# User manual
# mermaid ventura 213/240

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## 1. Preface

The mermaid ventura 213T and 240T are state of the art high-tech flat panel TFT monitors with resolutions of 1600x1200 and 1920x1200 respectively. They are based on the newest PVA technology, which gives very fast response times and therefore excellent suitability for video and gaming applications. The monitors are made of steel and hardened glass which provides excellent stability and strength. The integrated hinge means you are able to adjust the monitor for optimal viewing angle and comfort.

**Connections:**
- Analog VGA (D-Sub connector)
- DVI (DVI-I connector)
- S-Video (4-pole Mini-Din)
- CVBS, Composite Video (RCA/Phono connector)
- YUV (YprPb) or Component RGB with Sync on Green (3xRCA/Phono connectors)

**Features:**
- Graphical icon based OSD menu controlling all the functions of the monitor.
- PIP (Picture In Picture) featuring different placements and sizes.
- Vertical picture split PC/Video with fully configurable content.
- Adjustment of brightness, contrast, hue, sharpness and colour saturation when video input is selected.
- Remote control is optional.
- Accepts refresh rates of between 56 Hz and 75 Hz.
- VESA DPMS power saving compatible.
- 4:3 to 16:9 aspect ratio conversions built in.

## 2. Important information

Both the 213T and the 240T require a high quality graphics board which incorporates a high bandwidth (the ability to generate a high quality VGA signal even at high resolutions). In general, older type graphic boards are not suitable to drive the 213T and 240T. The mermaid ventura 213T is less demanding than the 240T and therefore can be driven by larger variety of graphics boards. Furthermore, it is important to use cables of good quality and to keep the analog VGA as short as possible.

If you should decide to drive the monitor by means of DVI, a graphics board with DVI-D or DVI-I output is required. It is also recommended to use a DVI graphics board which is compatible with the newest DVI 2.XX standard. Older versions have shown to be incompatible and may provide problems.

When using the monitors with Windows XP, it is recommended that the refresh rate be set to 60 Hz before connecting the 213T or 240T.

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 213T (21") or ventura 240T (24") monitor
- PSU (80 Watt)
- Powercord
- HQ VGA cable 1,8 meter
- Users manual
- "Quickstart" card
- Glass cleaner & screen wiping cloth

## 4. Unpacking, placement and setup. (PC)

After the box has been opened the monitor and side packing can be lifted out.

21"- First remove the outer two side pieces. Then remove the two inner side pieces from the monitor and carefully lift the monitor out of box.

24"- It will be necessary to lift the monitor and support material out in one operation.

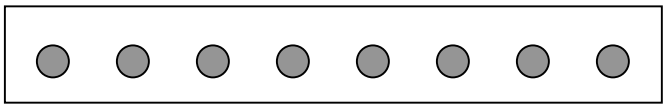
The monitor needs to be placed on a smooth and stable surface. This surface must be able to safely support 25 kg (213T) or 30 kg (240T).

Your monitor has been delivered with a standard VGA cable of high quality, intended to be used with standard graphic boards (analog RGB). If you wish to use DVI, a suitable cable will need to be purchased separately.
Make sure the computer is turned off before connecting the monitor.

- Connect the monitor to the computer, by means of the supplied VGA cable or by means of DVI.
- Connect the PSU to the monitor and AC outlet.
- Turn on the computer and monitor. If nothing happens within approx. 5 seconds, press the *OSD button #2* (OSD counted from the right) until the textbox shown at the upper right corner describes the input of your choice.


- mermaid 213T and 240T monitors are plug & play compatible via VESA DDC1/2B. Windows 98, ME and XP will recognise this and self configure.

