User manual
mermaid ventura 150 TFT x4

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1. Preface

The mermaid ventura 150T x4 is a state of the art high-tech flat panel TFT monitor, including four high quality TFT-LCD panels with maximum resolution of 1024x768 each, based on the newest TN technology, and high brightness 4-lamp CCFL backlight units. The very fast response time (25 ms) provides excellent suitability for video and gaming applications. The monitor enclosure is made of steel and hardened glass, which provides excellent stability and strength. When supplied with raiser and foot, the integrated hinge means you are able to manoeuvre the monitor for optimal viewing angle and comfort. Alternatively the monitor can be placed on a wall by means of the supplied wall bracket. The monitor is fully DDC 2 compliant, which makes installation very easy.

Connections:
- Analogue VGA (D-Sub connectors via 2 meter integrated cables)
- S-video (Y/C) (Mini-DIN connectors via 2 meter integrated cables)
- Composite (CVBS) (RCA connectors via 2 meter integrated cables)

Features:
- Graphical based OSD menu controlling all the functions of the monitor.
- High display quality : High contrast ratio, wide-viewing angle and High-speed response time.
- High brightness with the 4-CCFL backlight lamps
- Intelligent Digital Image processor
- Wide Input Voltage Range +9 VDC - +15 VDC
- Accepts refresh rates of between 56 Hz and 75 Hz.
- VESA DPMS power saving compatible.
- DDC Ver.2 Compliant
- Low power Consumption
- Separate H/V sync, Composite H/V Sync or Sync-on-green (SOG)
- Fully PAL and NTSC compatible Video inputs

2. Important Information

When using the ventura 150TFT x4 with Windows NT, it is recommended that the refresh rate be set to 60 Hz before connecting the monitor.

Please save the packaging. It has been designed to provide optimal support and protection for the monitor during transportation.

3. Content of the Box

- ventura 150 TFT x4 (15" x 4)

Accessories box including:

- PSU (120 Watt)
- Powercord
- Wall bracket
- Users manual
- Glass cleaner & screen wiping cloth

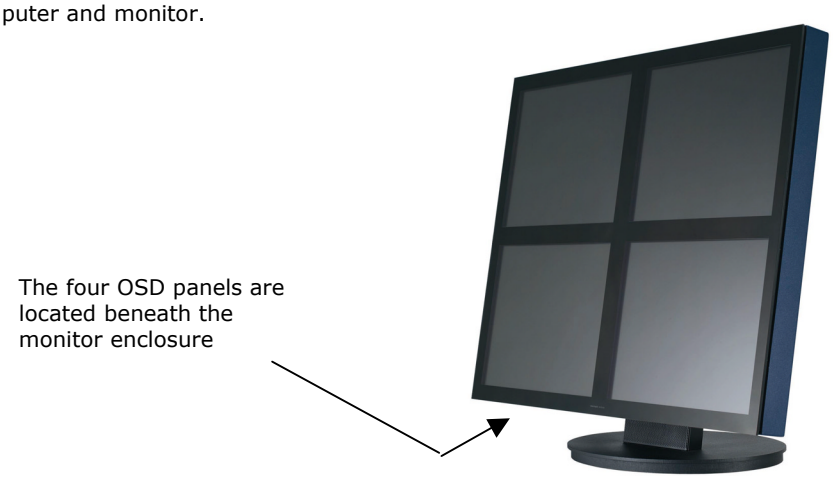
4. Unpacking, Placement and Set-up (PC)

After the box has been opened, remove the accessories box.
Bend the cardboard flaps outward and get hold of the whole cabinet. Gently lift the monitor out of the cardboard box. Most convenient is to be two persons. Remove the foam sidepieces and the plastic bag.

The monitor needs to be placed on a smooth and stable surface. This surface must be able to safely support 30 kg.
Wall solution: The wall must be able to safely support 20 kg.

Make sure both the computer and monitor are turned off before connecting the monitor.

