 150Hz.

### ■ Adding a New 3D Application to the List

New 3D applications and games are added to the program list by performing the following steps:

Start the desired 3D application.

Integrate the In-Game Control Panel with the hotkey. In the default settings, this is the \* key on the number pad of your keyboard.

If necessary, use the function keys to change the parameter, so that the 3D effect is optimal.

Press F10 to save the current settings.

The next time you open the ELSA Stereo Settings, you will find a new entry for the 3D application. The settings for this application may be changed at this time.

### ■ Disabling the 3D Stereo Effect

If a program is started with the stereo effect enabled, and the effect is then disabled by the hotkey (default setting: Num -), the stereo driver remains enabled, unnecessarily using up available CPU and graphics card processing power. To run a program entirely without stereo (e.g. because it is not stereo effect-compatible), Stereo3D in the ELSA Stereo Settings must be disabled, either generally, or for this program, prior to starting the game. It may first be necessary to add the 3D application to the list, as above.

### ■ In-Game Control Panel

The In-Game Control Panel can be integrated into the game with a hotkey (default setting: Num\*). If this happens, additional hotkeys are enabled and the game hotkeys are disabled:

F1/F2	Decrease/increase minimum Z value
F3/F4	Decrease/increase maximum Z value
F5/F6	Move scene forward out of monitor / backward into the monitor
F7/F8	Decrease/increase stereo width
F9	Enable/disable Dyna-Z™
F10	Save current settings for the active game
F11/F12	Decrease/Increase non-linearity factor

A histogram of all Z values utilized in the current picture is displayed on the In-Game Control Panel. The Z values utilized by the 3D application (usually between 0 and 1) express the distance of an object from the observer. The histogram helps determine the Stereo Driver's optimal working range. F1/F2 and F3/F4 are used to set the lower and upper limits of the Z range used. If enabled, Dyna-Z™ automatically selects the smallest possible Z range within the upper and lower limits, leading to better depth perception. When shifting the limits, it is important to set them so that all scene objects are inside, and all control objects and displays are outside these limits. Changes to these values should only be attempted by experienced users. For this reason, we have defined defaults for the most popular games. Of course, all our default settings may be edited in 'ELSR Stereo'.

#### ■ **Selecting the Clearing Mode**

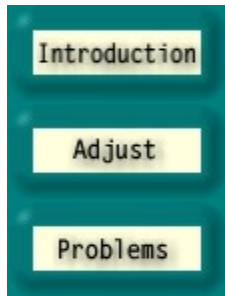
The perspective shift of the display for the left and right eyes can cause the left and right edges of the game to be "cut off". These strips are blacked out. (See the Advanced Settings button). It is better to use the Z buffer. In this case, objects farther away than a given distance are not displayed at the edges. Also, the objects at the front (mostly control displays) are not cleared.

#### ■ **Video Buffer Access**

Some game programmers bypass the Direct3D Engine and access the video buffer directly. Usually this is done for flat foreground objects, e.g. head-up displays, tachometers, consoles, etc. In order to remove this effect, the Video Buffer Access setting must be changed under 'ELSR Stereo' in Advanced Settings. If some objects are only visible for one eye, try setting the mode to Both Eyes. A special process will be enabled, to carry out the video buffer access for both eyes. These drawn objects have no depth information, and are always located on the screen surface.

#### ■ **Enlarging the Clipping Rectangle**

If some parts of a room behind a cutout (e.g. a door) are missing, then it is possible that the clipping rectangle is too small. What is a clipping rectangle? Suppose you are in a room with an open door, which leads to another room in behind. Through the door you only see part of the second room. A 3D game usually draws the whole of the second room, and then sets a clipping rectangle. Everything outside this rectangle, which in this case coincides with the door frame, is clipped and is not shown. Looking with both eyes, parts of the room to the left and right of the clipping rectangle will be missing, because the eyes have different perspectives. If this happens, the Enlarge Clipping Rectangle setting must be enabled under 'ELSR Stereo' in the Advanced Settings.



## Problems

### ■ Irregular Flicker

When the LCD shutters of the glasses switch irregularly or cut out momentarily, this indicates that the interrupts needed for switching the lenses are delayed by other devices. The ELSA stereo driver is very sensitive to this PC system error, which could be caused by a defective or old soundcard or joystick driver. If this is the case, the newest drivers for these devices should be installed. As well, enable the Poll with Interrupts On option in Joystick/Game Controller Setup .

### ■ Graphics for the Right Eye not Drawn

You probably have not installed the current DirectX 6.0 version or higher. Install it from the *ELSA WINNERware* CD.

If the error only occurs at certain times (e.g. when you activate a menu and the 3D engine is stopped), this is a known side effect that the driver cannot correctly identify. In this case, use the hotkey (default setting: Num-) to switch off the shutter effect.

It is possible that some objects are only visible to one eye. In this case, the program is probably accessing the video buffer directly. In Advanced Settings, try setting Access to the Video Buffer (Lock Mode) to Both Eyes.

Enables the ELSA Stereo Extensions. For benchmark programs, it is advisable to completely disable the Stereo Extension. During play, the stereo effect can be enabled/disabled by hotkey. See Hotkey Setup.

Open the Hotkey Setup page.

Specifies the number of pixels with a resolution of 640x480, to allow maximum object transposition. This can increase depth perception—the larger the stereo width, the stronger the depth perception. However, this effect has often been found to be disturbing.

If you see two pictures, the stereo width is possibly set too high.

Use the Stereo Width Calculator to find your individual setting.

During play, when the In-Game Control Panel is active, you can also experiment with the F7/F8 function keys to find your optimal perspective.

