



## Autostereoscopic 3D Display



"C" Product Line  
"Cn" Model

# Operating Manual

Congratulations - with this display, you have purchased an innovative high-quality product. It will help you to organise your work both more efficiently and more comfortably. Before you switch on the display for the first time, please make sure to carefully read this operating manual.

**SeeReal Technologies uses standard branded panels as the basis for the production of this autostereoscopic display. For basic information on the panel and safety regulations, please refer to the manufacturer's manual attached on CD.**

**TECHNICAL DATA ARE SUBJECT TO CHANGE WITHOUT NOTICE.**

Owing to further developments, single parts of this manual may not be up to date. For the most recent information, please refer to [www.seereal.com](http://www.seereal.com).

# Table of contents

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- 1 Applications and function ..... 4**
- 2 First-time operation..... 5**
  - 2.1 Installation ..... 5
  - 2.2 Connection ..... 5
  - 2.3 Switching on ..... 5
  - 2.4 Hard- and software ..... 6
- 3 Display controls ..... 8**
- 4 Cleaning ..... 9**
- 5 Transport..... 10**
- 6 Scope of delivery..... 11**
- 7 Technical data ..... 12**
- 8 Safety ..... 14**
- 9 Address ..... 15**

# 1 Applications and function

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Using the "Cn" display, images and videos with stereoscopic content can be displayed and viewed without any additional image separating equipment (e.g. glasses etc.). This way, the user receives an image of a scene that is truly three-dimensional and extremely close to reality. The use of the display is recommended wherever the visualisation of three-dimensional data is of great importance. The stereo images should be viewed at the same distance as from a common computer monitor, ideally at between 60 and 75 centimetres.

Stereoscopic viewing is based on the slightly different perspectives that the eyes have on an object, causing the right and the left eye to perceive images that slightly differ from each other. Based on these images, the brain forms the three-dimensional view.

To meet this principle, the display shows a composite image containing different information for each eye respectively. A highly precise image splitter directs the light going from the display to the viewer in such way that each eye receives only that image intended for this particular eye.

***Please note: when you view stereo images, the objects of which are sometimes far in front of or behind the normal display plane, please make sure to have regular breaks in order to relax your eyes and avoid strain. You may also have to optimise the stereo parameters of the software used. If you experience any signs of nausea, dizziness, eye problems, or similar, we recommend to interrupt work.***

## 2 First-time operation

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### 2.1 Installation

Make sure to place the display in a fixed position, dry and well-ventilated. Protect from moisture, undue heat or cold and areas containing excess dirt.

### 2.2 Connection

1. Remove both covers at the rear in order to access the input ports.
2. Connect the round low-voltage connector **(A)** to the DC power supply and the DC power supply to the mains. **In no case are you allowed to use a DC power supply other than the one enclosed in the delivery!** The enclosed mains cable meets the safety regulations in both Germany and most European countries. If used in other regions, replace if necessary in accordance with applying standards.



Figure 1

3. The enclosed DVI cable is used in order to connect the graphics board of the computer to the display through the DVI port **(B)**. To do so, the graphics board has to have a DVI connection.

**Only plug or unplug DVI cable connections into or from graphics board or display when devices have been switched off. Otherwise, there is danger of destroying the display electronics.**

The existing analogue port **(C)** on the display is not suitable for stereo operation and remains unused.

### 2.3 Switching on

The display is plug-and-play compatible.

Use the on/off-switch at the front (Figure 3) to switch the display on. The diode on the right will light up green (ready for operation). Now, switch the computer on. The display auto-initialises itself, analyses the video signal and adjusts the display parameters. This will take a few seconds.

## 2.4 Hard- and software

### **Resolution and refresh rate**

The display works with a resolution of 1600 x 1200 pixels and with a refresh rate of 60 Hz. Other resolutions are not supported for stereo display.

### **Stereo images/ videos**

The enclosed 3D demo CD contains a selection of stereoscopic images and videos. For installation instructions, please refer to the CD.

### **Interactive 3D applications**

For a current list of 3D programs which are suitable for stereoscopic visualisation on our 3D monitor, please refer to <http://www.seereal.com>.

Common professional OpenGL-applications which support the stereo mode e.g. for shutter glasses, can be displayed stereoscopically on the "Cn" display by means of NVidia-graphics boards (with Quadrochips). To this end, go to "Advanced Display settings" (right click on desktop → "Properties"), "OpenGL Settings" → "Additional OpenGL properties", switch on "Enable stereo in OpenGL" and change to the stereo display mode "Use vertical interlace monitor" (Figure 2).

