User manual
mermaid ventura 150/170/181/190 TFT Video

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1. Introduction

The mermaid ventura 150 TFT, 170 TFT, 181 TFT, and 190 TFT are state of the art high-tech flat panel TFT monitors, incorporating high quality TFT-LCD panels with maximum resolution of 1280x1024 (17", 18.1" & 19") and 1024x768 (15"). They are based on the newest technology with high brightness 4-lamp CCFL backlight units. The very fast response time provides excellent suitability for video and gaming applications. The monitors are made of steel and hardened glass providing excellent stability and strength. The integrated hinge and high adjustment means you are able to manouvre the monitors for optimal viewing angle and comfort. The monitors are fully DDC 2 compliant, which makes installation very easy.

Panel technology:

- ventura 150 TFT Video-IN: TN (Twisted Nematic)
- ventura 170 TFT Video-IN: ACE (Advanced Coplanar Electrode)
- ventura 181/190 TFT Video-IN: PVA (Patterned Vertical Alignment)

Connections:

- Analog VGA (D-Sub connector via integrated cable)
- Audio input (Mini Jack)
- S-Video (Y/C) (Mini-DIN connector via integrated cable)
- Composite (CVBS) (RCA connector via integrated cable)
- +12 Volt DC Power (2.5 mm Jack via integrated cable)

Features:

- State of the art high performance picture quality design
- Analog VGA interface
- Composite (x1) and S-Video (x1) inputs
- Full CRT multi-sync monitor compatibility
- Multi-sync capability up to SXGA resolution, 75Hz max., compatible standard DOS, VGA, SVGA, XGA and SXGA VESA timing (SXGA resolution does not apply to 15" monitor.)
- Expand DOS, VGA, SVGA and XGA to full screen display
- 24 bit (16.7 million) true color data processing and display driving
- Single control operated & transparent On-Screen-Display (hereafter 'OSD') user interface
- Full control of all relevant display and interface parameters via OSD
- Multi language support
- VESA DDC1/2B compliant
- Compatible with VESA DPMS power saving modes
- +12VDC single power: 45watts AC/DC power adapter recommended. (Supplied)
- Operating temperature: 0 to 50°C
- Internal passive speakers (2watt x 2 ch. / 8 ohms)

2. Important Information

- When using the ventura 150 TFT, ventura 170 TFT, ventura 181 TFT or 190 TFT with Windows NT, the computer needs to be started in VGA mode the first time. Log on as administrator and set the resolution to 1280x1024 (17", 18.1" & 19") or 1024x768 (15"). Set the refresh rate to 60 Hz. The computer can then be started in normal mode.
- 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 (15”), ventura 170 TFT (17”), ventura 181 TFT (18.1”) or ventura 190 TFT (19”)
- ”Quickstart” card

Accessories bag including:

- PSU (45 Watt)
- Powercord (Country specific)
- Speaker cable
- Users manual
- Glass cleaner & screen wiping cloth

4. Unpacking, Placement and Setup (PC)

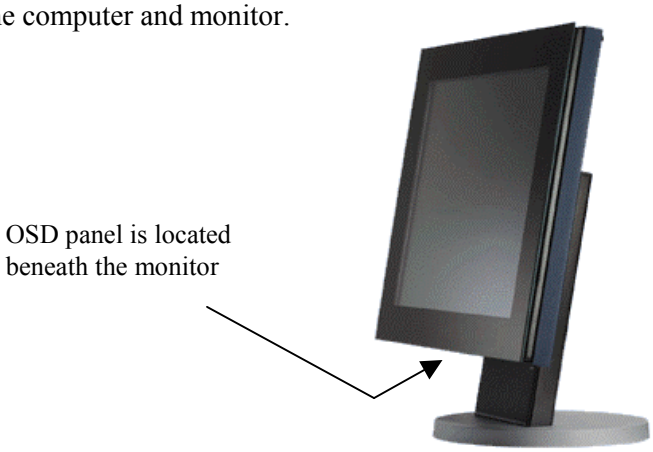
Note: To avoid condensation, please wait ½-1 hour, before operating the unit.

After the box has been opened, remove the accessories bag.
Bend the cardboard flaps outward and turn the box upside down, which will ensure the inlay foam with the monitor is able to slide out. Do not drop the content on the floor.
Remove the foam side pieces and the plastic bag.

