VIA KM400/KN400/K8M800 Display Driver Installation Guide in Red Hat 9.0

1. Summary

The document describes how to install the combo display driver binary for VIA KM400/K8M800 north bridge chips with the UniChrome Pro integrated graphics processor in Red Hat 9.0. The system display resolution and color depth are customized by the "Display" Tool. The "XVidtune Tool" is used to adjust different refresh rate. The "TV Out" including SAMM Mode setting, "Hardware Video Overlay", "3D DRI library" functions are included for user's reference. The information in this document is provided "AS IS," without guarantee of any kind.

2. File description

This package requires the two files as described below.

```
03/22/2005 04:25pm 7,253,457 KM-K8MXF40056-kernel-bin-RH9_20050303.tgz Driver Binary
                        Readme                                         this file
```

Users can download the driver from the VIA Arena website at
http://www.viaarena.com/

3. Install OS built-in display driver

Red Hat 9.0 is able to detect the configurations of the mouse, keyboard, monitor automatically, but it cannot detect the graphics card because the KM400 and K8M800 graphics cards are not supported yet. Use the following instructions to set up the display controller.

a. X configuration

The OS recognizes the KM400 and K8M800 graphics controller as `'VESA Driver (generic)'`. Accept this and accept the same frame buffer size in the BIOS setting as the value of `'Video card Ram'`.

b. Monitor configuration

The monitor will be automatically detected in most cases. If your monitor does not appear on the device list, you may create a new one and modify the horizontal (in KHz) and vertical synchronization (in Hz) ranges according to your monitor specification. The `X-server` may crash if the setting you enter does not comply with your monitor specification.

4. Install VIA KM400/K8M800 Display Driver

Follow the commands below to install VIA's KM400/K8M800 display driver binary:

```
# tar zxvf KM-K8MXF40056-kernel-bin-RH9_20050303.tgz

# cd KM-K8MXF40056-kernel-bin-RH9_20050303

# cd KM-K8MXF40056-kernel

# ./vinstall

# cd ../DRI

# ./minstall
```

Use the command "lsmod" to check whether the modules are successfully loaded. If users see the `"via_v4l_drv"`, `"videodev"`, `"via"` modules, then the driver is successfully loaded.

5. Configure XF86Config

Follow the step 3 in the `"Installation.txt"` file to customize the XFree86 setting. Edit the `"XF86Config"` file in `/etc/X11` directory for the X Windows display setting. Then proceed to setup different resolutions, color depths and the video cards by following step 3.

6. Configure Refresh Rate by the "Xvidtune" Tool

WARNING: The incorrect use of the tool can cause permanent damage to the monitor and/or video card.

Red Hat 9.0 provides the display setting tool in X Windows to setup different refresh rate (Vertical Sync in Hz). To use the `"xvidtune"` tool, open a console window in the GUI mode, and type the command `"#xvidtune"`. It is really important to note that the incorrect use of the program can cause permanent damage to the monitor and/or video card. Change the vertical synchronization in the vertical display section by clicking the "Taller" or "Shorter" Button. Click on the "test" button to adjust the refresh rate.

7. Display modes supported

The following table summarizes the display modes supported by the KM400 and K8M800 display driver. To use some special display modes such as `"720x480"`, `"720x576"`, `" 848x480"`, `"856x480"`, `"1024x512"`, and `"1280x768"`, refer to the `"Installation.txt"` file in the package for how to add the Modeline in the `"Monitor"` section of the `"XF86Config"` file. It is recommended to backup the original configure file before replacement.

| Resolution	Color Depth	Refresh Rate (Hz)
640x480	8, 16, 24	85
720x480	8, 16, 24	60
720x576	8, 16, 24	60
800x600	8, 16, 24	85
848x480	8 , 16, 24	65*
856x480	8, 16, 24	60
1024x512	8, 16, 24	60*
1024x768	8, 16, 24	85
1280x768	8, 16, 24	60
1280x960	8, 16, 24	60
1280x1024	8, 16, 24	60
1400x1050	8, 16, 24	60

