for Medical

LCD
Controller
Board

for Airtraffic

for Printing

High Resolution/Super-high Resolution
Medical Imaging Display Board

VREngine/MD/CMD/SMD Series

RealVision

A New Age in Medical Imaging

VREngine series products are designed for high to super-high resolution medical imaging displays. The VREngine PC board products offer various flexible solutions for high resolution digital medical imaging.

RealVision developed the Lupin series, high resolution display controller, based on years of experience gained in graphics LSI development and applications for medical imaging. The Lupin series display controller LSI and driver software provides strong solutions for medical imaging market applications.

VREngine series products are in use at domestic and global hospital sites. VREngine products have been integrated with various display and modality manufacturers, and PACS system integrators. The VREngine products have received good evaluations in the medical imaging industry.

RealVision's mission is to continue development of high quality next generation high to super-high resolution digital medical imaging products.

Product Architecture

RealVision started its operation as fabless semiconductor maker focusing on graphics LSI. Now we provides subsystem (board level) solutions to medical imaging application area based on the experience of graphics LSI developments and driver software technology.

We integrate market needs and seeds onto the board product based on states of the arts SoC (System On Chip) technology and support a competitive and easy display subsystem integration for medical imaging related makers.

We provide differentiated products and services by the unified operation of display controller LSI development, dedicated display driver development and application supports.

Display board for medical imaging

High Resolution Display Controller "Lupin" Series

Lupin series is the world only one graphics LSI optimized for medical imaging applications. RealVision has newly developed high performance Lupin-2 display controller based on experiences from Lupin-1 and Lupin-1.1 and feedbacks from medical imaging market.

Display performance

  5.3Gpixels/sec (Fill rate at grayscale display)

Display resolution

  320× 240 QVGA   3840× 2400 WQUXGA

Display colors and number of panels

  Grayscale (8-bit) X2 panels
  Grayscale (8-bit) X2 panels
  Color 64K colors (RGB 16-bit) X1 panel
  Color 16M colors (RGB 24-bit) X1 panel
  Color 1B colors (RGB 30-bit) X1 panel
  Color YCrCb (YUV422) X1 panel