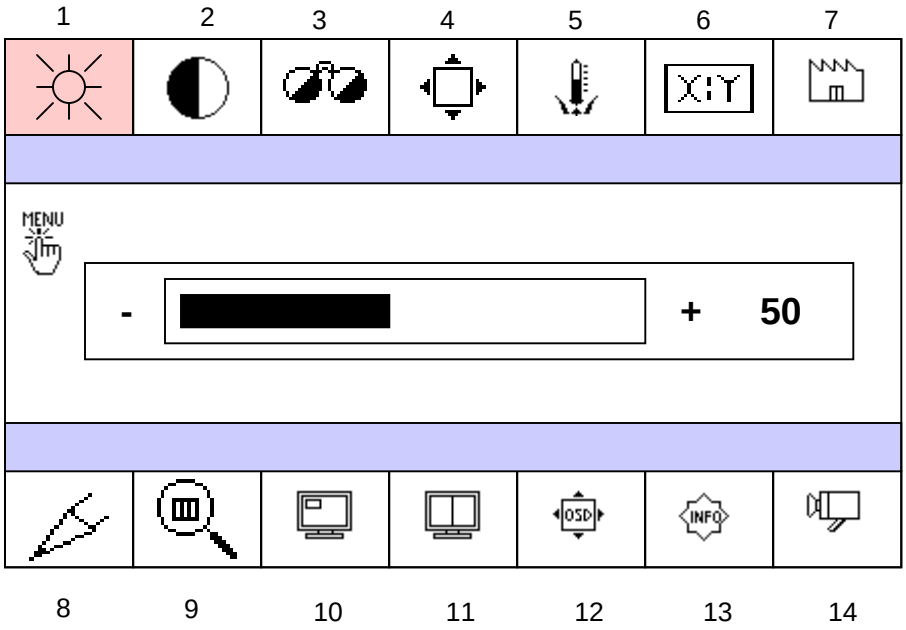
## 5. OSD Key functions



| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Hot Key:** | MENU | Bright | Bright | N/A | N/A | PIP | Source | Auto Adi. |
| **Normal:** | Select | Down Left | Up Right | Exit Pre-Menu | N/A | PIP swap | Source | Auto Adi. |

| Function | Description |
|---|---|
| Menu (Hot Key) | Activate the OSD |
| Bright (Hot Key) | Activate brightness control OSD |
| PIP (Hot Key) | Activate PIP (Picture-in-Picture) window |
| Source (Hot Key) | Source select Analog RGB->DVI->Video->S-Video->DVD (YPrPb/RGB) |
| Auto Adj. (Hot Key) | Optimize image quality automatically |
| Select | Select the highlighted menu |
| Down/Left<br>Up/Right | Moves the selector right or left on the OSD<br>Increase of decrease the value of selected |
| Exit | Exit from menu or sub-menus<br>Exit from OSD menu<br>Turns PIP off |
| PIP | Swap the PIP sources |

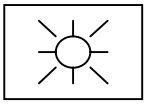
## 6. OSD Menu




| Main Menu | Sub-Menu |
|---|---|
| 1. Brightness | |
| 2. Contrast | |
| 3. Image control | H-Size / Phase |
| 4. Image position | H-position / V-position |
| 5. Color control | Mode / R / G / B |
| 6. Aspect ratio | Wide expand / Expand / Normal (1:1) |
| 7. Default setting | Power Resume/Power Save/Default load / Color load |
| 8. Sharpness | Sharpen / Medium / Soften |
| 9. Zoom | Zoom / H-panning / V-panning |
| 10. PIP | Size / H-position / V-position |
| 11. PBP | Mode / PC Source / Video Source(Composite/S-video/Component) |
| 12. OSD | Language / Transparent / OSD position / OSD timeout |
| 13. Info (Video information) | |
| 14. Video control | Brightness / Contrast / Saturation / Hue / Enhance/Component |

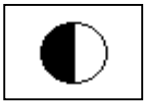
## 7. OSD Functions & Adjustments

**1. Brightness**

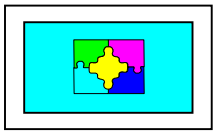


**Changes the overall brightness of image**

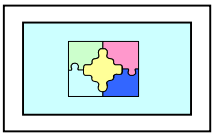
**2. Contrast**



**Changes the ratio between white and black**

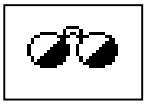


**¢¸ Distinct**

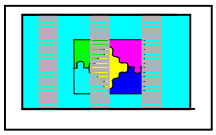


**¢° Vague**

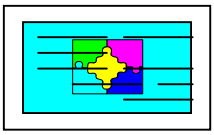
**3. Image control**



**Fine tune vertical and horizontal noise in the display.**

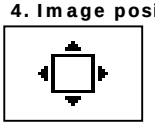


**Mismatch of Horizontal image size causes periodic vertical bands in the display**



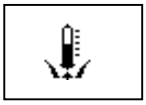
**Mismatch of Phase causes Horizontal line noise in the display**