The monitor needs to be placed on a smooth and stable surface. This surface must be able to safely support 15 kg (17”, 18.1” & 19”) or 10 kg (15”).

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.

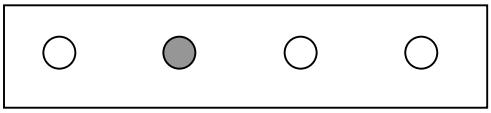


- ventura 150 TFT, ventura 170 TFT, ventura 181 TFT and ventura 190 TFT are plug & play compatible via VESA DDC1/2B. Windows 98, ME and XP will recognise this and self configure.
- When using the ventura 150 TFT, ventura 170 TFT, ventura 181 TFT or ventura 190 TFT with Windows NT, the computer needs to be started in VGA mode the first time. Log on as administrator and set the resolution to 1280x1024 (17”, 18.1” & 19”) or 1024x768 (15”). Set the refresh rate to 60 Hz. The computer can then be started in normal mode.

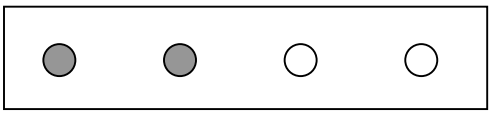
5. OSD Key Functions

4-button OSD Panel

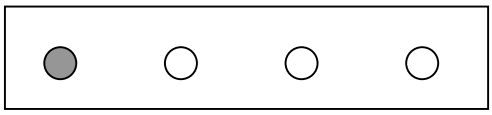
Auto Config:
(Hot key)



Source select:
(Hot key)



Select OSD Menu:
(Hot key)



OSD Menu selected:

Enter/ Escape	Down	Decrease(-)	Increase (+)

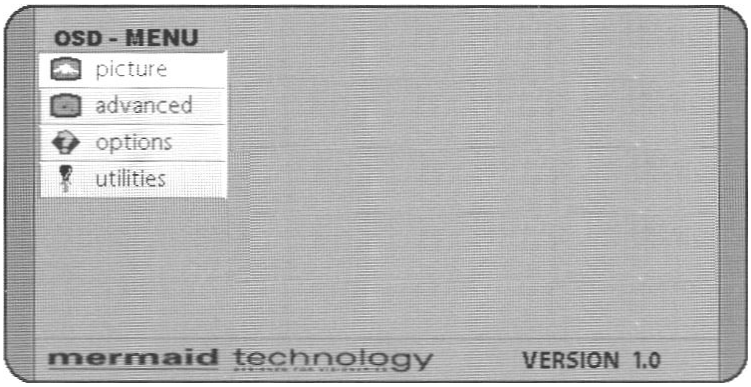
= key(s) which are pressed

Function	Description
Menu (Hot Key)	Activates the OSD
Auto Config (Hot Key)	Auto calibrate the monitor for optimal performance
Source Select *	When both keys are pressed, the monitor selects the next source VGA ▶ Composite ▶ S-Video
Enter/Escape	Enters or Escapes the highlighted menu.
Decrease (-)	Moves the cursor down to the next menu item
Increase (+)	Increases the value of the selected. Select the next lower level menu.

* When the monitor is turned on, it automatically scans the three different inputs (VGA, CVBS, Y/C) for a valid signal, It then stops at the first valid input. The scan routine starts from the last used input.