- Connect the monitor to the computer by means of the supplied VGA cable. (Attached to the monitor)
- Connect the PSU to the monitor and AC outlet.
- Turn on the computer and monitor.

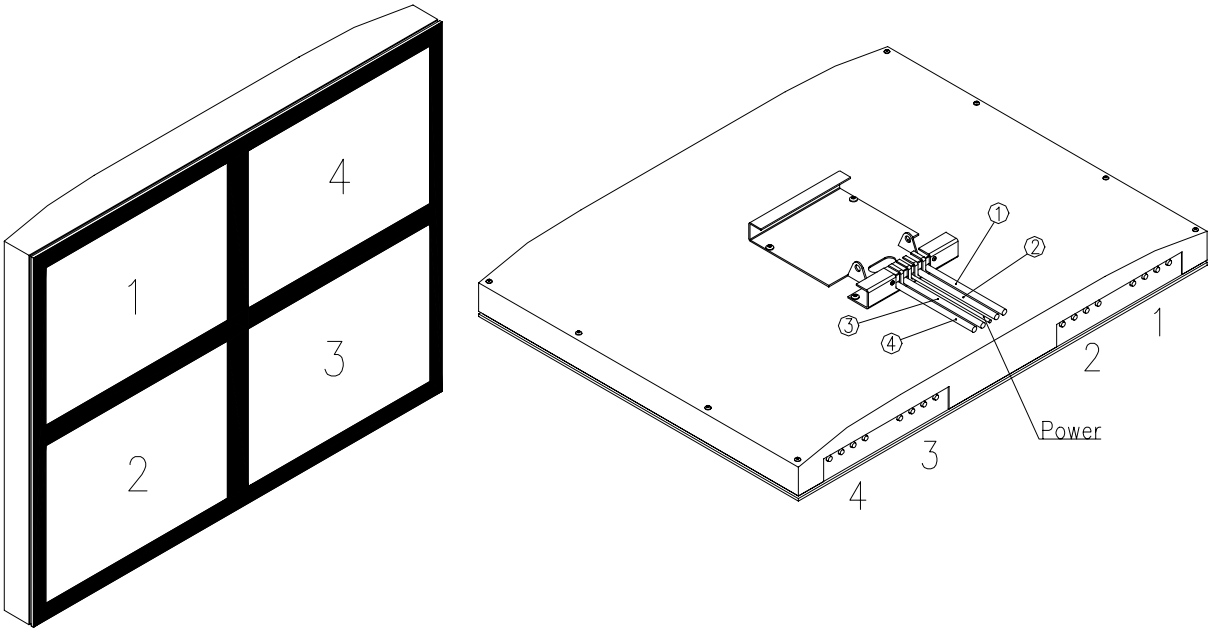


- mermaid ventura x4 15" consists of 4 identical mermaid ventura 150 AT screens.
- mermaid ventura 150 TFT is plug & play compatible via VESA DDC1/2B. Windows 98, ME and XP will recognise this and self configure.
- mermaid ventura x4 can be connected to 4 separate video cards:

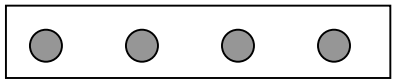
  - installed in the same PC
  - installed in up to 4 different PCs
  - or you can use a multiscreen video card with up to 4 output terminals.

- When using the mermaid ventura 150 TFT x4 with Windows NT, the computer needs to be started in VGA mode the first time. Log on as administrator and set the resolution to 1280x 1024 and refresh rate to 60 Hz. The computer can then be started in normal mode.

- The diagram below shows the interrelationship between the screen cable, the OSD key panel at the bottom of the screen and the related TFT panel.