Drawing functions

  VGA compatible
  Gamma correction
  Scaling functions
  External synchronization function
  Landscape/Portrait display (clockwise and counter clockwise rotations)
  Line drawing and polygon drawing
  BitBLT (Scatter Gather DMA supported)
  Transparent BLT, Stretched BLT
  Raster operation (Dynadic operation)
  Alpha blending
  Text rendering
  Video capture function
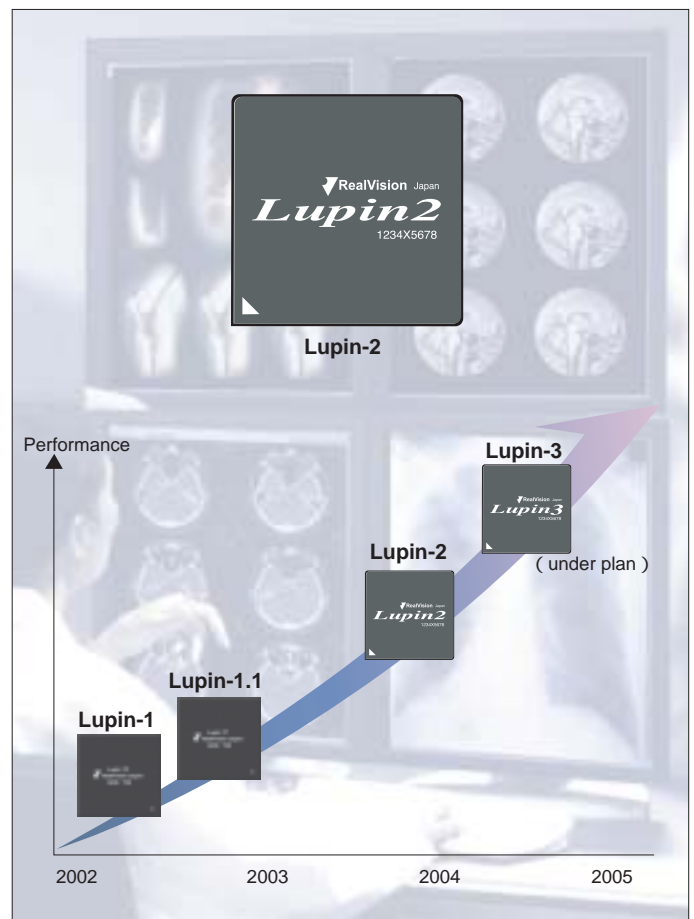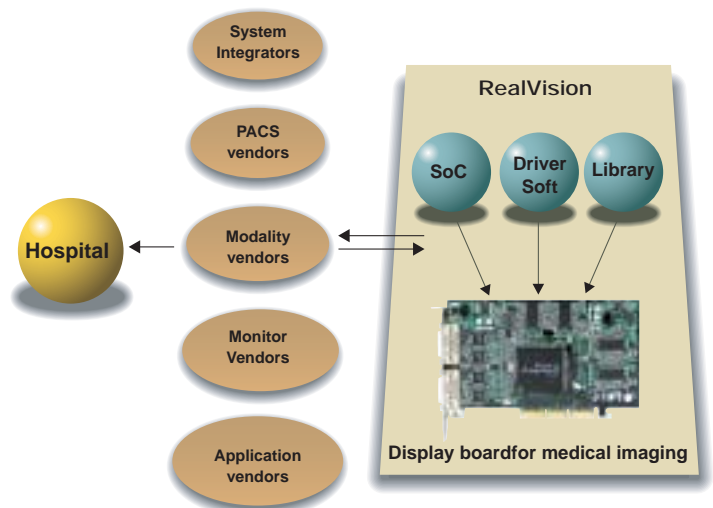 Color conversion

Dot clock

  Up to 165MHz

Supported buses

  AGP4X bus, PCI bus

Process , package, operating frequency

  0.13 micron CMOS, 700-pin BGA, 200MHz

Product Lineup

VREngine/MD Series

PCI bus board series using Lupin-1.1 graphics controller. This series supports 2M, 3M and 5Mpixel LCD monitors for grayscale and color display.

VREngine/CMD (CompactMD) series

PCI bus board series using Lupin-1.1 graphics controller. This series supports 2M, 3M and 5Mpixel LCD monitors for grayscale and color display.This series is designed to support low profile PC systems. (including Small Form Factor Computer).

VREngine/SMD (SuperMD) series

The newest board series using Lupin-2 graphics controller. PCI bus board and AGP bus board are available and supports 2M to 9M pixel LCD monitors for grayscale and color display.
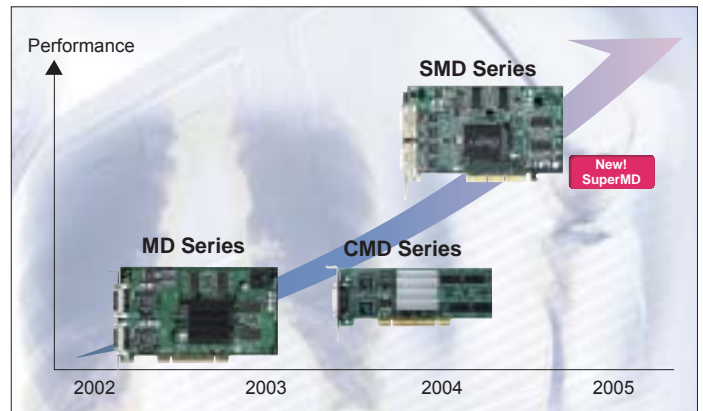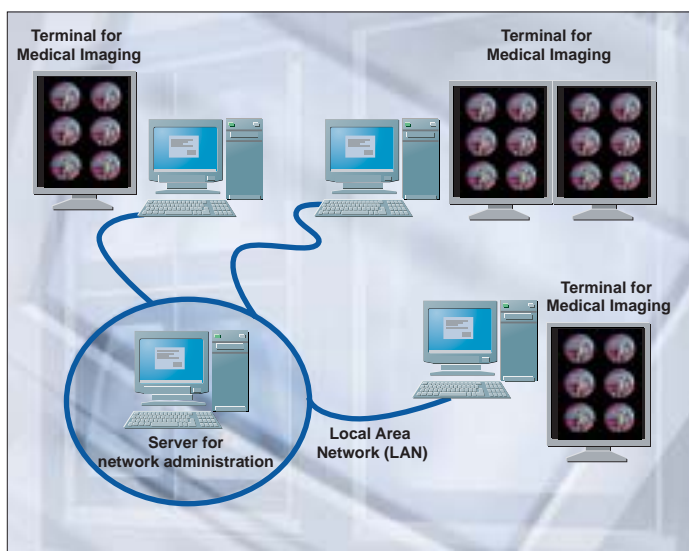
Network Administration Software

