



50" (127 cm) Professional QFHD 3D display

DM504MAS

User Manual



Warning this is a class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

Safety Instructions for DM504MAS

Read and follow these instructions:

1. This product must be earthed.
2. The mains plug or appliance inlet is used as the disconnect device and should be easily accessible.
3. Use only an approved power cord or interconnection cable.
4. Unplug the product if you are not going to use it for a long period of time.
5. Unplug the product if you need to clean it, use a slightly damp cloth. Never use alcohol, solvents or ammonia-based liquids.
6. Refer all servicing to qualified service personnel
7. Do not block any ventilation holes.
8. To avoid electric shock, do not expose to rain or excessive moisture.
9. Do not store or use the product in locations exposed to excessive heat, direct sunlight, extreme cold or in dusty environments.
10. Avoid moving the product between locations with large temperature differences.
11. Choose a location within the following temperature and humidity ranges.
 - Temperature: 0- 50°C
 - Humidity : 20-90% RH
12. Avoid hitting or dropping during operation and transportation.

Mounting

The display can be placed on a table stand or wall-mounted. A table stand is not supplied with the display, but can be purchased separately. Furthermore, the display can be mounted with VESA 400x400 (MIS-F) compliant universal wall supports, ceiling supports or universal floor stands. Upon selecting a mount the weight of the display (45 kg) should be taken into account.

Fitting the table stand

For use of the separately available table stands, make sure that the fasteners are properly tightened. Never use a makeshift stand, or legs fixed using wood screws.

Using a VESA mount

The standard VESA mount holes on back of the display allow the user to install the 3D display on any VESA MIS-F compatible wall support, ceiling support or floor stand.

Important: Use a VESA MIS-F compatible support suitable for the weight of this 3D Display.

Positioning the display

For the best results, choose a place where there is no direct light shining onto the screen, and which is some distance away from radiators or other sources of heat. Leave a space of at least 10 cm all around the display for ventilation, making sure that curtains, cupboards etc. cannot obstruct the airflow through the ventilation apertures. The display is intended for use in a public places only and should never be operated or stored in excessively hot or humid conditions.

Document Information

Info	Content
Title	50" QFHD 3D Display, User Manual
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Contact	http://www.dimencodisplays.com

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1 Introduction

The autostereoscopic 4k 50" LCD display offers a magnificent resolution of 3840x2160 pixels. Combining Dimenco Nabla and Clear View technologies, the 4k display delivers the best depth performance, widest viewing angle, lowest cross-talk, and deepest black levels.

The 50-inch 3D display from Dimenco Displays offers state-of-the-art lenticular lens design creating a variety of distinct autostereoscopic views. By this the viewer will benefit from the multi-user experience along with a large comfort zone. The 50-inch 3D display is specifically designed for a wide range of applications such as digital signage and information provision.

The display is featuring superior lens design and 3D rendering relying on proven, highly optimized and accurate manufacturing processes. The lens design minimizes cross talk, creating highly distinct views. The DM504MAS is designed for optimal viewing comfort and for maximum 3D viewing experience.

The display's 2D-plus-depth rendering interface is open, allowing maximum flexibility. No matter what sort of Dimenco Displays display is used, the content does not need regeneration. What's more, the rendering hardware sits inside the display, allowing for maximum optimization of the optical system by embedded processing.

Provided with the 50-inch 3D display are the Dimenco 3D Player and the Dimenco Control Tool. The Dimenco Control Tool can be used to set all kinds of visualization parameters for the 3D display; examples are depth offset, depth range, optimal viewing distance, contrast, and brightness. The Dimenco 3D Player is used for play-out for the Dimenco Displays 3D displays. It takes care that the display switches to 3D mode with the appropriate 3D visualization settings.

