



Graphics/ Radar/ Video Distribution 2007.

The following pages provide the Embedded Engineer a brief overview of graphics products and tools supported by Unitronix for the Australian and New Zealand market place.

Graphics display requirements for embedded and real time applications do not, in general, require high end "Gaming" type processing requirements. For this reason many applications are served quite adequately by general graphics chips on Single Board Computers. However for some applications high end graphics processing is required, along with the latest Open GL and X Windows support. In these cases the availability of high end graphics cards on any form factor other than PCI for desk top, is extremely limited.

Applications that require high end graphics processing include, (Mission Systems, Moving Map, Radar, Multi Function Display consoles, Spectral Analysis, Image Processing, Multi Windowed Systems.

In the embedded space these types of application also require hardware that is "rugged", to various degrees, and very importantly have a long life cycle of chip, and card availability. In this environment the generally available PCI graphics engines do not provide any adequate rugged features, nor are they available for more than 6-12 months.

CurtissWright Controls have addressed these problems with a range of Graphics products for the embedded market place. Mainly based on the PMC form factor. The cards are available in a number of configurations from Air-Cooled to full Conduction Cooled MilSpec, and are designed with chipsets providing long term product availability of 5 -6 years.

It is also prudent for the Engineer looking at embedded graphics applications, to understand that freely available "shareware" or "open source" graphics development environments like OpenGL, are not available quite so freely in the embedded space. The reason for this is that the graphics development tools and environments need to be "Ported" to real time operating systems, and specific embedded hardware. This is something that the "Open Source" fraternity do not support, and as such it is down to the embedded manufacturer to write, test, and support these applications on their hardware.

CurtissWright has done this with a complete suite of Graphical User Interface (GUI) software to help developers easily develop and maintain their graphics applications. This includes full-featured X Windows X11R6 server, Optimized OpenGL software API, Video capture API supporting Xv Extensions and OpenGL textured video capture. These are supported under VxWorks and INTEGRITY for Power PC as well as growing support for Linux environments. The CurtissWright tools are also compatible with 3rd party applications such as VAPS from eGENUITY.

CurtissWright GRAPHICS AtlasPMC/1 One or Two Display Channels:

The AtlasPMC/1 is based on ATI Technologies' RADEON Mobility 9000 (M9) mobile graphics processor, which supports 2D, 3D, OpenGL, and DirectX compatible displays with up to 24 bpp. The M9 features 64 MB of integrated memory, reduced-power optimizations, integrated video output, and quad-pipeline 2D/3D hardware acceleration. The AtlasPMC/1 displays analog VGA screen resolutions up to 1920x1200 over both of its front panel connectors. The card can also be configured to output dual digital video (DVI) channels at resolutions up to 1600x1200 (1920x1200 with reduced blanking interval timing). TV video signal output (NTSC/PAL) is supported on the card's second channel. STANAG 3350 A-C and Sync-On-Green (SOG) can be had on both channels. A special order version supports front panel LVDS requirements.



CurtissWright GRAPHICS PMC-706:

Is a PCI Mezzanine Card (PMC) form factor, ruggedized, high-performance, feature rich Graphics PMC designed, developed and supported by CurtissWright. With support for both legacy (STANAG) and new video interfaces, PMC-706 is an ideal solution for both new and retrofit ground, naval and avionics platforms. The PMC-706 is the first rugged COTS PMC to make use of the industry leading ATI Radeon Mobility 9000 (M9) Visual Processing Unit (VPU). Optimized full X11 Server, X Extensions, Optimized OpenGL 1.3 compliant driver. Operating System support includes VxWorks Tornado 2.2, Green Hills INTEGRITY.