**4. Image position**



**Moves the vertical and horizon location of the display**

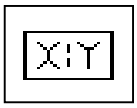
**5. Color control**



**Changes the color tone of the display**

Mode 1: Bluish white
Mode 2: Reddish white
Mode 3: Normal white
User: Changes individual color Red, Green and Blue

**6. Aspect ratio**

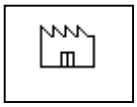



**Changes the ratio of vertical and horizontal size of display**

| | |
|---|---|
| Wide Expand: | Full screen image expansion regardless of the original aspect ratio |
| Expand: | Perform image expansion while keeping the original aspect ratio |
| Normal (1:1): | No image expansion |

It works in PC source / composite / S-video /YPbPr.
It does not work with Wide LCD Panel in Analog PC signal at its maximum wide resolution and its next non-wide.

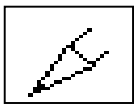
**7. Default setting**



**Erases all user settings and go back to the default setting**

| | |
|---|---|
| Power resume: | Recovering option selection from DPMS Mode |
| Power save: | DPMS Sign duration time selection |
| Default load: | Erase current H-position and V-position setting |
| Color load: | Erase current color setting and load default color setting |

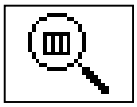
**8. Sharpness**



**Modify the sharpness of the display**

| | |
|---|---|
| Sharpen: | Edges of image become sharp |
| Medium | |
| Soften: | Edges of image become soft |

**9. Zoom and Panning**



**Perform digital zoom and move around the magnified image**

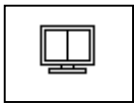
| | |
|---|---|
| Zoom: | Perform digital zoom and magnifies an image. It works with PC source only. It does not work in UXGA and WUXGA mode. |
| H-Pan / V-Pan: | Moves magnified image to the horizontal / vertical direction. |

**10. Picture in Picture**

**Shows a small sub-window superimposed on video or PC. When video is in full screen mode, then PC will be appeared in a small window or vice versa.**

| | |
|---|---|
| Size: | Off (Disable PIP), 1 (400 x 300), 2 (640 x 480), 3 (800 x 600) |
| Position: | Changes the PIP window position to the horizontal / vertical direction |

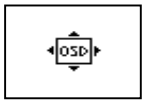
**11. Picture by Picture**



**Split display into two (2) windows. Then shows PC and video side by side.**

| | |
|---|---|
| Mode: | Off (Disable PBP feature), 1 (PC in the left, Video in the right) |
| | 2 (Video in the left, PC in the right) |
| PC Source: | 1 (PC analog), 2 (PC DVI) |
| Video Source: | 1 (Composite video signal), 2 (S-Video), 3 (HDTV) |

**12. OSD set**




**Sets up OSD appearance**

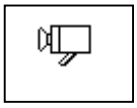
| | |
|---|---|
| Language: | Select an OSD language. English is available as default |
| Transparent: | Sets the transparency of OSD back ground. 9 steps. |
| OSD position: | Changes the OSD menu position in the display |
| OSD Timeout: | Sets time span before OSD menu disappearance. 5, 10, 20, 50 and 200 seconds. |

**13. Information**


**Displays the information regarding current display source. Input signal, Information includes as following:**

Video signal type: Analog / DVI/ Video / S-video
Sync. Type, frequency, polarity and resolution

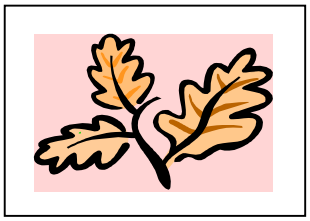
14. Video control



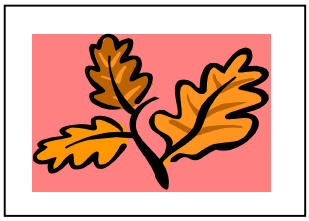
**Changes the parameters of video display. Applicable for Composite video, S-Video and DVD only.**

| | |
|---|---|
| Brightness: | Changes the overall brightness of image |
| Contrast: | Changes the ratio between white and black |
| Saturation: | Changes the color tone in accordance with the difference of color concentration under red color criterion |
| Hue: | Changes the difference of color toward Blue or Red color direction. |
| Enhance: | Video quality improvement |
| Component : | Selection for Yuv or RGB signal |