The Dimenco 3D Player and Dimenco Control Tool can be downloaded from:

<ftp://ftp.dimenco.eu/>

User: DimencoSoftware

Password: playeranddct

Optionally download some sample clips from:

<ftp://ftp.dimenco.eu/>

User: Dimencoguest

Password: 3dconversion

2 Product features

2.1 Global product features

Add an extra dimension to your professional application with Dimenco Displays 3D monitors. Based on unique technology, its stunning 3D effect immediately grabs the attention and gives a more entertaining experience to the viewer. This 'magical' appeal attracts the consumer's attention making it ideal for use in digital signage, point-of-sale advertising, games and 3D visualization.

Exciting out-of-screen 3D effects

- A stunning and truly 'magical' 3D effect that instantly grabs the attention and enhances the entertaining experience of the viewer
- Increased amount of view-time resulted in 45% higher customer attention (result from a study performed by the University of Tilburg in 2011)

Autostereoscopic lenticular technology

- No need for special 3D glasses
- Multiple users experience 3D at the same time
- Full brightness, full contrast, true color representation
- 3D data interface
- 2D-plus-Depth converted to 28 different views and interwoven into a 3D image
- Ability to adjust real time depth factor, depth offset and optimal viewing distance

High quality 3D and 2D mode

- No need for special 3D glasses
- Autosensing between 2D and 3D mode
- Dimenco rendering core inside for 2D/3D display processing
- High quality 2D mode with picture quality improvement
- 3D rendering mode
- Real-time control over advanced 3D visualization parameters
- Dimenco cyclic view – enabling a smooth cone transition

3D content enabling products (optional)

- Plug-ins for popular 3D animation software available
- OpenGL Visualizer and Control, DirectX Visualizer
- Player API, Settings API
- Content conversion (from 2D and stereo) available, see www.dimenco.eu/adepth.

2.2 Technical aspects and details

Group	Item	DM504MAS
LCD panel	Type	a-si TFT active matrix
	Resolution	3840 x RGB x 2160
	Effective viewing area	1095.8 x 616.4 mm
	Size	50"
	Pixel pitch (sub pixel)	0.0955(H) x 0.2865(V)
	Contrast ratio (typical)	5000:1
	Aspect ratio	16:9
	Brightness	400 cd/m ²
	Response time gray-to-gray (typical)	6.5 ms
	Refresh rate	30 Hz
	Display colors	1.067 G (10 bits RGB)
	Orientation	Landscape
Physical	Weight	45 kg
	Dimensions (WxHxD)	116 x 68 x 10 cm
	Package dimensions (WxHxD)	136 x 88 x 25 cm
	Installation	Table stand (optional), wall or ceiling mounting bracket
	Installation angle	0 - 10° from vertical
Environmental	Power consumption	130 W
	Voltage	90-253 VAC, 50/60 Hz
	Ambient operating temperature	0 to 35 °C
	Storage temperature	-20 to 60 °C
	Relative humidity	20 to 90 % RH
Connectivity	Video input	DVI-D dual link, maximum 1.5 m DVI cable length
	Input resolution	3840 x 2160
	Video frame rate	30 fps progressive
	Input format 3D	2D-plus-Depth
	Monitor control	Via DDC/CI channel

2.3 Cosmetic specifications

2.3.1 Description

This specification standard is applicable to: 3D displays supplied by Dimenco Displays.

2.3.2 Environmental conditions of inspection

The environmental conditions and visual inspection shall be conducted as below.

- Ambient temperature in the range 15-25 [°C].
- Humidity in the range 25-75 [%RH].
- The functional inspection distance of the monitor (measured between the monitor and the inspector's sight) should be at least 3.0 [m].
- The maximal viewing angle relative from the normal direction of the module/monitor is specified according to $\pm Y$ degree to the front surface of the display in vertical direction, and $\pm X$ degree to the front surface of the display in horizontal direction. The values below are the following: X = 15, Y = 45.
- Ambient illumination:
 - External appearance inspection in the range 400-600 [Lux].
 - Light on inspection in the range 100-200 [Lux].

2.3.3 Classification of defects

The defects are classified as major and minor defects. The definition of defects is described as follows:

- Major defect:
The defect may cause functional failure, or reduce the usability of the product for its purpose. For example: electrical failure, deformation, etc.
- Minor defect:
The defect does not reduce the usability of the product for its purpose. For example: dot defect, etc.