New! LumiCal

It is possible to execute a monitor calibration (LumiCal) and gather monitor data through network (LimiCal Administrator) for all of LCD monitors which are connected to VREngine series boards.

For medical monitors, it is required to display and diagnose images in same image qualities even if these monitors are located different places or referred in different times. Network Calibration Software is prepared for that. This function enables to monitor the operation status periodically and provide information to network server. Operation status includes the intensity of backlight, running time, monitor temperature, the status of monitor ON/OFF and etc.

Terminal for Medical Imaging

Terminal for Medical Imaging

Terminal for Medical Imaging

Server for network administration

Local Area Network (LAN)

DICOM support

VREngine series provides two systems of display channels on a board. Each display channel has independent CLUT (Color Look Up Table) and it enables to do gamma collection independently. It makes possible to display grayscale data in accordance with the provision of DICOM part 14.

Performance

SMD Series

New! SuperMD

MD Series

CMD Series

2002   2003   2004   2005

Multi-OS support

The driver software of VREngine series supports both of Windows (2000, XP) operating systems and Linux operating systems. All of driver's function can be used in completely same level. User can select most proper operating system for system environments in a hospital.
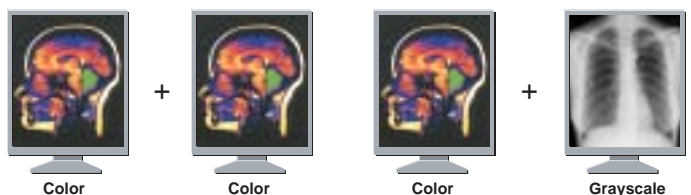
DualLink support

New! SuperMD

VREngine series outputs video data using DVI interface. New SuperMD board series starts to support DualLink output adding to SingleLink output. It makes possible to display two 3M pixel color LCD monitors using one SuperMD board.
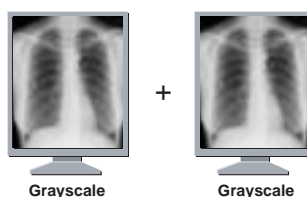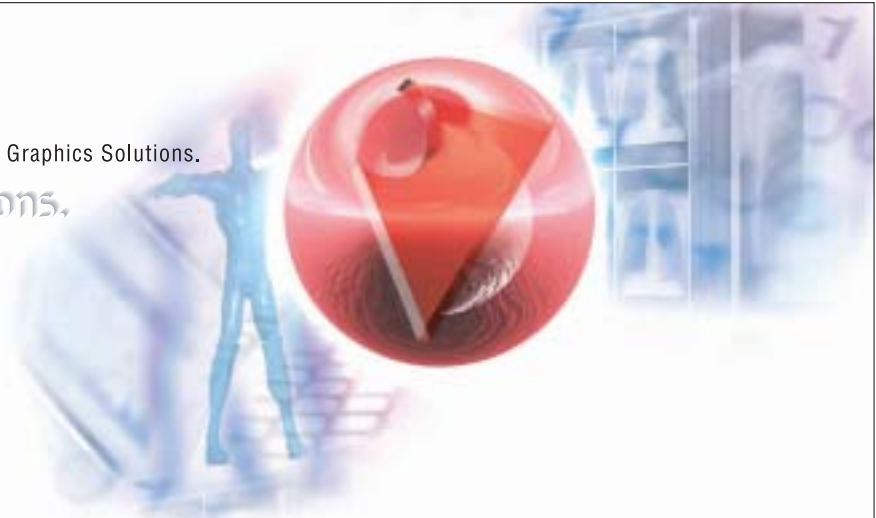
Dual Head support