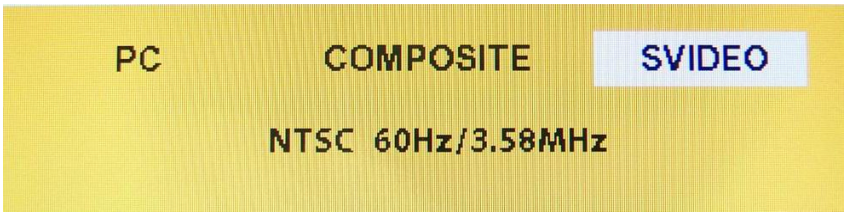


5. OSD Key Functions



Hot Key	Menu	Bright	Bright	Source Info
Normal	Select	Down	Up	Exit
		Left	Right	Pre-Menu

Function	Description
Menu (Hot Key)	Activate the OSD
Bright (Hot Key)	Activate brightness control OSD
Source info (Hot Key)	Displays the resolution and frequencies of the chosen input**
Select	Select the highlighted menu
Down/Left Up/Right	Moves the selector right or left on the OSD Increase or decrease the value of the selected item.
Exit	Exit from menu or sub-menus Exit from OSD menu

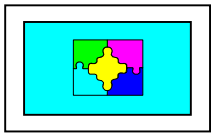


** When the Source info window is shown, the input source can be selected by use of the Down/Left or Up/Right buttons.

6. OSD Functions & Adjustments

PC menu (Only available when the PC input source is active)

Function	Description
1. Brightness	**Changes the overall brightness of the image.**
2. Contrast	**Changes the ratio between white and black.**



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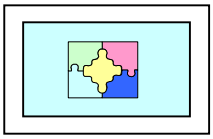
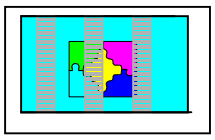


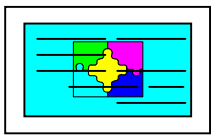
¢º Vague

3. Phase
4. Frequency

Fine tune vertical and horizontal noise in the display.



Mismatch of Horizontal image size causes periodic vertical bands in the display



Mismatch of Phase causes Horizontal line noise in the display

5. H-Position
6. V-Position

Moves the vertical and horizontal location of the picture shown.

7. Sharpness

Modify the sharpness of the display.

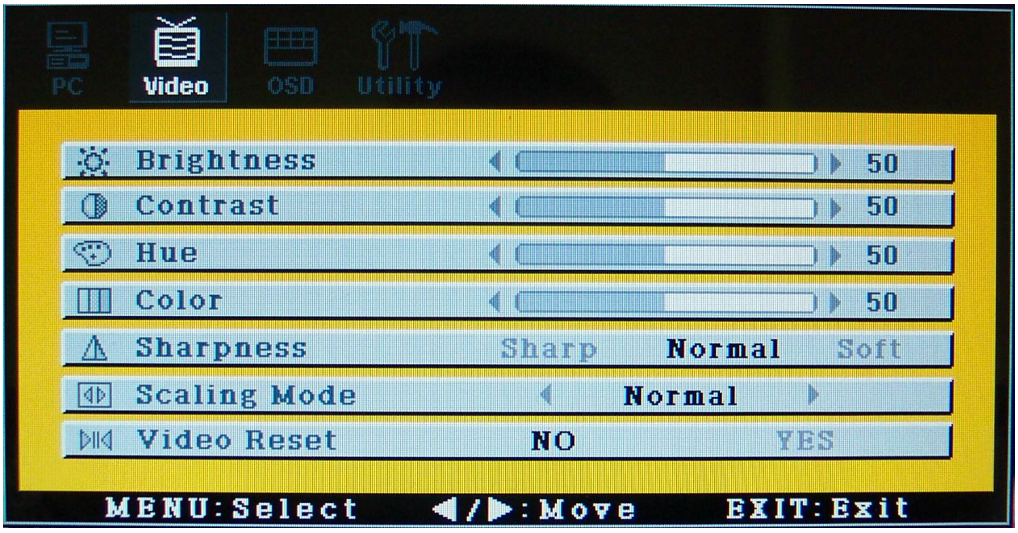
Sharp: Edges of image become sharp
Medium
Soft: Edges of image become soft

8. Colour Temperature

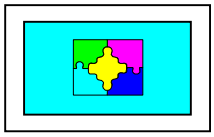
Changes the colour tone of the display.