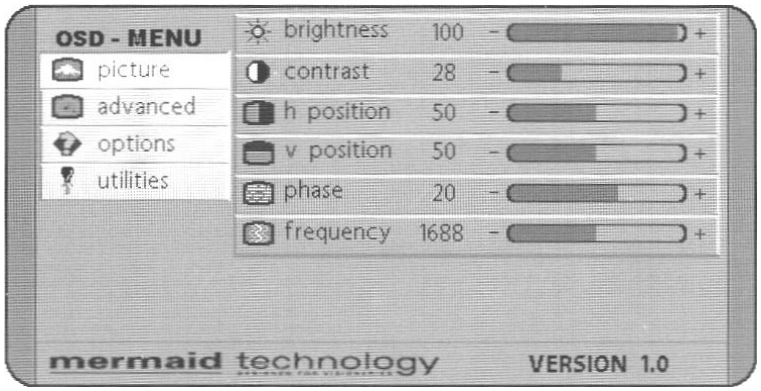
6. OSD Functions & Adjustments

RGB Main Menu



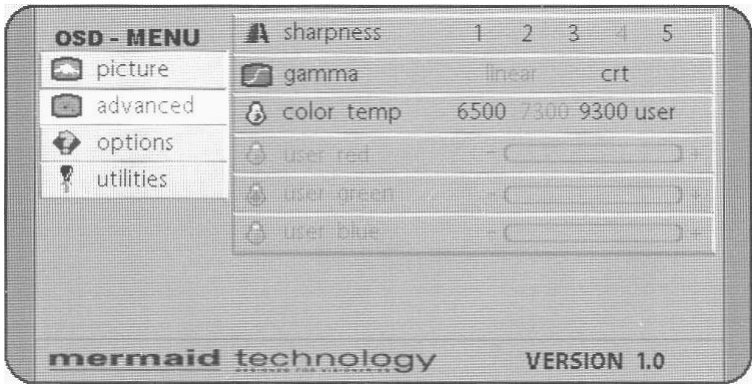
Picture	Several picture adjustments like brightness, contrast picture position etc.
Advanced	Advanced picture adjustments
Options	Monitor setup
Utilities	Monitor setup

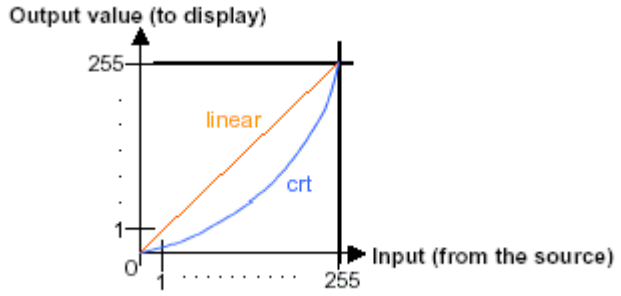
RGB Picture Menu



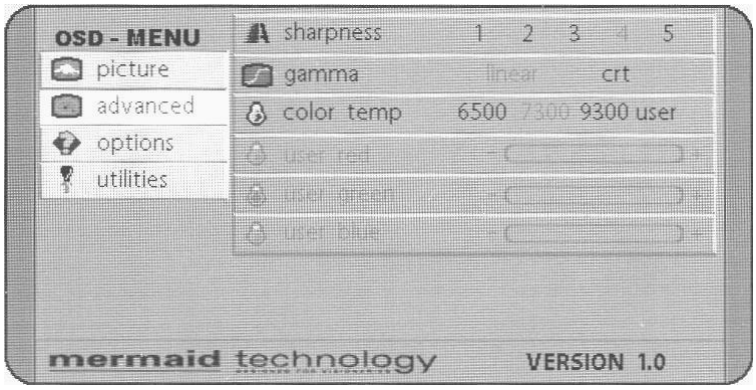
Brightness	Adjustment of brightness
Contrast	Adjustment of contrast
H-Position	Adjustment of horizontal picture position
V-Position	Adjustment of vertical picture position
Phase	The phase setting allows slight picture disturbances (snow & shimmering) to be eliminated.
Frequency	The frequency setting allows the pixel clock frequency to be adjusted. This will only have to be adjusted, if the automatic alignment was unable to determine the correct pixel clock frequency.

RGB Advanced Menu



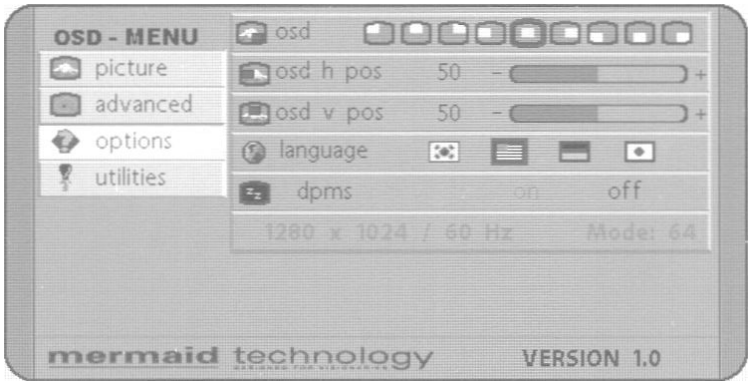
Sharpness	Adjustment of picture sharpness 5 = "Sharp" picture 1 = "Soft" picture
Gamma	Selection of the appropriate "Gamma curve" Two different curves "linear" and "crt" are available. The "linear" gamma curve does not correct any color information, which will be directly transferred to the display panel. The "crt" gamma curve processes the color information according to the scheme below, before it is transferred to the display panel. 