For other resolutions, the value is scaled automatically from the 640x480 value.



Open the Stereo Width Calculator to determine your individual optimal stereo width, which is based on your monitor dimensions and your eye separation.

This list shows all programs, whose stereo 3D settings have already been specified, or whose settings have been saved (with the F10 key) in In-Game Control Panel, while the application was running. Select an application, and the corresponding settings appear in the lower part of the dialog

Renaming the current program entry.

Deleting the current program entry.

Enables ELSA 3D Stereo for the application selected from the list.

When selected, the application uses the stereo width given below.

Changes the stereo width in the selected application

Opens the Advance Settings page. The best results can only be attained if the Advanced Settings accurately describe the Z range in use.  
Play with the settings and notice the results. Ideally, make the changes while the game is running, using the hotkeys with the In-Game Control Panel enabled.



This is the smallest Z value used. Z values are measures of depth used by the 3D application, in order to make objects three-dimensional. The Z value is the distance to the observer, and usually falls between 0 and 1. Switch on the In-Game Control Panel with the hotkey, in order to see the Z values being used.

This is the largest Z value used. Z values are measures of depth used by the 3D application, in order to make objects three-dimensional. The Z value is the distance to the observer, and usually falls between 0 and 1. Switch on the In-Game Control Panel with the hotkey, in order to see the Z values being used. Dyna-Z™, developed by ELSA, calculates in real time the Z values in use by the 3D application, and dynamically adjusts the depth perception. Dyna-Z™ should almost always be enabled!

In certain 3D applications, it is possible for small sections of the screen to be displayed incorrectly. The Clearing Mode determines how these sections are cleared.

The Blit Clearing mode (Cover with Black) is usually the right choice.

The Z buffer Clearing Mode only works when the Z buffer is used in the game. This mode requires a Z clearing value that depends on the 3D application. Everything that is at depths greater than the Z clearing value is cleared at the side.

The Z clearing value is used with the Z buffer clearing mode. Everything that is at depths greater than this value is cleared at the side.

Access procedure for the video buffer (Lock Mode). Some applications access the video buffer directly, without using the Direct3D Engine. In order to do this, the application assigns an address for the video buffer of a specific picture, and accesses this area for each successive pixel. Since for stereo, two pictures are drawn in parallel, the application driver can release only one of the two pictures to be drawn. The Lock Mode determines which of the two pictures the application accesses. In this case, you see the changes with only one eye. This situation makes it easy to recognize an application directly accessing the video buffer.

In the Both Eyes mode, however, the driver tries to access both pictures with a special trick. In rare cases, it is possible that a pale lilac color is left on the page. The default setting for Video Buffer Access is Left Only.

Clipping rectangles are used in a driver to draw (e.g. a room seen through a door). In this case, only the part of the room seen through the door needs to be displayed. The size of this visible area is given by the clipping rectangle. In stereo mode, mismatches can occur when one eye sees more of the room than the other. This effect can be avoided by increasing the width of the clipping rectangle.

The size of your monitor in inches

The format of your monitor (normally 4:3)



Distance between your eyes. The average distance is 6.2 cm. Ask a friend to measure the distance for you.

Calculated maximum stereo width

Path and name of the 3D application

Name of the program entry. The names can be chosen at will without changing anything in the application on the hard disk. The name is only used in the stereo settings.

The calculated pixel depth recommended for you. Experiment with the F7/F8 hotkeys when the 3D application is running, and the In-Game Control Panel is enabled.

Hotkey for switching the stereo effect off and on. It is activated only if the 3D application was started with the stereo effect on.

Hotkey to switch on/off the Control Panel with the integrated Z histogram. When the Control Panel is active, the F1 to F10 function keys can adjust many stereo settings:

- F1/F2 Front Z Value -/+
- F3/F4 Back Z Value -/+
- F5/F6 Perceived screen position -/+
- F7/F8 Stereo width
- F9 Dyna-Z™ on/off
- F10 Save settings for this application
- F11/F12 Decrease/Increase non-linearity factor

Any hotkeys currently used by the 3D application are disabled at this time.

The Z histogram shows, as a bar graph, the number of objects drawn at any Z distance (bar height). The farther right a bar is, the farther away the object is.

Hotkey to generate a true 3D screenshot. The pictures are saved in the current 3D application directory, with the name ELSA3Dxx.BMP, where xx is a running number.



This shift register sets the location of the 3D space of the application relative to the computer screen. When it is on Back, the entire 3D scene is perceived to be behind the screen. In the Front setting, it appears entirely in front of the screen. When the whole scene is behind the screen, the monitor appears to be a window to a 3D world.

The effect is stronger for some people than others. Experiment with it!

Setup the default values specified by ELSA for well-known applications.

Programs map the Z values to the actual depth in varying ways. The important thing is that the Z values for two objects at different depths should be distinct.

The non-linearity factor is a correction to the mapping, in order to generate a more realistic impression of depth.

The value 0 corresponds to no correction, and is usually the value chosen. If the depth impression is not satisfactory, this factor can be adjusted on the In-Game Control Panel with the F11/F12 keys.

The maximum time in seconds for a newly calculated screen to be shown three-dimensionally. This ensures that an animated series of pictures will always be shown three-dimensionally. With a fixed picture (e.g. a control page), the shutter effect is switched off after a set time.

Select the check box if you want to save all screenshots in a common directory. Then select a directory for the screenshots.

Select a directory for all screenshots. A running number index is incorporated into the filenames. If there is already a file with the same name in the directory, the next higher number will be attached and checked.



