5-Megapixel High-resolution Grayscale Display Card

VREngine™/MD5

VREngine/MD5 is RealVision's advanced display controller which targets the demand of medical imaging applications. Based on RealVision's own custom graphics ASIC technology, the VREngine/MD5 delivers the highest quality visual image on 5-Megapixel LCD displays. A single VREngine/MD5 display controller supports single head QSXGA (2560x2048 or 2048x2560) or dual head (5120x2048 or 4096x2560) resolutions. And with built-in VGA support only a single card is required for image viewing and VGA boot, thus leaving additional PCI slots open for other uses. The VREngine/MD5 supports popular operating environments such as Microsoft® Windows® NT4.0, Windows® 2000, Windows® XP, Linux, Sun Solaris™.

FEATURES

Supports 5-Megapixel QSXGA (Quad-SXGA)

- 2560 x 2048 pixel (Landscape form)
- 2048 x 2560 pixel (Portrait form)

Dual Head Display

- 5120 x 2048 pixel (Landscape form)
- 4096 x 2560 pixel (Portrait form)

Hardware Pivot

Dual view function

10-bit Gray-scale display capability

VGA display capability

Supports 5-Megapixel Digital LCD monitor

DVI Monitor Display Interface (2 Channels)
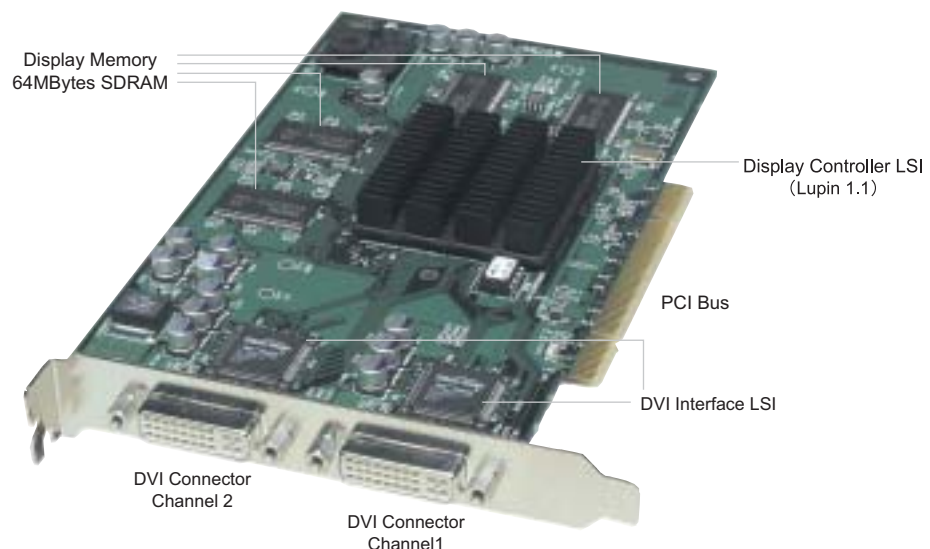
PCI Bus Card

Operating Systems

- Windows
- Solaris
- Linux
- Mac OS (Under development)

Newly developed High-resolution Display Controller LSI
(Lupin 1.1)

Card Name	Operating System	Platform
VREngine/MD5W	Windows NT 4.0	IBM PC Compatibles
	Windows 2000 Professional	
	Windows XP	
	Linux	
VREngine/MD5S	Solaris 8	Sun Workstation
VREngine/MD5M	MacOS 9.2	Power Macintosh
	MacOS X	

Board Outline

Display Memory
64MBytes SDRAM

Display Controller LSI
（Lupin 1.1）

PCI Bus

DVI Interface LSI

DVI Connector
Channel 2

DVI Connector
Channel1

LCD Controller Board

Display Color

The format of color format in Frame memory (bpp : bit per pixel)

Color	Format
8bpp	256 shades gray
10bpp	1024 shades of gray (Note)

(Note) On Board Gamma table which can set 256 gray-scales from 1024 gray-scales.

Display Resolution

Single Head
- 2560 x 2048 pixel (Landscape)
- 2048 x 2560 pixel (Portrait)

Dual Head
- 5120 x 2048 pixel (Landscape)
- 4096 x 2560 pixel (Portrait)

Number of connectable monitors

Maximum 2 monitors
(More than 2 monitors are connectable using multiple board (Max 4) configuration)

Display Output Interface

DVI (Digital Visual Interface)   DVI-D 2 Channels

Maximum Drawing Performance

3.9 Giga pixels /sec

Drawing Functions

- Supports Landscape and Portrait form drawing (Counter clockwise)
- Point drawing (1 pixel width)
- Line drawing
- Polygon drawing
- BITBLT
  Graphic memory→Graphic memory
  Host memory→Graphic memory(supporting Scatter Gather DMA)
- Transparent BLT
- Index DIB color conversion (8 bit index color)
- Raster operation (Dynadic operation)

Hardware Pivot

High speed Pivot form drawing by display controller

Support VGA display (depends on monitors)

Gamma Correction

- Supports linear and non-linear palette
- 2 monitors are controlled independently.