OSD Functions & Adjustments - continued

Video menu (Only available when Composite or S-video input source is active)



Function	Description
1. Brightness	**Changes the overall brightness of the image.**
2. Contrast	**Changes the ratio between white and black.**



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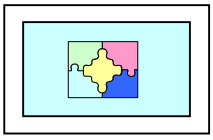

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3. Hue — **Changes the color balance in either bluish or greenish direction.**

◀ Bluish ▶ Greenish

4. Colour — **Changes the colour saturation of the image**

5. Sharpness — **Modify the sharpness of the display.**

Sharp: Edges of image become sharp
Medium
Soft: Edges of image become soft

6. Scaling mode — **Changes Selects between different ways to scale the video input.**
7. Video Reset — **Reset the values in the video menu to factory defaults.**

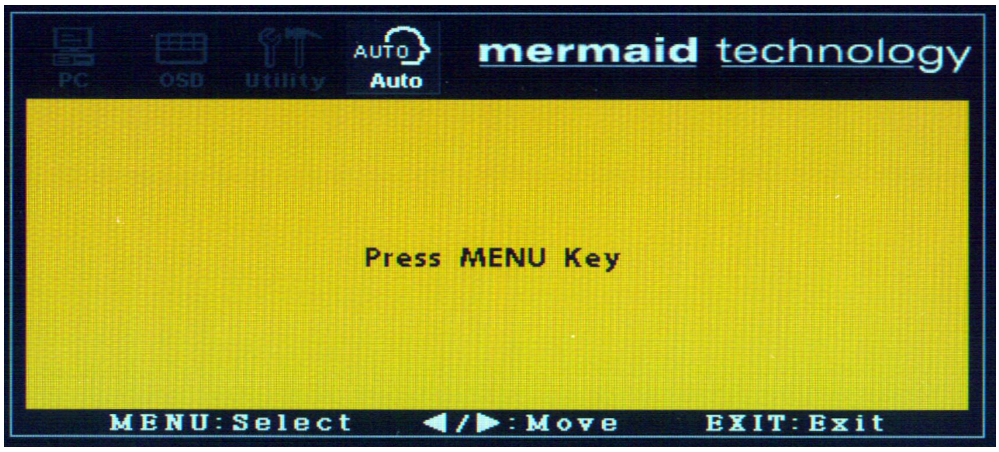
OSD Functions & Adjustments - continued

Function	Description
1. H-Position **2. V-Position**	**Moves the location of the OSD menu.**
3. OSD Timeout	**Specifies the time span before the OSD menu disappears.** (20 - 200 seconds)
4. Language	**Specifies the OSD language.** Select between English – German – Korean and Japanese

OSD Functions & Adjustments - continued

Function	Description
1. Dynamic Brightness	**Smart Inverter Control.** This function allows the system to adjust the brightness of the backlight automatically in conjunction with the quantity of the input data.
2. Information	**Displays the resolution and frequencies of the input.**
3. Reset	**Reset to factory default.**
4. Half Tone	**Changes the colour of the OSD menu.**

OSD Functions & Adjustments - continued



Function	Description
Auto Adjust	The built-in microprocessor will optimize all display adjustment sets such as video offset gain, position, phase and frequency automatically according to the pre-programmed auto adjustment program. 1)

1) If the microprocessor does not optimize all settings successfully, please use the manual adjustment functions in the OSD menu. (Phase – Frequency – V-position and H-position)

7. Guarantee Terms

mermaid ventura 150 TFT x4 is covered by a 1-year send-in warranty.

Repair
If your mermaid ventura needs repairing, please visit www.mermaid.dk and fill-in the RMA-request. You will then receive an RMA-number, which you must attach outside the monitor packing before you ship your product to mermaid. We will return the product to you within 10 to 14 working days.

The guarantee terms set out above apply to Europe only.

8. If you need to contact us!

Contact mermaid customer support.
If you need to get in touch with mermaid technology, please contact us via phone or mail:

Phone
mermaid customer support opening hours are Monday to Friday 13.00-16.30.