VREngine series board can display images on two LCD monitors by using one board. User can use variety of display configurations by selecting grayscale or color, landscape of portrait, or various resolutions for each LCD monitors.

Color   Color   Color   Grayscale

Grayscale   Grayscale

We deliver Custom Graphics Solutions.

10-bit, 12-bit length support

New! SuperMD

New SuperMD board supports 10-bit and 12-bit length of grayscale for displaying more fine medical images.
In the case of grayscale display, 10-bit and 12-bit grayscale are supported. 1024 scale of grays are selected and displayed from 4096 scale of grays at 12-bit grayscale.
In the case of color display, 1 billion of colors are displayed by RGB 30-bit (RGB 10:10;10-bit).

Variety of Monitor Configurations

VREngine series supports variety of display modes and monitor configurations for medical imaging.

Landscape/Portrait display

Landscape and portrait display mode are available. Both of counter clockwise and clockwise monitor rotation are supported.

WideView Mode

It is possible to use two monitors as one screen.

TwinView Mode

Displays same images on two monitors.

DualView Mode

It is possible to display independent images on two monitors.

Multi-board Mode

It is possible for PCI board to install more than two board onto a host system. All of display modes are also available at multi-board mode.

Supports variety of PC platforms

VREngine series supports multiple board forms and host bus interfaces. It makes possible to use variety of PC platforms from a high performance PC server to a low profile desktop PC which are located various space in hospital.
SuperMD board supports both of AGP bus and PCI bus. CompactMD series board supports low profile PCs.

Quality control and Service

All VREngine graphics boards are designed and manufactured by high standards in Japan.
Medical Imaging applications require very high quality and rapid product support compared to ordinary PC board products.
RealVision provides consistently high quality graphics products due to strict QA, testing, and excellent manufacturing EMS process control.
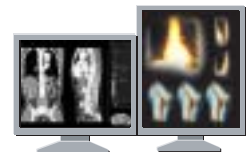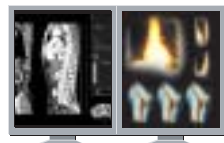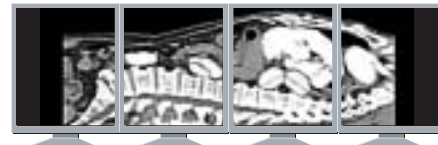

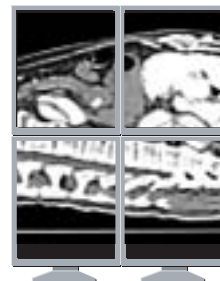**Landscape display**
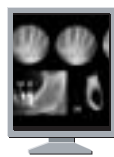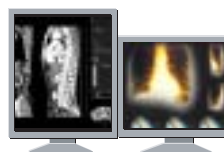
Portrait display

