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Panther Dual-Screen Multi-Layer Display Daughtercard Data Sheet

The Panther multi-layer display controller provides exceptional flexibility for generating combined graphics, radar and video displays on two interlaced or non-interlaced monitors with identical pixel clocks at resolutions of up to 1,600 x 1,280 pixels. The Panther offers up to 24 display bit-planes per monitor which are split into a convenient multi-layer structure with up to 16 bits per layer. The layer structure of the card is programmable. The Panther includes a Synchronous Video Channel (SVC) interface that allows radar video data from a separate scan converter to be digitally mixed with either or both of the Panther's video outputs. One of the RGB outputs of the Panther can be genlocked and keyed to a standard workstation or PC using a Video Keyer. In combination with the CAT processor board, Panther gives outstanding graphics performance for dual-screen X window display requirements.

Features

- Dual screen output
- Multiple layers with digital switching and mixing
- 24 bit-planes per screen, 1-4 layers with up to 16 bit-planes per layer
- Up to 1,600 x 1,280 resolution, lockable to external video source
- Digital scan converter input (SVC)
- Full software support available: Primalib graphics library, PARIS and X11R6 (dual screen server)
- Interlaced and non-interlaced output
- 8+8+8 and 16+8 bit layer modes as standard

Applications

- Dual screen Command and Control Consoles
- High specification X terminals
- Radar Head Monitors
- Video replay systems
- Video processing
- Medical imaging
- Real-time sensor display

Technical Information

The Panther combines 6 Mbytes of screen memory per display screen, a synchronous video channel input for scan converted radar, a flexible digital video multiplexer, two 17-bit (128 kbyte per colour) output look-up tables, and two colour video outputs on a mezzanine board for the CAT image processor and graphics accelerator board. Rapid data transfer is achieved via a 200 Mbytes/sec bus between the CAT and the Panther.

The screen memory is configured as three 2-Mbyte, 8-bit framestores for resolutions up to 1,600 x 1,280 pixels. Output resolution, video timings and amounts of off-screen or on-screen memory are set up in software using Primalib or an accelerated X server. The video timings of the two screens are identical. Three 17 bit look-up tables per screen on the red, green and blue channels allow considerable flexibility in the use of colour video output. The layering structure of the display is set in an FPGA digital video multiplexer. For flexibility, a number of layering formats are usually stored in one FPGA although for special requirements, new FPGA configurations

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can be programmed at the factory or in the field. The digital video multiplexer allows scan converted radar data, received via a synchronous video channel from a separate scan converter, to be mixed with the display data generated from the framestores. The digital video multiplexer allows up to 4 layers to be displayed with a maximum of 16 bit-planes per layer. The Panther can display 24 bit-planes from its own framestores; 32 bit-planes of information can be displayed in combination with a separate scan converter.

In the standard digital video multiplexer, the video layers are controlled by writing 'key' values into the 8-bit overlay framestore. This allows window by window control of the display contents. Six 'key' values are defined in the FPGA's which control the following display items:

Middle layer + underlay (video)	(16 bits)
SVC radar + underlay	(15 bits)
Software scan converted radar + underlay	(15 bits)
Underlay only	(8 bits)
Middle layer only	(8 bits)
External radar only	(8 bits)

The Panther is fully compatible with Primagraphics' range of video keyers and can be used to provide real-time graphics for workstations or PC's.

Specification

Physical:	Mezzanine board to CAT image processor and graphics accelerator card Dual slot 6U VME double Eurocard in combination with CAT
CAT bus:	64 bits wide - maximum transfer speed 200 Mbytes/sec.
Framestore:	12 Mbytes configured as two screens with three 8-bit framestores per screen Additional SVC input into Digital Video Multiplexer Hardware cursor for each screen
Digital Video Multiplexer:	Determines number of layers and bitplanes per layer Configuration set at hardware build Reprogrammable on card (with additional cable and software) Maximum of 16 bit-planes per layer 8-bit SVC input mixed with CAT generated layer to produce composite layer up to 16 bits deep SVC input may be displayed on either or both screens
Video outputs:	Interlaced or non-interlaced Separate or composite sync 1V into 75Ω Resolutions up to 1,600 x 1,280 @ 75Hz
Software Support:	Embedded Primalib graphics library Multi-screen 8-bit X11R6 server PARIS; Primagraphics' Advanced Radar Interface Software
Host Support:	SPARC, Hewlett Packard, DEC, Motorola

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