Saturation

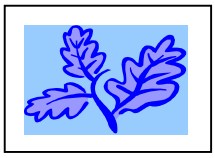


**¢¸ Decrement**

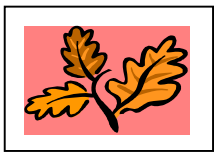


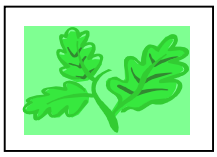
**¢° Reddish**

Hue



**¢¸ Bluish**





**¢° Greenish**

## 8. Guarantee terms

mermaid ventura 213/240 are covered by a 1-year Pick-UP service

Pick-UP
Collection from and return to your address. If your mermaid ventura needs repairing, contact mermaid customer services, who will arrange to have your screen collected, repaired and returned to you within 14 working days.

The guarantee terms set out above apply to Europe only.

## 9. 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 (Kundeservice)
Symfonivej 34-36
2730 Herlev

Telephone
+45 44 52 92 00

Telefax
+45 44 52 92 65

E-mail
kundeservice@mermaid.dk

Internet
http://www.mermaid.dk

## 10. Troubleshooting

If you have troubles using this monitor, please refer to following suggestions for troubleshooting.

If you can not fix it properly, please contact your distributor or place of purchase.

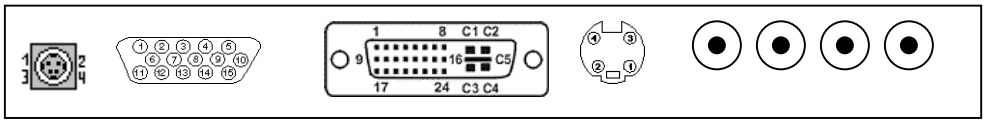
| Symptom | Suggestions | Reference |
|---|---|---|
| | | |
| Screen is blank | Ensure that the power cord is connected and the monitor is on | None |
| "Check signal cable" message | Ensure that the signal cable is connected firmly connected to the signal source<br>Ensure that the signal source is turned on | None |
| "Sync out of range" message | Check the maximum resolution and the frequency of the video adapter | Video mode support |
| 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 "Image Control / Phase" | |
| Vertical bars appear to flicker, jitter or shimmer on the image | Adjust the "Image Control / H-Size" | |
| Screen is blank | The system activates power management mode. Just press the PC keyboard or move the PC mouse | OSD Key function |
| 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. | None |
| Image is not centered on the screen | Adjust the "Image Position / H-Position" or V-Position | OSD Function and adjustment |

## Appendix A: List of tested graphic boards.

| Graphic board/Chip | Ventura 213T (1600x1200) | | Ventura240T (1920x1200) | |
|---|---|---|---|---|
| Interface | Analog VGA | DVI | Analog VGA | DVI |
| ASUS V7100 (Nvidia Gforce 2 MX) | yes | yes | yes | yes |
| Matrox G200 (MGA xx) | yes | - | no | - |
| Winfast (Nvidia TNT2) | yes | - | no | - |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |

The graphic boards, which failed at high resolutions, will probably run at lower resolutions.

## Appendix B: Connector specifications.




P1 Power In | P2 Analog VGA | P3 DVI In | P4 S-Video | P5 Y CVBS | P6 Pb G | P7 Pr B | P8 (YUV mode) R (RGB mode)

### Power In (P1)

| Pin no. | Function | Pin no. | Function | Pin no. | Function | Pin no. | Function |
|---|---|---|---|---|---|---|---|
| 1 | Power in | 2 | Power in | 3 | GND | 4 | GND |

### Analog RGB in (P2)

| 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 | | |

### DVI In (P3)

| Pin no. | Function | Pin no. | Function | Pin no. | Function | Pin no. | Function |
|---|---|---|---|---|---|---|---|
| 1 | Rx2- | 2 | Rx2+ | 3 | SGKD2 (GND) | 4 | NC |
| 5 | NC | 6 | DDC_CLK(SCL) | | DDC_DAT (SDA) | 8 | AVSYND (HDTV) |
| 9 | Rx1- | 10 | Rx1+ | 11 | SHLD (GND) | 12 | NC |
| 13 | NC | 14 | DVI_VCC (5V) | 15 | GND | 16 | Hot Plug Det. |
| 17 | Rx0- | 18 | Rx0+ | 19 | SHLD0 (GND) | 20 | NC |
| 21 | NC | 22 | SHLDC (GND) | 23 | RxC+ | 24 | RxC- |
| C1 | HDPr(HDTV) | C2 | HDY | C3 | HDPb (HDTV) | C4 | AHSYNC (HDTV) |
| C5 | AGND | | | | | | |

**Notes:**
* DVI Input: Pin 1 – 7, Pin 9-24
* Reserved for HDTV Input: Pin 8, C2 – C5

Connector specifications – continued.