CurtissWright FRAME GRABBER PMC-724:

This mezzanine module is a ruggedized IEEE 1386.1 PMC Frame Grabber providing high-performance image capture capabilities. The PMC-724 Frame Grabber captures both analog and digital video input formats and supports high speed transfer of the captured images to system memory (e.g. basecard or other PCI-accessible memory). Applications such as target tracking and UAV image capture are ideally suited for the PMC-724 where analog or digital video data is gathered in real time then transferred to a basecard for processing. The PMC form factor allows this card to be used in rugged stand alone PCs, 3U and 6U cPCI as well as VME and VXS systems.



CurtissWright VME Sabre Imaging Platform:

Combines a high-performance PowerPC processor with a multi-head, multi-layer graphics video and radar display capability in a single VME slot. The Sabre display processor offers a number of advanced capabilities for displaying graphics and real-time video data in a VME or network-centric display configuration.

A key feature of the Sabre graphics architecture is that the whole X Server runs locally on the card. With the host processor providing the X Client libraries, an application may use Sabre graphics with no special-purpose device driver on the host. The loose-coupling between the host processor and the Sabre X Server display product simplifies system integration and removes the interdependence of host processor and graphics driver.



CurtissWright Video Compression Orion PMC:

The Orion brings JPEG2000 real-time video compression and decompression to PMC and PCI form-factors with a dual-channel capability for TV resolution video sources. In input mode, Orion can accept up to 10 analogue video inputs and select two for simultaneous compression with the JPEG2000 standard. The compression engine supports full frame rate encoding of standard 625 line PAL or 525 line NTSC composite video, outputting a JPEG2000 compliant data stream onto the PCI bus.

CurtissWright VME Video Crosspoint Switch:

VxPoint is a single slot, semi-ruggedized 6U VME Video Crosspoint Switch card which will accept up to 8 standard video signals and will route these to any of 32 outputs with virtually no loss in image quality. A wide range of video formats can be accommodated including composite NTSC or PAL signals and high resolution RGB video. The card incorporates a microprocessor for controlling the on-board circuits and is able to function as a communications controller via its four serial ports. An encoder is also provided to convert between RGB video and PAL or NTSC encoded composite video.



CurtissWright RADAR Interface PMC:

Osiris is a high-performance, dual channel radar interface board that accepts and processes analogue and digital radar signals and provides a PCI interface to applications. Osiris comes from a long history of radar interface products at Curtiss-Wright (formerly Primagraphics), with interfaces to support many legacy and modern radar types. With an on-board FPGA and high-speed PCI interface, Osiris offers high performance with two independent channels on a half-length PCI or PMC mezzanine format.



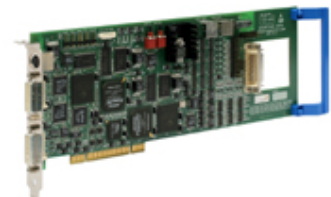
CurtissWright RADAR Scan Converter PMC:

Eagle is a flexible and powerful radar scan converter which is based upon a mechanically ruggedized PMC form factor. Eagle is a low power, rugged design that will operate in a wide range of environments, including conditions of high temperature and vibration. Radar data is passed to the card via high-speed PCI bus transfers. This can originate either from a Osiris card or via network from a radar video server. Eagle digitally combines the generated radar image with the output from a standard DVI output (PanelLink) graphics card, such as the Atlas PMC1. During video keying, the Eagle is able to place the video from the graphics card either as an underlay or as an overlay to the radar image. This feature is typically used to allow target symbols to be presented as overlays and maps to be presented as underlays.



CurtissWright RADAR "All In One" PCI card for Desktop:

Advantage Zeta is a new radar scan converter that combines Curtiss-Wright's radar signal acquisition and scan conversion onto a single PCI card. The new PCI card uniquely offers radar display designers the highest performance while maintaining a minimal slot count. Combining radar acquisition and scan conversion onto a single card frees the PCI bus and host computer while simplifying system architectures. Advantage Zeta complements Curtiss-Wright's existing radar acquisition, distribution and display capability and provides our customers with more choices for radar display solutions.



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