By mail
mermaid technology a/s
Att.: Customer Support
Klingseyvej 15B
2730 Herlev
Denmark

Telephone
+45 44 52 92 00

Telefax
+45 44 52 92 65

E-mail
customerservice@mermaid.dk

Internet
http://www.mermaid.dk

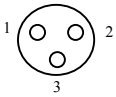
9. Troubleshooting

If you have troubles using this monitor, please refer to following suggestions for troubleshooting.
If you can not rectify the problem yourself, please contact your distributor or place of purchase.

Symptom	**Suggestions**
Screen is blank	Ensure that the power cord is connected and the monitor is on.
"Check signal cable" message	Ensure that the signal cable is connected firmly to the signal source. Ensure that the signal source is turned on.
"Sync out of range" message	Check the maximum resolution and the frequency of the video adapter.
The image is too dark or bright	Adjust the brightness and contrast.
Horizontal bars appear to flicker, jitter or shimmer on the image	Adjust the "Phase".
Vertical bars appear to flicker, jitter or shimmer on the image	Select "Auto Adjust" in OSD menu
Screen is blank	The system activates power management mode. Just press the PC keyboard or move the PC mouse
Image is not stable and may appear to vibrate	Check the display resolution and frequency from your PC or video board is within the available range of your monitor. On your PC, check "Control Panel -> Display >Settings". If the setting is incorrect, you may change the setting using PC utility program.
Image is not centered on the screen	Adjust the "Image Position / H-Position or V-Position".

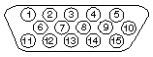
Appendix A: Connector Specifications

Power In



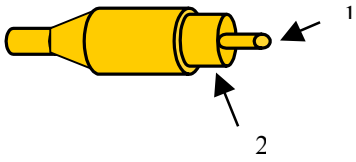
Pin no.	Function	Pin no.	Function	Pin no.	Function
1	+12 Volt	2	Gnd	3	Not used

Analog RGB in



Pin no.	Function	Pin no.	Function	Pin no.	Function	Pin no.	Function
1	Red	2	Green	3	Blue	4	NC
5	GND	6	R_GND	7	G_GND	8	B_GND
9	NC	10	GND	11	GND	12	SDA
13	H Sync	14	V. Sync	15	SCL		

CVBS in



Pin no.	Function	Pin no.	Function
1	CVBS	2	Gnd

S-Video in

Pin no.	Function	Pin no.	Function	Pin no.	Function	Pin no.	Function
1	Gnd	2	Gnd	3	Luma	4	Chroma

Appendix B: Power Management Mode: VESA DPMS protocol applied

Mode	Horizontal sync	Vertical sync	Video signal	Power Consumption
On	Active	Active	Active	< 3 Watts
Stand by	Inactive	Active	Blanked	
Suspend	Active	Inactive	Blanked	
Off	Inactive	Inactive	Blanked	

Appendix C. Technical Specifications

Input Video and sync signal

Item		Description	Notes
Video	Input	• Type: Analog RGB • Level: 0.7Vp-p ±5% • Polarity: Positive Bright • Impedance: 75Ω±5% (Terminated)	VESA Compliance
	Resolution	• Optimum: 1024x768@60Hz • Maximum: 1280x1024@60Hz	Down Scaling mode
	Horizontal Frequency	• 30-61KHz (normal mode) • 30-75KHz (Failure Safe mode)	
	Vertical Frequency	• 55-75Hz (normal mode) • 55-75Hz (Failure Safe mode)	
	Applicable Bandwidth	• Typical: 95MHz (1024x768@85Hz) • Max: 108MHz (1280x1024@60Hz)	Depends on ADC specification
	Sync Signal	• Type: Separate H/V sync, Composite H/V Sync, Sync-on-green (SOG) • Level: TTL level (V high ≤2.0V, V low ≤0.8V) • Polarity: Positive or negative • Termination resistance: more than 2KΩ	
Sync	Input	• Type: Separate H/V sync, Composite (SOG) Sync-on-green • Level: TTL level (V high ≤2.0V, V low ≤0.8V) • Polarity: Positive or negative	
	Horizontal Frequency	• 30-61 KHz (normal mode) • 30-69 KHz (Failure Safe mode)	
	Vertical Frequency	• 55-75Hz (normal mode) • 55-75Hz (Failure Safe mode)	

Electrical Parameters

Description	Min	Typ	Max	Unit
DC power supply	9	12		Volts
Supply Current		2.0	2.3	Amp.