**S-Video IN (P4)**

| Pin no. | Function | Pin no. | Function | Pin no. | Function | Pin no. | Function |
|---|---|---|---|---|---|---|---|
| 1 | GND | 2 | GND | 3 | Luma | 4 | Chroma |

**CVBS (n – Composite Video (P5)**

| Pin no. | Function | Pin no. | Function | Pin no. | Function | Pin no. | Function |
|---|---|---|---|---|---|---|---|
| 1 | GND | 2 | CVBS 1 | | | | |

**Y In/Green* (P6)**

| Pin no. | Function | Pin no. | Function | Pin no. | Function | Pin no. | Function |
|---|---|---|---|---|---|---|---|
| 1 | GND | 2 | Y | | | | |

* In RBG mode, the "Green" signal must be provided with sync. "SOG"

**Pb In/Blue (P7)**

| Pin no. | Function | Pin no. | Function | Pin no. | Function | Pin no. | Function |
|---|---|---|---|---|---|---|---|
| 1 | GND | 2 | Pb | | | | GND |

**Pr (In/Red (P8)**

| Pin no. | Function | Pin no. | Function | Pin no. | Function | Pin no. | Function |
|---|---|---|---|---|---|---|---|
| 1 | GND | 2 | Pr | | | | |

## Appendix C: Technical specifications

### Electrical parameters reference : $t_A$ 25 ° C

| Symbol | Descriptio | Mi | Ty | Ma | Uni |
|---|---|---|---|---|---|
| $V_{DD}$ | DC power supply | TBD | 14.0 | TBD | V |
| $V_{i(RGB)}$ | Video input signal (w.r.t. GND) | 0.5 | 0.7 | 1.0 | $V_{PP}$ |
| $f_S$ | Video sample rate | | | 200 | MHz |
| $f_H$ | Horizontal sync frequency | 30 | | 93 | KHz |
| $f_{vs}$ | Vertical sync frequency | 30 | | 75 | Hz |
| $I_{DD1}$ | Supply current +12V (w/o LCD & inverter) | | 0.85 | | A |
| $I_{DD2}$ | Supply current +12V (with LCD & inverter) | | 6.31 | | A |
| $I_{DDPS1}$ | Supply current +12V (with LCD & inverter, power save) | | 0.45 | | A |

### Additional features

| Paramete | Value | Unit |
|---|---|---|
| Max. output resolution | 1920/1600 x 1200 | pixel |
| Data | 24 | bit |
| Input impedance: Analog<br>vide<br>syn | <br>75<br>470 | <br>oh<br>oh |
| Sync polarities | +/- | |
| Sync levels | TTL | |
| Max. number of colours | 16.7M | color |
| Operating temperature | 0 ~ 50 | ° C |
| Storage temperature | -20 ~ 70 | ° C |

## Appendix D: Video Mode Support

The modes are detected whten 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 | Resolution | Refresh rate | H-freq. | Pixel freq. | Remarks[*1] |
|---|---|---|---|---|---|
| VGA | 720 x 400 | 59.940HZ | 31.469Hz | 25.175MHz | VESA Standard |
| VGA | 640 x 480 | 60Hz | 31.5Hz | 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 | 37.9 KHz | 40.000MHz | VESA Standard |
| SVGA | 800 x 600 | 75Hz | 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 | 60 KHz | 78.750MHz | VESA Standard |
| | 1152 x 864 | 75Hz | 67.5KHz | 108.000MHz | |
| SXGA[*3] | 1280 x 1024 | 60Hz | 64.0KHz | 108.000MHz | VESA Standard |
| SXGA[*3] | 1280 x 1024 | 75Hz | 79.0KHz | 135.000MHz | VESA Standard |
| WSXGA[*3] | 1600 x 1024 | 60Hz | 62.1KHz | 112.700MHz | |
| UXGA[*4] | 1600 x 1200 | 60Hz | 75.0KHz | 162.000MHz | VESA Standard |
| UXGA[*4] | 1600 x 1200 | 65Hz | 81.3KHz | 175.500MHz | VESA Standard |
| UXGA[*4] | 1600 x 1200 | 70Hz | 87.5KHz | 189.000MHz | VESA Standard |
| UXGA[*4] | 1600 x 1200 | 65Hz | 93.8KHz | 202.500MHz | VESA Standard |
| WUXGA[*4] | 1920 x 1200 | 60Hz | 75KHz | 193.156MHz | Analog |
| WUXGA | 1920 x 1200 | 60Hz | 75KHz | 158.0MHz | Digital |

