

# SM750 Linux Kernel Driver Specification

Version 1.1

## 1. Display Outputs

Kernel driver supports dual displays with simultaneous content (SIMUL mode) in one of the following output configurations:

1. SIMUL Digital TFT (expansion) + CRT
2. SIMUL Digital TFT (fixed resolution) + CRT
3. SIMUL Digital TFT (fixed resolution) + Digital TFT (fixed resolution)
4. SIMUL Dual CRT

The tables below summarize the display layers for each output configuration.

### 1. SIMUL Digital TFT (expansion) + CRT

	<b>TFT</b>	<b>CRT</b>
<b>Graphic layer</b>	18/24/36 bit digital TFT with expansion feature to match different resolutions to different panel sizes	Analog DAC
<b>Cursor layer</b>	Software	Same as TFT
<b>Video</b>	2D Color Space Conversion	Same as TFT
<b>Alpha layers</b>	N/A	Same as TFT

### 2. SIMUL Digital TFT (fixed resolution) + CRT

	<b>TFT</b>	<b>CRT</b>
<b>Graphic layer</b>	18/24/36 bit digital TFT with a fixed resolution equal to panel size	Analog DAC
<b>Cursor layer</b>	Hardware	Same as TFT
<b>Video</b>	Overlay	Same as TFT
<b>Alpha layers</b>	Support	Same as TFT

### 3. SIMUL Digital TFT (fixed resolution) + Digital TFT (fixed resolution)

	<b>TFT 0</b>	<b>TFT 1</b>
<b>Graphic layer</b>	18 bit TFT with a fixed resolution equal to panel size	Same as TFT 0
<b>Cursor layer</b>	Hardware	Same as TFT 0
<b>Video</b>	Overlay	Same as TFT 0
<b>Alpha layers</b>	Support	Same as TFT 0

#### 4. SIMUL Dual CRT

	<b>CRT 1</b>	<b>CRT 0</b>
<b>Graphic layer</b>	Analog DAC	Same as CRT 1
<b>Cursor</b>	Hardware	Same as CRT 1
<b>Video</b>	Overlay	Same as CRT 1
<b>Alpha layers</b>	Support	Same as CRT 1

#### 1.1 Display Output Behavior of Driver during Boot-Up

By using boot-loader argument or GRUB, kernel driver is configurable with the following parameters:

1. Primary is CRT or TFT (18/24/36 bit)
2. Primary TFT size (if expansion is needed)
3. Secondary is CRT or TFT (18 bit)
4. Boot up in SIMUL, primary only or secondary only.
5. Resolution and color depth.

According to the above input parameters, kernel driver will set itself to one of the output configurations. If there is no boot-loader information, driver defaults to dual CRT output configuration in SIMUL.

Please refer to the README.TXT in driver release for the details of configuration parameters.

## 2. Driver Features Summary

<b>Features</b>	<b>Remark</b>	<b>Availability</b>
Kernel versions	2.6.21 2.6.24 2.6.26 2.6.28 2.6.30.8	Latest driver (note 1)
System	X86 PowerPC MIPS ARM <b>Depend on customer actual OS environment</b>	Latest driver (note 1)
4:3 resolutions: 640x480 800x600 1024x768 1280x1024 1600x1200	Support 60, 75, 85Hz refresh rates	Latest driver (note 1)
Wide screen resolution:	Support 60Hz refresh rate only	Latest driver (note 1)

1024x600 1280x720 1360x768 1440x960 1920x1080		
Color depth: 8, 16, 32 BPP	32 BPP is not available in 1600x1200 1920x1080	Latest driver (note 1)
Refresh Rate (CRT output only): 60, 75, 85Hz	<ul style="list-style-type: none"> <li>85 Hz is not available in 1600x1200 and 1920x1080.</li> <li>Only 60Hz is available in all wide screen resolutions</li> </ul>	Latest driver (note 1)
Panel type	18/24 bit TFT 36 bit double pixel TFT	Latest driver (note 1)
Panel expansion	SM750 can stretch the screen to fit the size of most TFT. The only limitation is that panel size cannot be smaller than the target resolution since there is no screen shrinking capability.	Latest driver (note 1)
Primary Graphics Configuration	SM750 boots as primary adapter with video BIOS	Latest driver (note 1)
Secondary Graphics Configuration	SM750 boots as secondary adapter without BIOS	Latest driver (note 1)
Frame buffer direct access	Mmap or call write system call	Latest driver (note 1)
2D accelerations	Image BLT Copy area FILL RECT	Latest driver (note 1)
Power Management	ACPI	Latest driver (note 1)
Dual displays	Simultaneous content only	Latest driver (note 1)
Big-endian		Latest driver (note 1)
MTRR	CPU dependent	Latest driver (note 1)
64-bit Linux		Latest driver (note 1)
Multiple Adapter support	Two or more SM750 in the same system	To be scheduled per request.

Note 1: Latest driver version is 1.0.3.