Additional parameters

Description	Value	Unit	
Driver Element	a-Si TFT active matrix		
Display Colours	16.7M (true)	Colours	
Display Area	304.1(H) x 228.1(V)	mm	15.0 Inch diagonal
Number of Pixels	1024 x 768	Pixels	
Pixel Arrangement	RGB vertical stripe		
Pixel Pitch	0.297(H) x 0.297(W)	mm	
Display Mode	Normally White		
Lamp	4-Lamp CCFL		
Operating Temperature	0 ~50	°C	
Storage Teemperature	-25 ~60	°C	

Appendix D: Video Mode Support

No	Mode	Resolution	Total	Horizontal		Vertical		Pixel Clock
				Frequency	Polarity	Frequency	Polarity	
1	VGA	720x400	900x449	31.47KHz	N	70.0 Hz	P	28.322MHz
2		640x480	800x525	31.47KHz	N	60.0 Hz	N	25.175MHz
3		640x480	864x525	35.00KHz	N	66.7 Hz	N	30.240MHz
4		640x480	832x520	37.86KHz	N	72.8 Hz	N	31.500MHz
5		640x480	840x500	37.50KHz	N	75,0 Hz	N	31.500MHz
6		640x480	832x509	43.27KHz	N	85.0 Hz	N	36.000MHz
7	SVGA	800x600	1024x625	35.16KHz	N/P	56.3 Hz	N/P	36.000MHz
8		800x600	1056x628	37.88KHz	P	60.3 Hz	P	40.000MHz
9		800x600	1040x666	48.08KHz	P	72.2 Hz	P	50.000MHz
10		800x600	1056x625	47.87KHz	P	75.0 Hz	P	49.500MHz
11		800x600	1048x631	53.67KHz	P	85.1 Hz	P	56.250MHz
12		832x624	1152x667	49.73KHz	N	74.6 Hz	N	57.284MHz
13	XGA	1024x768	1152x667	48.36KHz	N	60.0 Hz	N	65.000MHz
14		1024x768	1328x806	56.48KHz	N	70.1 Hz	N	75.000MHz
15		1024x768	1312x806	60.02KHz	P	75.0 Hz	P	78.750MHz
16		1024x768	1276x808	68.67KHz	P	85.0 Hz	P	94.500MHz
17	SXGA	1280x1024	1708x1056	64.00KHz	N	60.0 Hz	N	108.000Mhz

■ 6, 11, 16, 17 mode is "Failure-safe Mode"

Appendix E: Optical Characteristics – ventura 150 TFT

The following items were measured under stable conditions. The optical characteristics should be measured in a dark room or equivalent state.

* Measuring equipment: TOPCON MB-5A: Contrast Ratio, Luminance of White, Viewing Angle
TOPCON BM-7: Response time, Flicker
Photo Research PR650: Colour Chromaticity

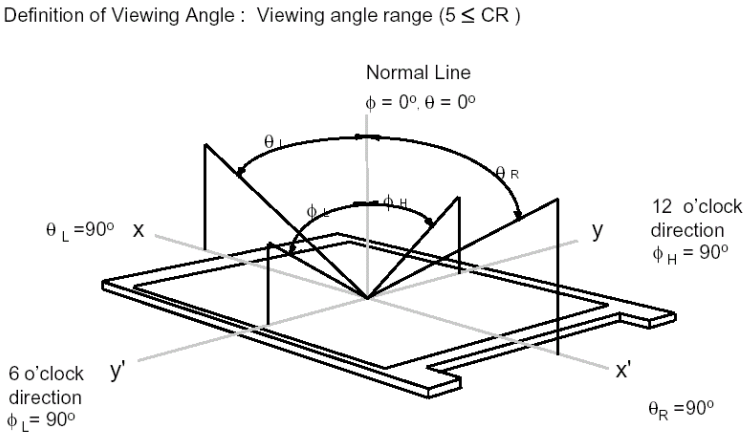
* Ta = 25± 2 ^{0}C, VIN = +12Vm fv= 60Hz., IL = 6.0mA