WideView mode
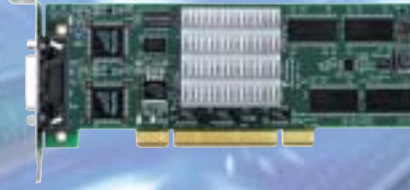
TwinView mode

DualView mode

WideView mode at Multi-board mode

MD Series   CompactMD Series   SuperMD Series

Line-up of VREngine

Name	Product Name	Resolution	Graphics Processor	Bus	OS
MD Series	VREngine/MD2	pixel 2M	Lupin 1.1	PCI 33MHz,32bit	Windows 2000 Windows XP Linux
	VREngine/MD3	pixel 3M	Lupin 1.1	PCI 33MHz,32bit	
	VREngine/MD5	pixel 5M	Lupin 1.1	PCI 33MHz,32bit	
CompactMD Series	VREngine/CMD2	pixel 2M	Lupin 1.1	PCI 33MHz,32bit	
	VREngine/CMD3	pixel 3M	Lupin 1.1	PCI 33MHz,32bit	
	VREngine/CMD5	pixel 5M	Lupin 1.1	PCI 33MHz,32bit	
SuperMD Series	VREngine/SMD2-PCI	pixel 1M 2M	Lupin 2	PCI 66MHz,32bit	
	VREngine/SMD2-AGP	pixel 1M 2M	Lupin 2	AGP X1, X4	
	VREngine/SMD3-PCI	pixel 1M 3M	Lupin 2	PCI 66MHz,32bit	
	VREngine/SMD3-AGP	pixel 1M 3M	Lupin 2	AGP X1, X4	
	VREngine/SMD5-PCI	pixel 1M 5M	Lupin 2	PCI 66MHz,32bit	
	VREngine/SMD5-AGP	pixel 1M 5M	Lupin 2	AGP X1, X4	
	VREngine/SMD9-PCI	pixel 1M 9M	Lupin 2	PCI 66MHz,32bit	
	VREngine/SMD9-AGP	pixel 1M 9M	Lupin 2	AGP X1, X4	

Sepcification of MD Series

Operating Environment	Installable system	DOS/V compatible PC	
	Operating system	Windows 2000 Professional	
	Host processor	intel IA32, AMD, etc.	
	Operating frequency of host processor	500MHz or faster	
	Host bus interface specification	PCI 32-bit / 5V, 3.3V PCI Version2.2 compliant	
	Host bud clock frequency	33MHz	
	Main memory size	256Mbytes or more	
	Maximum power dissipation	15W	
Mechanical Specification	Board size	174.5(W) X 106.7(H) mm	
	Weight	158g	
	Number of occupied slot	One slot of PCI bus	
	Board composition	One PCI bus board	
Display Resolution	Single monitor case	Landscape	Portrait
	MD2	1600× 1200	1200× 1600
	MD3	2048× 1536	1536× 2048
	MD5	2560× 2048	2048× 2560
	Dual monitor case	Landscape	Portrait
	MD2	3200× 1200	2400× 1600
	MD3	4096× 1536	3072× 2048
	MD5	5120× 2048	4096× 2560
Number of Connectable Monitors		Maximum 2 monitors (at greyscale display mode)	
Form of monitor display	Single monitor case	Landscape display (L), Portrait display (R)	
	Dual monitor case	L L P P L+P P+L	
VGA Display Function	Integrated	VGA standard compliant	
Direction of Monitor Rotation	Switching between landscape and portrait	Counter clockwise (left rotation) and clockwise (right rotation)	
Display Bit Length		8-bit/pixel greyscale	
		10-bit/pixel greyscale	
		Internal Gamma table which can set 256 scales of grey from 1024	
		8, 24-bit/pixel color	
Frame Buffer Size		On board 64Mbytes SDRAM	
Vide Output Signal Specification	DVI (Digital Visual Interface)	DVI-D	
Certifications		UL/cUL FCC CE	