RGB Advanced Menu - Continued



Color temp	Adjustment of the color temperature. Select between 3 pre-defined temperature (6500K, 7300K or 9000K) Or use the "User" setting to select the appropriate values yourself.

RGB Utility Menu



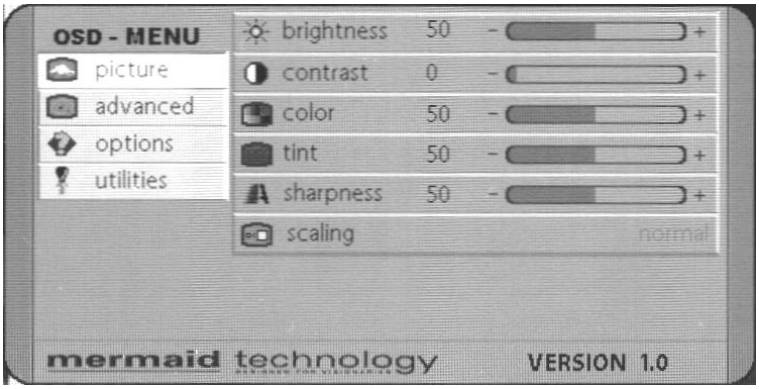
OSD	Selection of nine predefined OSD positions.
OSD h-pos	Variable OSD position - horizontal
OSD v-pos	Variable OSD position - vertical
Language	Select OSD language (English/German)
dpms	**Activates/deactivates the power management If the DPMS is active,** then the monitor switches off automatically, when there is no sync signal, eg. When you turn of the computer. Before the monitr turns off, a "No signal" message is displayed If the DPMS is not active, the "No signal" message is shown until a valid video signal is applied to the monitor. 
Info line	Activates automatic source scan.

RGB Utilities Menu

OSD timeout	Adjustment of OSD turn off time after last key pressed. You can select values between 5 and 60 sec. (5 sec. steps)
OSD background	Changes type of the OSD background Translucent = tranparanet Opaque = solid (not transparent)
Factory reset	Resets all functions to factory default.

Video Picture Menu

When the signal source is either CVBS or S-video, the “picture”menu has other functions implemented.



Brightness	Adjustment of the brightness
Contrast	Adjustment of the contrats
Color	Adjustment of the colorsaturation
Tint	Adjustment of the tint
Sharpness	Adjustment of the picture sharpness
Scaling	Selects between different ways to scale the video input

7. Warranty Terms

mermaid ventura 150 TFT Video-In, 170 TFT Video-In, ventura 181 TFT Video-In and ventura 190 TFT Video-In are all covered by a 3-years 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 14.00-16.30.

By mail
mermaid technology a/s
Att.: Customer Support
Symfonivej 34-36
DK-2730 Herlev
Denmark

Telephone
+45 44 52 92 00

Telefax
+45 44 52 92 65

E-mail
kundeservice@mermaid.dk

Internet
http://www.mermaid.dk

9. Troubleshooting

If you have troubles using your ventura 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 in available mode for 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

Analog RGB in

Analog RGB Input Connector : D-Sub 15pin 

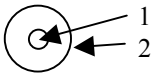
pin no	Symbol	Symbol	pin no	Symbol	Symbol
1	RED	Analog Red	9	NC	+5Vdc
2	GREEN	Analog Green	10	SGND	Sync GND
3	BLUE	Analog Blue	11	NC	Reserved
4	GND	Reserved	12	SDA	DDC Serial Data
5	GND	Digital GND	13	HSYNC	Horizontal Sync
6	RGND	Red Return	14	VSYNC	Vertical Sync.
7	GGND	Green Return	15	SCL	DDC Data Clock
8	BGND	Blue Return			

S-video in

S-video Input Connector: 4pin miniDin 

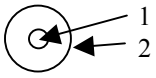
Pin no	Function	Pin no	Symbol
1	Ground	3	Luma
2	Ground	4	Chroma

CVBS video in

Composite video Connector: RCA 

Pin no	Function	Pin no	Symbol
1	CVBS	2	Ground

Power in

Power input connector: 2.5 mm DC jack 

Pin no	Function	Pin no	Symbol
1	CVBS	2	Ground

Appendix B: Power Management Mode: VESA DPMS protocol applied

Mode	Horizontal sync	Vertical sync	Video signal	Power Consumption (max)
On	Active	Active	Active	27,5W (15") 40 W (17"-19")
Stand.by	Inactive	Active	Blanked	< 3 Watts
Suspend	Active	Inactive	Blanked	
Off	Inactive	Inactive	Blanked	