The judgment of the major and minor defects shall be according to the table with classification of defects below.

Inspection item	Description	Defect type
Vertical line	Abnormal line appears in vertical direction	Major
Horizontal line	Abnormal line appears in horizontal direction	Major
Cross line	Abnormal cross line appears in display	Major
No display	No signal output in display	Major
Irregular display	Abnormal signal outputs in display	Major
Dot defect	Bright dot, dark dot or dot adjacent appear in display	Minor
Foreign material	Foreign material appears in display	Minor

2.3.4 Inspection Criteria

Definitions:

- Dot defect:
If the size of a dot defect is larger than 0.5 times a single pixel, it can be regarded as one dot defect.
- Bright dot:
Dot appears bright and the size is fixed in a black pattern.
- Dark dot:
Dot appears dark and the size is fixed in pure red, green and blue pattern.

2.3.4.1 Display defects

The size of a circular area is defined by the average of the size along the horizontal axis (=a) and the vertical axis (=b), i.e. $D=(a+b)/2$. The size of a lint/scratch is defined by its width (=W) and its length (=L).

Item 3D display	Type	Maximum tolerance
Bright dot	Random	$N \leq 3$
	2 dots adjacent	$N \leq 1$
	3 dots adjacent or more	$N \leq 0$
Dark dot	Random	$N \leq 12$
	2 dots adjacent	$N \leq 2$
	3 dots adjacent or more	$N \leq 1$
	Minimum distance between dark dots	$L \geq 15$ [mm]
Total bright and dark dots		$N \leq 12$
Backlight	Break down	Not permitted
Surface plate	Scratches	$0.15 < W \leq 0.25$ [mm], $0.3 < L \leq 10.0$ [mm], $N \leq 7$
Cosmetic profiles	Scratches	$0.05 < W \leq 0.15$ [mm], $0.3 < L \leq 2.0$ [mm], $N \leq 7$
	Sharp edges	Not allowable
Outside and connectors	Cracks and rust	Not acceptable

Disclaimer will be printed on bag sticker and included in this manual, in case this is not present please contact sales@dimencodisplays.com.

- Please be aware that the protective plate in front of this display is sensitive for scratching during cleaning. This is caused by hard particles (like sand) that might be present in the cloth used and/or the cleaning fluid.
- Small backlight intensity variations can occur in even colored backgrounds.
- Discoloration of the active area circumference can occur and should be treated as normal and will not change the functional performance of the 3D intelligent display.
- Dimenco Displays is not responsible for a poor performance due to a not optimal signal input and not complying to the following DVI standard: Digital Visual Interface DVI, Digital Display Working Group, Revision 1.0; April 02, 1999.

3 Scope of supply, Set up and mounting

3.1 Scope of Supply

The contents of the box:

- Display DM504MAS
- Mains cords (EU)
- DVI cable
- Quick installation guide
- Cardboard box with cushions

The following items can be purchased separately:

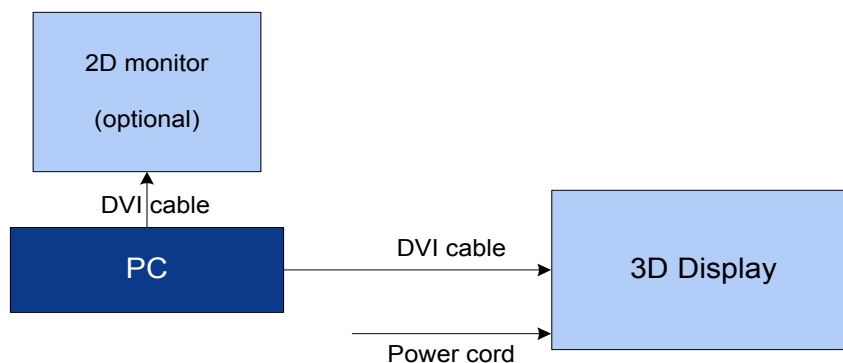
- Table stands

3.2 Image retention

IMPORTANT: Always display alternating content with your application. If a still image in high contrast remains on the screen for an extended period of time, it may leave an 'after-image' or 'ghost image' on the front of the screen. This is a well-known phenomenon, caused by the shortcomings inherent in the LCD technology. Please note that the after-image symptom cannot be repaired and is not covered under warranty.