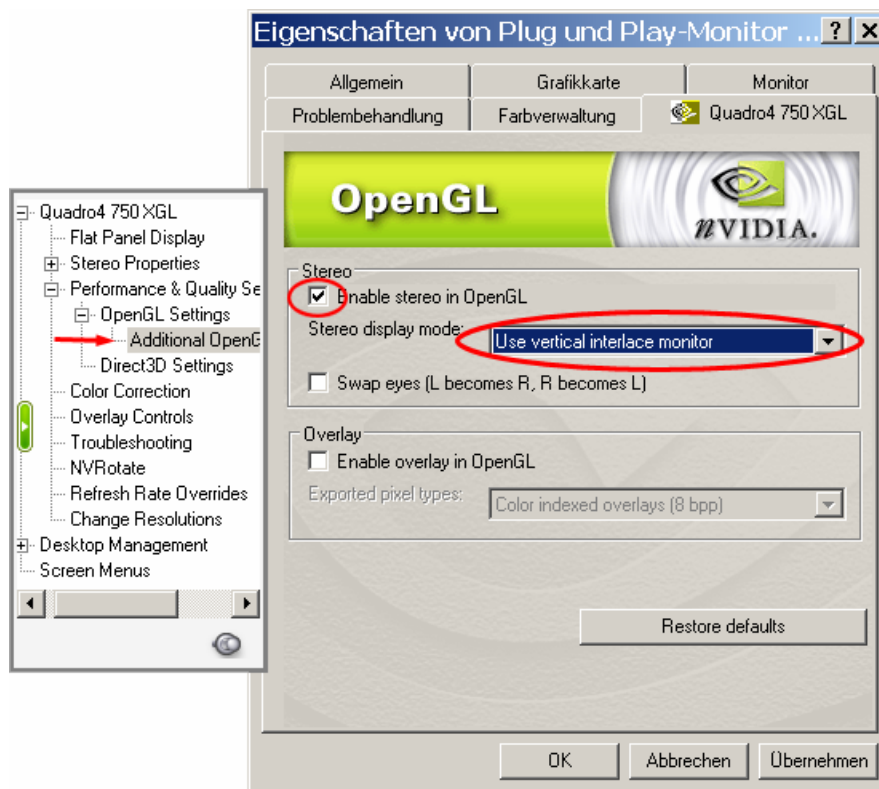


Figure 2

Please ask your dealer if your program uses the OpenGL graphics library.

### **Graphics boards, one- and two-monitor-solutions**

The display can be used at workplaces with one- or two-monitor-operation. If you do not only want to display stereoscopic content but also applications with 2D elements, we would recommend using an ordinary monitor as the second one.

## 2. First-time operation

The "Cn" display is fully digitally controlled, meaning that only graphics boards with digital DVI connection can be used.

In case of questions and specific software problems, please contact [support@seereal.com](mailto:support@seereal.com). For a current list of standard applications that can run on the display, please refer to [www.seereal.com](http://www.seereal.com).

## 3 Display controls

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For detailed information on the panel, please refer to the exact documentation of the manufacturer. Here, you will find the most important information on the main functions of the different buttons for comfortable everyday work.

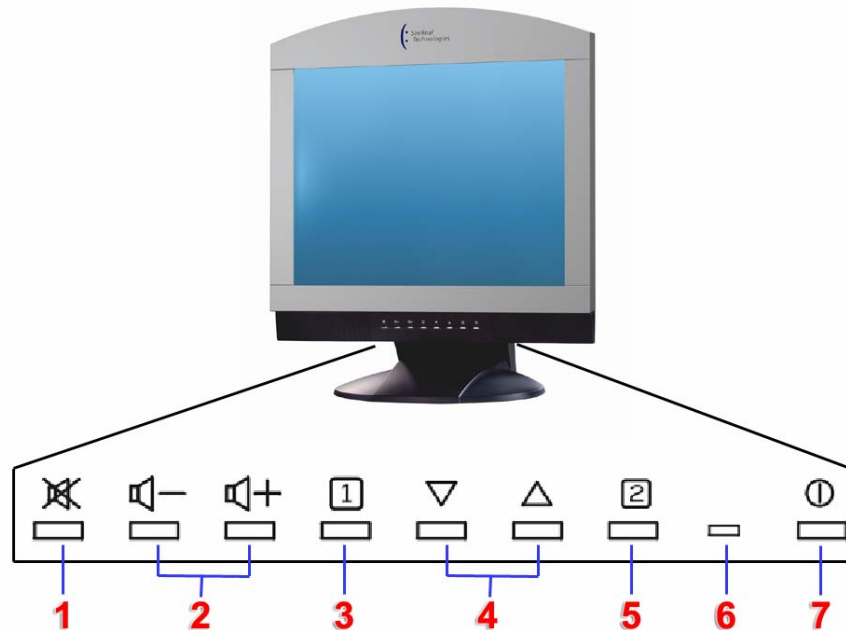


Figure 3

- 1 Audio mute button switches the sound off.
- 2 Decreases or increases the volume.
- 3 Displays the Main Menu or exits the control screen and saves adjustments.
- 4 Scrolls through menu options and adjusts the displayed control.  
Also a shortcut to display the Contrast adjustment control screen.
- 5 Displays the control screen for the highlighted control.  
Also toggles between two controls on some screens.  
Also a shortcut to toggle between analog and digital connections. For stereo viewing, the digital input has to be used.
- 6 Status LED  
Green = ON  
Orange = Energy-saving mode
- 7 Power On/Off

## 4 Cleaning

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**Warning! Always disconnect power supply before carrying out any cleaning work!**

Never use any hard or sharp objects that might scratch the protective screen or the housing when cleaning. Do not use any aggressive cleaning agents such as solvent, benzine, scrubbing detergents, spray-on cleaners, acid or alkaline solutions, or wax. To clean the housing or protective screen, slightly moisten a soft cloth with hand warm water and remove the dirt.