Specification of CompactMD Series

Operating Environment	Installable system	DOS/V compatible PC
	Operating system	Windows 2000 Professional
	Host processor	intel IA32, AMD, etc.
	Operating frequency of host processor	500MHz or faster
	Host bus interface specification	PCI 32-bit / 5V, 3.3V
	Host bud clock frequency	33MHz
	Main memory size	256Mbytes or more
	Maximum power dissipation	15W
Mechanical Specification	Board size	167.64(W) X 64.41(H) mm, Low profile
	Weight	100g
	Number of occupied slot	One slot of half height PCI bus
	Board composition	One PCI bus board

Display Resolution	Single monitor case		Landscape	Portrait
		CMD2	1600× 1200	1200× 1600
		CMD3	2048× 1536	1536× 2048
		CMD5	2560× 2048	2048× 2560
	Dual monitor case		Landscape	Portrait
		CMD2	3200× 1200	2400× 1600
		CMD3	4096× 1536	3072× 2048
		CMD5	5120× 2048	4096× 2560

Number of Connectable Monitors		Maximum 2 monitors (at greyscale display mode)
Form of monitor display	Single monitor case	Landscape display (L), Portrait display (R)
	Dual monitor case	L L P P L+P P+L
VGA Display Function	Integrated	VGA standard compliant
Direction of Monitor Rotation	Switching between landscape and portrait	Counter clockwise (left rotation) and clockwise (right rotation)
Display Bit Length		8-bit/pixel greyscale
		10-bit/pixel greyscale
		Internal Gamma table which can set 256 scales of grey from 1024
		8, 24-bit/pixel color
Frame Buffer Size		On board 64Mbytes SDRAM
Vide Output Signal Specification	DVI (Digital Visual Interface)	DVI-D
Certifications		UL/cUL FCC CE

Specification of SuperMD Series

Operating Environment	Installable system	DOS/V compatible PC
	Operating system	Windows 2000 Professional
	Host processor	intel IA32, AMD, etc.
	Operating frequency of host processor	500MHz or faster
	Host bus interface specification	AGP 4X or PCI 32-bit / 5V, 3.3V
	Host bud clock frequency	33MHz/66MHz
	Main memory size	256Mbytes or more
	Maximum power dissipation	23W
Mechanical Specification	Board size — AGP	174.63(W) X 107.96(H) mm
	Board size — PCI	174.63(W) X 106.68(H) mm
	Weight	200g
	Number of occupied slot	One slot of AGP or PCI bus
	Board composition	One AGP or PCI bus board

Display Resolution	Single monitor case		Landscape	Portrait
		SMD2	1024× 768 1600× 1200	768× 1024 1200× 1600
		SMD3	1024× 768 2048× 1536	768× 1024 1536× 2048
		SDM5	1024× 768 2560× 2048	768× 1024 2048× 2560
		SMD9	1024× 768 3840× 2400	768× 1024 2400× 3840
	Dual monitor case		Landscape	Portrait
		SMD2	2048× 768 3200× 1200	1536× 1024 2400× 1600
		SMD3	2048× 768 4096× 1536	1536× 1024 3072× 2048
		SDM5	2048× 768 5120× 2048	1536× 1024 4096× 2560
		SMD9	2048× 768 7680× 2400	1536× 1024 4800× 3840

Number of Connectable Monitors		Maximum 2 monitors
Form of monitor display	Single monitor case	Landscape display (L), Portrait display (R)
	Dual monitor case	L L P P L+P P+L
VGA Display Function	Integrated	VGA and SVGA standard compliant
Direction of Monitor Rotation	Switching between landscape and portrait	Counter clockwise (left rotation) and clockwise (right rotation)
Display Bit Length		8-bit/pixel greyscale
		10-bit/pixel greyscale
		12-bit/pixel greyscale
		Internal Gamma table which can set 1024 scales of grey from 4096
		8, 16, 24,30-bit/pixel color
Frame Buffer Size		On board 128Mbytes DDR-SDRAM
Vide Output Signal Specification	DVI (Digital Visual Interface)	DVI-D
Certifications		UL/cUL FCC CE

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