Display memory

On board 64Mbytes SDRAM

Video Output Specifications

- Dot clock   74MHz x 2
- Horizontal timing signal   103.9KHz
- Vertical timing signal   50Hz
- Refresh rate   50Hz

Bus Interface

PCI Bus (Version 2.2 Compliant), 32 bit width, 33MHz

Board power dissipation

Maximum   15W

Operating Environment

- Host system   Windows based PC(PC/AT compatibles)
                  Sun Blade™ 100 or Sun Ultra60™ or greater
                  G4 based Power Macintosh
- CPU speed   more than 500MHz
- Host system bus PCI 32bit, 5V/3.3V (PCI Version 2.2 compliant)
- Bus frequency   33MHz
- Main memory size More than 256Mbytes

Operating Systems

- Windows NT 4.0 Workstation (later than Service Pack 6)
- Windows 2000 Professional
- Windows XP
- Linux
- Solaris 8
- Mac OS 9.2 (Under development)
- Mac OS X (Under development)
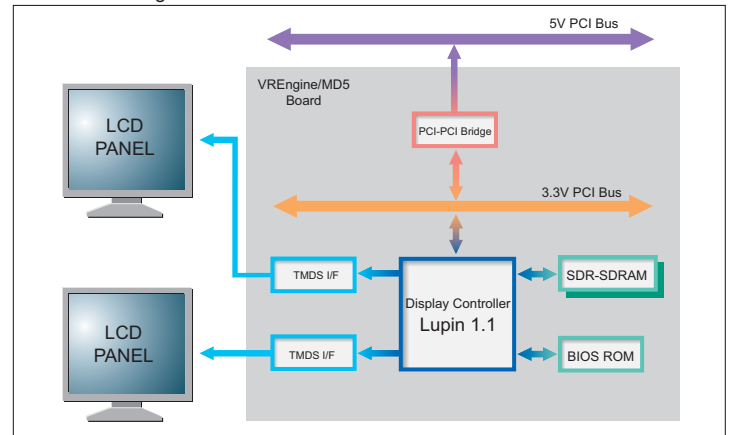
Certifications

UL/cUL, FCC Class A, CE

Mechanical Specifications

- Board size   174.5 (W) x 106.7 (H) mm
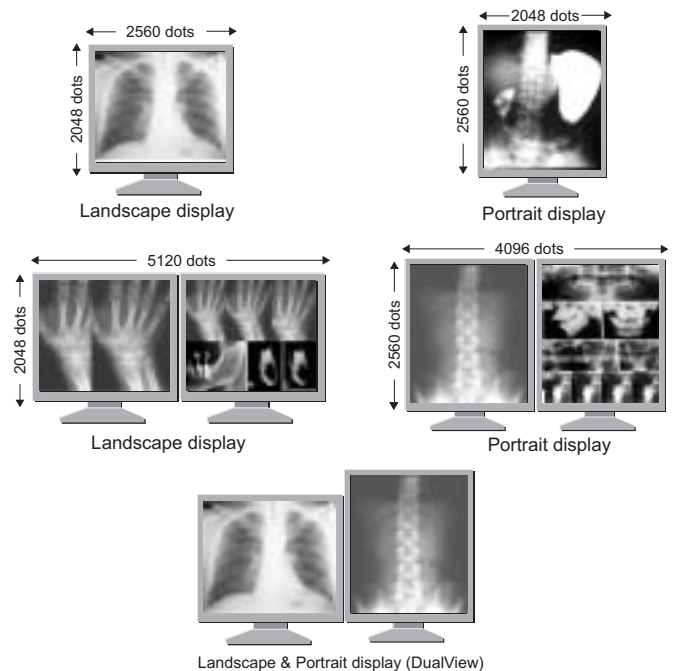- Number of occupied slot   1 slot

Monitors

- 5M digital LCD monitor

Board Block Diagram

Display form and Maxumum display resolution

2560 dots / 2048 dots
Landscape display

2048 dots / 2560 dots
Portrait display

5120 dots / 2048 dots
Landscape display

4096 dots / 2560 dots
Portrait display

Landscape & Portrait display (DualView)

Three Drawing modes for Dual Head configuration

- Wide view
  Two displays are drawn as single display.
- Twin view
  Mirror image of the first display is drawn on another display.
- Dual view
  Two displays are drawn as two independent displays.

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