3.3 Connecting the display

NEVER (dis)connect DVI when your PC or Display is on.



A second 2D display may be connected to the PC. Only use a DVI cable and graphics card that is compliant with the DVI standard (see reference to DVI standard in section 6).

Make sure the PC and display are switched off!

- Connect the PC via the provided DVI cable to the top DVI connector (the one closest to the power connector) on the backside of the display.
- Connect the power cord.

3.4 Cleaning instructions

Before cleaning the display, disconnect the power cord and DVI cable.

It is preferable to clean the front of the display with the cleaning products listed in the table below.

To clean we recommend	Examples
General cleaning materials	soft cotton cloth, window leather
Aqueous solution, neutral and weakly alkaline window cleaner without additives of abrasive substances: Permitted portion of ammonia < 5 vol-%, as well as water soluble organic solvents < 5 vol-%.	Flux, Ajax

Do not use for cleaning	Examples
Alkaline lyes	durd soap, certain textile detergents
Lyes	toilet cleaner
Acids	hydrochloric acid, vinegar, lemon
Decalcification agent	citric acid
Degreasing agent	acetone, methylene chloride, trichloroethylene, petrol
Strong ammonia detergents	toilet cleaner
Chlorine or hypochloride detergents	Chavel water, Domestos
Solvents	Ethyl alcohol, Isopropyl alcohol, alcohol, acetone, trichloroethylene, benzene, hexane, petrol
Coarse millinery	abrasive, steel wool, sponge with abrasives, blades cloth with thread made of steel, hard cloth or paper tissue
Other	Electrolube ASC, REF ASC250ml

As an alternative, clean the front of the display with a solution of soft soap (e.g. liquid hand soap) and tepid water, using a soft cloth or sponge.

The rest of the display can be cleaned with a dry cloth.

3.5 Disposal of your old product

Your product is designed and manufactured with high quality materials and components, which can be recycled and reused.

Please inform yourself about the local separate collection system for electrical and electronic products.

Please act according to your local rules and do not dispose of your old products with normal household waste. The correct disposal of your old product will help prevent potential negative consequences for the environment and human health.

4 Software installation

This chapter contains the prerequisites for the PC hardware and the operating system for the software. First, check whether your PC complies with the requirements that are given in the next sections. Then follow the installation instructions, where you will be guided step by step through the software installation procedure.

4.1 Minimum PC requirements

The play-out PC must comply with the following minimum requirements:

- 2 GHz processor
- an NVidia or AMD/ATI graphics card (not combined with other type of graphics chips), resolution 3840x1080
- DVI dual-link output
- Windows 7 (preferred) or Windows XP

4.2 Prepare PC

- Install the Dimenco 3D Player and Control Tool that can be downloaded from:
<ftp://ftp.dimenco.eu/>
User: DimencoSoftware
Password: playeranddct
- Optionally download some sample clips from:
<ftp://ftp.dimenco.eu/>
User: Dimencoguest
Password: 3dconversion
- Play out the content with the Dimenco 3D Player and control the visualization settings with the Dimenco Control Tool.

5 Trademarks, Copyrights and disclaimer

Specifications are subject to change without notice.

Trademarks are the property of Dimenco Displays B.V. or their respective owners.

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6 References

The following references are not normative but informative.

Description
VESA Display data channel standard; Version 3; December 15, 1997
VESA Display data channel command interface (DDC/CI) standard; Version 1; August 14, 1998
Digital Visual Interface DVI; Digital Display Working Group; Revision 1.0; April 02, 1999
VESA enhanced extended display identification data standard; Release A, Revision 1; February 9, 2000
ITU-R BT.709.4; Parameter values for HDTV standards for production and international program exchange

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