Appendix C: Technical Specifications

Input Video and sync signal

Parameter	Value	Unit
Max. Output Resolution (15")	1024x768	Pixels
Max. Output Resolution (17", 18.1" & 19")	1280x1024	Pixels
Data Processing	24	Bits
Input impedance • Video • Sync	 75 470	 Ohms Ohms
Sync Polarities	+/-	
Sync Levels	TTL compatible	
Max. Number of colors	16.7 Mill.	Colors

Electrical Parameters

reference : t_A 25 ° C

Symbol	Description	Min	Typ	Max	Unit
V_{DD}	+12V DC power supply	10.8	12.0	13.2	V
$V_{i(RGB)}$	Video input signal (w.r.t. GND)	0.5	0.7	1.0	V_{PP}
f_S	Video sample rate			80	MHz
f_{HS}	Horizontal sync frequency	30		60	KHz
f_{vs}	Vertical sync frequency	56		75	Hz
F_{SIH}	Sync input high level	2.5			V
V_{SIL}	Sync input low level			0.8	VDC
I_{DD2}	Supply current @ +12V , ventura 150 TFT			2.3	A
I_{DD2}	Supply current @ +12V , ventura 170 TFT		3.0	3.3	A
I_{DD2}	Supply current @ +12V , ventura 181 TFT			3.3	A
I_{DD2}	Supply current @ +12V , ventura 190 TFT			3.3	A

Note 1. Power consumption measuring condition is 2pixel checkerboard pattern @ XGA 75Hz and maximum brightness at t_A 25° C.

Appendix D: Video Mode Support

The ventura 150 TFT video-in, ventura 170 TFT video-in, ventura 181 TFT video-in and ventura 190 TFT video-in support any video mode at inputs within the following ranges:

- The signal sample frequency on the input ≤ 80MHz
- The horizontal sync frequency between 30KHz and 60KHz

The modes are detected when presented to the input and previous alignments for setup are automatically recalled. A true multi-sync monitor emulation is implemented.
The factory preset supported modes include:

Mode[*1]	Resolution	Refresh rate	H-freq.	Pixel freq.	Remarks[*1]
VGA	640 x 350	70Hz	31.47KHz	25.175MHz	VESA Standard
VGA	720 x 400	59.940HZ	31.469KHZ	25.175MHZ	IBM VGA 3H
VGA	640 x 480	60Hz	31.5KHz	25.175MHz	Industry Standard
VGA	640 x 480	72Hz	37.9KHz	31.500MHz	VESA Standard
VGA	640 x 480	75HZ	37.5KHZ	31.500MHZ	VESA Standard
SVGA	800 x 600	60Hz	37.9KHz	40.000MHz	VESA Guidelines
SVGA	800 x 600	72Hz	48.1KHz	50.000MHz	VESA Standard
SVGA	800 x 600	75HZ	46.9KHZ	49.500MHZ	VESA Standard
XGA	1024 x 768	60Hz	48.4KHz	65.000MHz	VESA Guidelines
XGA	1024 x 768	70Hz	56.5KHz	75.000MHz	VESA Standard
XGA	1024 x 768	75HZ	60KHZ	78.750MHZ	VESA Standard
SXGA[1)]	1280 x 1024	60Hz	64KHZ	108.000 MHZ	VESA Standard

1) SXGA mode does not apply to ventura 150 TFT Video-in

Appendix E: Optical Characteristics – ventura 150 TFT Video-in

The following items are measured under stable conditions. The optical characteristics should be measured in a dark room or equivalent state
Measuring equipment : TOPCON BM-5A

* Ta = 25 ± 2 °C , V_{DD} = 3.3V, fv= 60Hz, f_{DCLK}=65MHz, I_L = 6.0 mArms

ITEM		SYMBOL	CONDITION	MIN.	TYP.	MAX.	UNIT
Contrast Ratio (Center of screen)		CR		200	300	-	
Response Time at Ta	Rising	T_R		-	(5)	-	msec
	Falling	T_F		-	(20)	-	
Luminance of White (Center of screen)		Y_L		-	(230)	-	cd/m²
Color Chromaticity (CIE)	Red	R_X	ϕ = 0, θ = 0 Normal Viewing Angle	-	TBD	-	
		R_Y		-	TBD	-	
	Green	G_X		-	TBD	-	
		G_Y		-	TBD	-	
	Blue	B_X		-	TBD	-	
		B_Y		-	TBD	-	
	White	W_X		-	(0.327)	-	
		W_Y		-	(0.336)	-	
Viewing Angle	Hor.	θ_L	CR ≥10	-	65	-	Degrees
		θ_R		-	65	-	
	Ver.	ϕ_H		-	50	-	
		ϕ_L		-	60	-	