Make sure that no fluid can leak into the inside of the display! Then wipe the cleaned spot with a clean and dry cloth. To this end, it is possible to use a mild wetting agent. Ordinary computer cleaning cloths are well-suited for cleaning the protective screen and the housing.

*Please note: only switch the display on again after the cleaning liquid has completely evaporated!*

## 5 Transport

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The display may only be transported **in vertical position** and in an adequate, solid transportation box. SeeReal Technologies does not take responsibility for any damages to the display during transport that result from inadequate packaging or improper handling of the product by a third party.

## **6 Scope of delivery**

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The following accessories will come enclosed with your "Cn" display:

- Manual and installation CD of the panel manufacturer
- "Cn" display operating manual on CD-ROM
- 3D demo CD-ROM
- Mains cable and DC power supply with round low-voltage connector for display connection
- DVI connecting cable

## 7 Technical data

General data	
Distance <sup>1)</sup>	650 mm
Sweetspot <sup>2)</sup>	
- width	50 mm
- depth	150 mm
Number of viewers	3
Size	20.1"
Stereo resolution <sup>3)</sup>	800 x 1200
Stereo contrast <sup>4)</sup>	0.8 BM
Luminance <sup>4)</sup>	180 cd/m <sup>2</sup>
Inputs	DVI, D-Sub 9-pin, 12V power supply
Weight	12 kg
Warranty	2 years

<sup>1)</sup> optimum distance, main sweetspot

<sup>2)</sup> rhombic shaped / zone in which stereo viewing is possible

<sup>3)</sup> resolution per stereo image

<sup>4)</sup> measured at centre sweetspot (650 mm distance, display centre)

LC-Panel	Specification
Type	Fujitsu FLC51UXC8V-02B
Resolution	1600 x 1200 pixels
Pixel size	0.255 mm (h) x 0.255 mm (v)
Pixel arrangement	RGB vertical stripe
Number of colours	16 million
Contrast	600 (min. 350)
Luminance	250 cd/m <sup>2</sup> (min. 200 cd/m <sup>2</sup> )
Increase time (opt.)	15 ms (max. 30 ms) at 25°C 50 ms (max. 100 ms) at 0°C
Decrease time (opt.)	10 ms (max. 30 ms) at 25°C 50 ms (max. 100 ms) at 0°C
Technology	αSi TFT active matrix, MVA
Size	456.0 mm x 356.0 mm x 25.0 mm
Passive area	421.5 mm x 321.5 mm
Active area	408.0 mm (h) x 306.0 mm (v); 20.1"
Glass thickness	1 mm
Input	LVDS, two channels, even and odd pixels separated
Power consumption	600 mA (max. 1200 mA) for logic 2.6 A (max. 3.0 A) for backlight
Operating voltage	12 V (11.5 V – 12.5 V)
Backlight type	6 CCFL tubes ∅ 2.6 mm
Storage temperature	-20°C to +60°C
Operating temperature	0°C to +60°C
Weight	3.7 kg

<b>System requirements</b>	
PC	IBM-compatible PC, Pentium II 300 MHz
Operating systems	Windows 9x/ME/NT4/2000/XP, LINUX
Graphics board	Digital 3D graphics board (e.g. nVidia Quadro)
SGI workstation	Fuel or Octon2 with V10 or V12 graphics board

## 8 Safety

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Please note the following safety instructions when working with the display:

- The power supply will heat up and this heat has to be dissipated to the surroundings without any obstruction. Therefore, make sure that the power supply is not covered and not exposed to any heat sources.
- If used and transported other than in the specified way, damage to the display - especially to the protective screen - may occur, this way causing risk of injury.  
**Attention:** warranty is only covered when transporting the display exclusively in **original package!**
- When adjusting the height and tilting of the display on the display base, make sure that there is no risk of injury for the user, especially that they cannot catch their fingers between display and base. If necessary, adjustment should be carried out together with a second person. Make sure to tighten hand wheel and lever properly.
- The display may only be used as specified and for no other purposes.
- Under no circumstances is it allowed to open the display. No repair or service work may be carried out.
- In case the display has to be disposed of, please ensure proper disposal as electronic waste.
- Always tighten the screws of the DVI cable connector to avoid EMI (electro magnetic interference).

### **Warning!**

**This product is compliant with emissions standard EN55022 level A. This product may cause radio interferences in residential areas. In that case, the operator may be asked to take suitable measures.**

## 9 Address

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