Item		Symbol	Condition	Min.	Typ.	Max.	Unit
Contrast Ratio		CR	Φ=0, Θ=0 Normal Viewing Angle	(200)	300	-	
Response Time at Ta	Rising	T_R		-	5	-	msec
	Falling	T_F		-	20	-	
Luminance of White (Centre of Screen)		Y_L		(200)	250	-	cd/m^2
Colour Chromaticity (CIE 1931)	Red	R_X		(0.603)	(0.628)	(0.653)	
		R_Y		(0.328)	(0.353)	(0.378)	
	Green	G_X		(0.265)	(0.290)	(0.315)	
		G_Y		(0.570)	(0.595)	(0.620)	
	Blue	B_X		(0.119)	(0.144)	(0.169)	
		B_Y		(0.063)	(0.088)	(0.113)	
	White	W_X		0.279	0.304	0.329	
		W_Y		0.300	0.325	0.350	
Viewing Angle	Hor.	θ_L	CR≥10	(65)	-	-	Degrees
		θ_R		(65)	-	-	
	Ver.	Θ_H		(50)	-	-	
		Θ_L		(60)	-	-	
Colour Gamut				-	(65)	-	%
Brightness Uniformity (9 points)		B_{UNI}		-	-	(29)	%

- Measuring Condition: Maximum value of Brightness and Contrast in OSD menu.
- Flicker must be controlled internally.

Appendix F: Definition of viewing angle.

- Viewing angle is defined as the range, measured at a 90° angle from the display surface plane in the centre of the display panel to that angle, where the the contrast value has dropped to 10:1 or 5:1. The exact value is defined by the manufacturer of the panel. See drawing.
- Viewing angle is defined both vertically and horizontally.
- The two sets of parameters are rarely common.



The panels in the mermaid ventura 150 x4 have the folloing data:

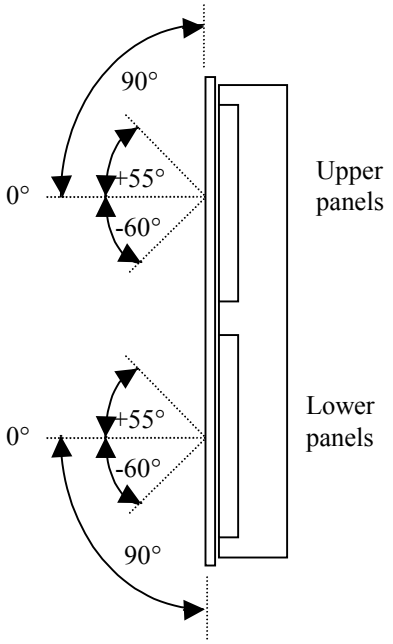
- Viewing angle Vertical +55°/-60°
- Viewing angle Horizontal: +/-70°
- Contrast: 300:1 (The difference between max. white and black)
- Brightness: 250 cd/m^2 (Backlight output)

Because two panels are mounted on top of each other in pairs, it's impossible to experience the same contrast value on all 4 panels, when looking at them from the same angle.

Please remember, thet even though the viewing angles are fairly high, the contrast is allowed to drop from e.g. 300:1 to 5:1 within that range, which equals to 60 times!

The user will typically experience this as colour differences and backlight uniformity differences.

All 4 panels are taken from the same production batch, which ensures the best panel homogeneity as possible.



mermaid ventura 150x4

Klingseyvej 15B
2730 Herlev
Denmark
Phone: +45 44 52 92 00
www.mermaid.dk