The KM400/K8M800 driver will probe the support range of monitor's resolutions automatically. Users may adjust the screen settings manually to suit particular monitor type. But some monitor types return wrong value so that the resolution is always **"640x480"**. To bypass this issue, edit the "Device" section in the **"XF86Config"** file and add the line **Option "NoDDCValue"**.
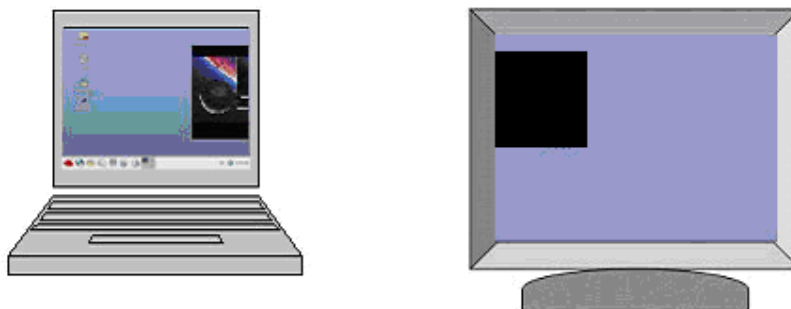
8. TV-Out Function

The KM400 and K8M800 north bridges support TV-Out Function. To enable the TV-Out function, VIA provides the S3utility to ease the settings for users. The S3utility is a graphical interface tool for users to set different types of TV out functions. Refer to the figure below as a screenshot for S3utlity.
VIA's KM400/K8M800 north bridge chips support VIA's VT1622/1622A/1623 TV encoders, and it supports two TV signal types NTSC and PAL.
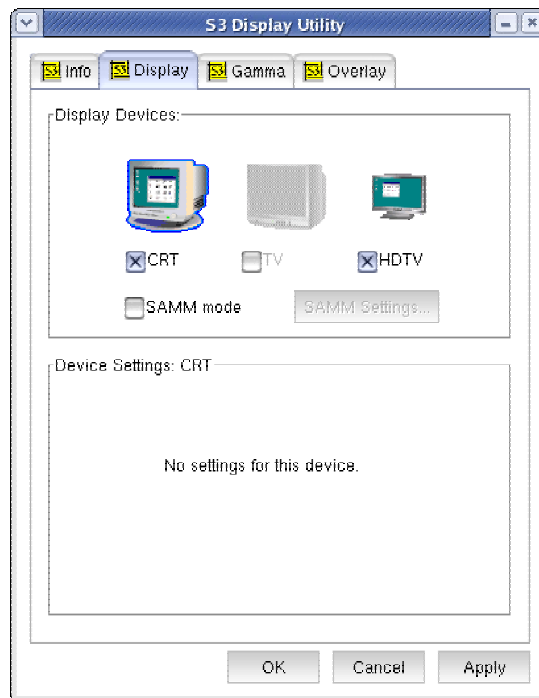
VIA's S3utility supports the SAMM (Single Adapter Multiple Monitor) functions for VIA's KM400/K8M800 chips, which allows the X Window Desktop to be displayed in two different devices. Refer to the figure below as an example of SAMM mode, which is displayed in both LCD and TV. Users can drag the video output window from one device to another.

To enable the SAMM mode function in the S3utility, users should check the SAMM mode option in the Display window.
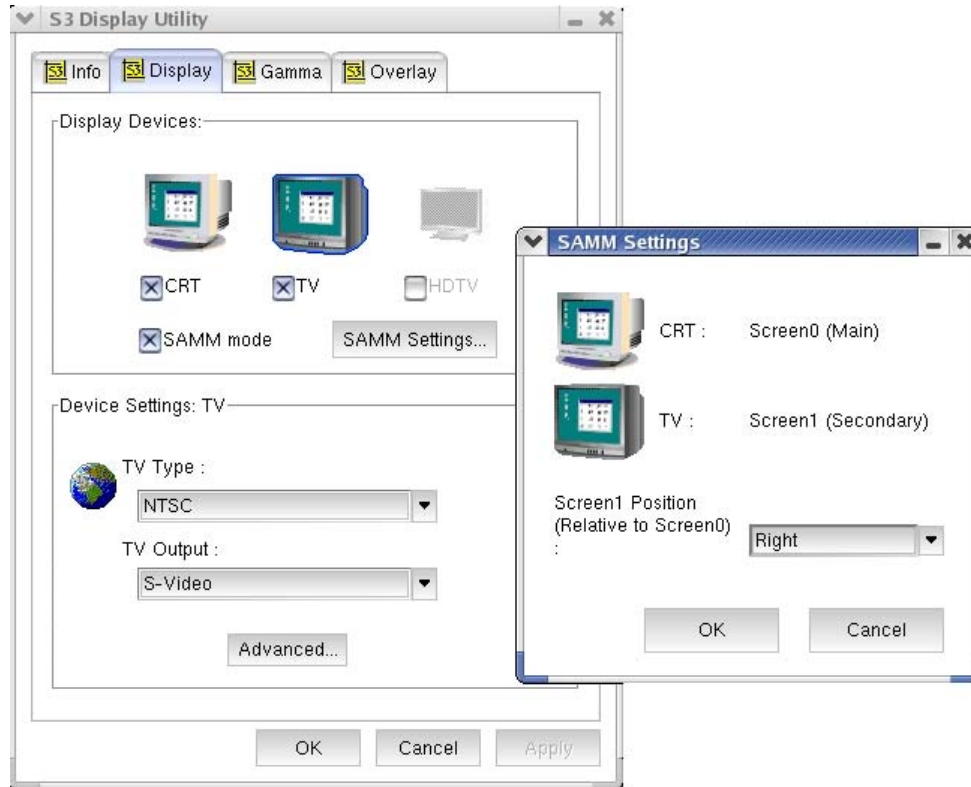
The following table summarizes the TV Output display modes in both TV by using VT1623 TV encoders in KM400/K8M800 respectively:

Resolution	640x480	480p (720x480)	576p (720x576)	800x600	848x480	1024x768
VT1623M	Pass	Pass	Pass	Pass	Pass	Pass

9. Hardware Video Overlay – VCD/ DVD playback

The KM400 and K8M800 board supports the Hardware Overlay function. VIA provides the VeMP (VIA enhanced Mplayer) video player on Source Forge for users to download the package and verify. Download the MPlayer 1.0-pre5 package at http://www1.mplayerhq.hu/MPlayer/releases/ and VeMP patch package at http://sourceforge.net/projects/vemp/. Follow the command below to install and play MPEG1/2/4 files:

```
# cat VeMP_1.1.patch | patch -p0
# cd MPlayer1.0-pre5
# ./configure && make && make install
# mkdir -p /usr/local/etc/mplayer
# cp etc/*.conf /usr/local/etc/mplayer
```

Enter the X Window and play the MPEG1/2/4 by the following command:

```
# mplayer -vo vmix11 [options] playlist
```

The vmix11 is VIA's MPEG2/4 Hardware Accelerator, and it CPU consumption performance is summarized in the following table. It is noted that the bit-rate size of the MPEG file will affect the CPU loading accordingly.

Chipset	KM400			K8M800		
Video Output	-x11	-xv	-vmix11	-x11	-xv	-vmix11
VCD	Pass	Pass	N/S	Pass	Pass	Pass
DVD	Pass	Pass	N/S	Pass	Pass	Pass
MPEG4	Pass	Pass	N/S	Pass	Pass	Pass

10. Install 3D DRI Library

This driver supports 3D functionality; follow the step 1 in the **"Installation.txt"** file to install the library by using the command **"./minstall".** To verify whether the 3D functionality is enabled, use the commands **"glxinfo"** and **"glxgears"** to check in X-Window. If the 3D function is enabled, you should see the following output:

```
# glxinfo
        name of display: :0.0

        display: :0  screen: 0

        direct rendering: Yes

        server glx vendor string: GLX_EXT_visual_info GLX_EXT_visual_rating

        GLX_EXT_import_context GLX_SGIX_fbconfig GLX_SGIX_pbuffer
        ……
# glxgears
        2184 frames in 5.0 seconds = 436.800 FPS

        2185 frames in 5.0 seconds = 437.000 FPS

        2185 frames in 5.0 seconds = 437.000 FPS

        2183 frames in 5.0 seconds = 436.600 FPS

        2185 frames in 5.0 seconds = 437.000 FPS

        ……
```

In the **"glxinfo"** command, you should see the **"Yes"** output for the direct rendering. And for using the **"glxgears"** tool, the program should run more than 300 frames per second.

11. Test configuration

The following table summarizes the hardware configuration used for test.

CPU	AMD Duron 950 MHz
Mainboard	VT8185D-3 (KM400+VT8237)
DRAM	256 MB DDR400
HDD	Seagate ST340014A 40GB
Monitor	Bridge BM17C, HorizSync: 30.0-70.0 KHz, VertRefresh: 50.0-160.0 Hz, Max resolution: 1400x1050

CPU	AMD Sempron 3100+
Mainboard	VT8256F-2 (K8M800+VT8237)
DRAM	256 MB DDR400
HDD	Seagate ST340014A 40GB
Monitor	Bridge BM17C, HorizSync: 30.0-70.0 KHz, VertRefresh: 50.0-160.0 Hz, Max resolution: 1400x1050