**Notes:**

- All mentioned modes are non-interlaced. The maximum and minimum frame rates are determined by the TFTLCD.
- Factory preset modes are overwritten by additional user alignments for automatic recall. At all times it remains possible to recall the initial factory presets.
- If the resolution of TFT LCD is WSXGA (1600x1024), the ventura monitor decides to run WSXGA mode in SXGA and WSXGA input.
- If the resolution of TFT LCD is WUXGA (1920x1200), the ventura monitor decides to run WUXGA mode in UXGA and WSXGA input.

## Appendix E: Optical Characteristics – ventura 240 T

The following items are measured under stable conditions. The optical characteristics should be measured in a dark room or equivalent state with the methods shown in Note (1).

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

* Ta = 25± 2 $^0$C, Vco = 5.0V, fdclk=97.5MHz, IL = 6.5 mArms

| Item | | Symbol | Condition | Min. | Typ | Max | Unit |
|---|---|---|---|---|---|---|---|
| Contrast Ratio (Center of screen) | | CR | | (400) | - | - | |
| Response Time at Ta | Rising | $T_R$ | | - | (15) | - | msec |
| | Falling | $T_F$ | $\varphi$=0, | - | (20) | - | |
| Luminance of White (Center of Screen) | | $Y_L$ | $\theta$=0 | - | 230 | - | cd/m$^2$ |
| Color Chromaticity (CIE) | Red | $R_X$ | Normal Viewing Angle | - | 0.610 | - | |
| | | $R_Y$ | | - | 0.356 | - | |
| | Green | $G_X$ | | - | 0.313 | - | |
| | | $G_Y$ | | - | 0.584 | - | |
| | Blue | $B_X$ | | - | 0.149 | - | |
| | | $B_Y$ | | - | 0.317 | - | |
| | White | $W_X$ | | - | (0.315) | - | |
| | | $W_Y$ | | - | 0.350 | - | |
| Viewing Angle | Hor. | $\theta_L$ | CR≥10 | - | 80 | - | Degrees |
| | | $\theta_R$ | | - | 80 | - | |
| | Ver. | $\varphi_H$ | | - | 80 | - | |
| | | $\varphi_L$ | | - | 80 | - | |

## Appendix F: Optical Characteristics – ventura 213 T

The following items are measured under stable conditions. The optical characteristics should be measured in a dark room or equivalent state with the methods shown in Note (1).

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

* Ta = 25± 2 $^0$C, Vco = 5.0V, fdclk=97.5MHz, IL = 6.5 mArms

| Item | | Symbol | Condition | Min. | Typ | Max | Unit |
|---|---|---|---|---|---|---|---|
| Contrast Ratio (Center of screen) | | CR | | (400) | - | - | |
| Response Time at Ta | Rising | $T_R$ | | - | (20) | - | msec |
| | Falling | $T_F$ | $\varphi$=0, | - | (15) | - | |
| Luminance of White (Center of Screen) | | $Y_L$ | $\theta$=0 | - | 250 | - | cd/m$^2$ |
| Color Chromaticity (CIE) | Red | $R_X$ | Normal Viewing Angle | - | (TBD) | - | |
| | | $R_Y$ | | - | (TBD) | - | |
| | Green | $G_X$ | | - | (TBD) | - | |
| | | $G_Y$ | | - | (TBD) | - | |
| | Blue | $B_X$ | | - | (TBD) | - | |
| | | $B_Y$ | | - | (TBD) | - | |
| | White | $W_X$ | | - | (0.310) | - | |
| | | $W_Y$ | | - | (0.330) | - | |
| Viewing Angle | Hor. | $\theta_L$ | CR≥10 | - | 80 | - | Degrees |
| | | $\theta_R$ | | - | 80 | - | |
| | Ver. | $\varphi_H$ | | - | 80 | - | |
| | | $\theta_L$ | | - | 80 | - | |