Appendix F: Optical Characteristics – ventura 170 TFT Video-in

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

Measuring equipment : TOPCON BM-5A , BM-7, PHOTO RESEARCH PR650

* Ta = 25 ± 2°C , V_{DD}=5V, fv= 60Hz, f_{DCLK}=54 MHz, I_L = 6.5 mA_{rms}

Item		Symbol	Condition	Min.	Typ.	Max.	Unit
Contrast Ratio (Center of screen)		C/R	Normal ϕ = 0 θ = 0 Viewing Angle	-	300	-	
Response Time	Rising	Tr		-	20	-	msec
	Falling	Tf		-	15	-	
Luminance of White (Center of screen)		Y_L		-	200	-	cd/m2
Color Chromaticity (CIE 1931)	Red	Rx		-	TBD	-	
		Ry					
	Green	Gx					
		Gy					
	Blue	Bx					
		By					
	White	Wx			TBD (0.312)		
		Wy			TBD (0.335)		
Viewing Angle	Hor.	θ L	CR≥10	-	80	-	Degrees
		θ R		-	80	-	
	Ver.	ϕ H		-	80	-	
		ϕ L		-	80	-	

Appendix G: Optical Characteristics – ventura 181 TFT Video-in

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

Measuring equipment : TOPCON BM-5A , BM-7, PHOTO RESEARCH PR650
Eldim EZ-Contrast

(Inverter Freq. : 54kHz) * Ta = 25 ± 2°C, V_{DD}=5V, fv= 60Hz, f_{DCLK}=54MHz, I_L = 6.5mA_{rms}

Item		Symbol	Condition	Min.	Typ.	Max.	Unit
Contrast Ratio (Center of screen)		C/R	Normal $\phi = 0$ $\theta = 0$ Viewing Angle	-	(450)	-	
Response Time	Rising	Tr		-	(15)	-	msec
	Falling	Tf		-	(15)	-	
Luminance of White (Center of screen)		Y_L		-	(250)	-	cd/m2
Color Chromaticity (CIE 1931)	Red	Rx		TYP. -0.03	TBD	TYP. +0.03	
		Ry			TBD		
	Green	Gx			TBD		
		Gy			TBD		
	Blue	Bx			TBD		
		By			TBD		
	White	Wx			(0.310)		
		Wy			(0.330)		
Viewing Angle	Hor.	θ L	CR≥10	-	80	-	Degrees
		θ R		-	80	-	
	Ver.	ϕ H		-	80	-	
		ϕ L		-	80	-	

Appendix H: Optical Characteristics – ventura 190 TFT Video-in

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

Measuring equipment : TOPCON BM-5A , BM-7, PHOTO RESEARCH PR650
Eldim EZ-Contrast

(Inverter Freq. : 54kHz) * Ta = 25 ± 2°C, V_{DD}=5V, fv= 60Hz, f_{DCLK}=54MHz, I_L = 6.5mA_{rms}

Item		Symbol	Condition	Min.	Typ.	Max.	Unit
Contrast Ratio (Center of screen)		C/R	Normal $\phi = 0$ $\theta = 0$ Viewing Angle	400	500	-	
Response Time	Rising	Tr		-	15	20	msec
	Falling	Tf		-	10	15	
Luminance of White (Center of screen)		Y_L		220	250	-	cd/m2
Color Chromaticity (CIE 1931)	Red	Rx		TYP. -0.03	0.634	TYP. +0.03	
		Ry			0.354		
	Green	Gx			0.304		
		Gy			0.581		
	Blue	Bx			0.143		
		By			0.102		
	White	Wx			0.310		
		Wy			0.330		
Viewing Angle	Hor.	θ L	CR≥10	70	85	-	Degrees
		θ R		70	85	-	
	Ver.	ϕ H		70	85	-	
		ϕ L		70	85	-	
Brightness Uniformity (9 points)		Buni		-	-	25	%