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Find the *Interface Concept IC-GRA-VPX6a* at our website: *Click HERE*

IC-GRA-VPX6a

AMD E8860 / Xilinx Kintex®-7 Graphic & Processing board

Because GPU and FPGA offer a formidable blend for video applications, Interface Concept has developed the **IC-GRA-VPX6a** mixing both technologies.

By combining the power of the E8860 GPU and the Xilinx Kintex®-7 FPGA high ratio processing power to consumption with the high communication capabilities of the OpenVPX, the **IC-GRA-VPX6a** can manage many video flows in a single VPX chassis slot, allowing high cost reduction.

The **IC-GRA-VPX6a** is designed to mix up-to-date digital video interfaces with still in use legacy standards such as Stanag 3350 (with useful features: external synchronization, Vertical Interface Reference, etc.).

Its modular design means it can meet specific applications requirements.
Consult us to share your specifications.



The GPU part of the **IC-GRA-VPX6a** is based on our **IC-GRA-XMCc** board and its AMD Mobility Radeon™ e8860, offering 6 independent display controllers supporting resolutions from VGA (640x480) up to WQUXGA (4096 x 2160 @ 30Hz).
By routing XMC2 Jn26 IOs in X38s+X8d+X12d connection scheme to P5/P6, the **IC-GRA-VPX6a** can reproduce on the backplane all the interfaces (digital/analog/TV) available on the **IC-GRA-XMCc** *(refer to the **IC-GRA-XMCc** Data Sheet for details)*.

The major interest is the capability to link two Display Port outputs directly to the Kintex®-7 325T through GTX transceivers, allowing thus to process video signals in the FPGA.

Moreover, direct attachment of the FPGA to the backplane (through 24 LVDS - useable as single-ended signals - and 12 high speed TX lanes) allows to implement data flow inputs coming from external HDMI output, IR camera, video data recorder or others. Coming whether from the embedded GPU or the backplane, it is then possible to implement signal decoding, video scaling, frame buffering, synchronization, images merging and digital (ARINC818, HDMI, DP...) or analog (VGA, Stanag3350B/C...) video encoding in the FPGA.

For analog outputs, the **IC-GRA-VPX6a** implements two Video DACs and External synchronization resources which expand the analog features already offered by the **IC-GRA-XMCa**. The **IC-GRA-VPX6a** also integrates an EDID Eeprom for each link where the FPGA plays the game of a Display.

It is also possible to use a second optionalPMC/XMC slot supporting the XMC1 Jn16 IOs in X38s+X8d+X12d connection scheme to P3/P4 or the PMC1 Jn14 IOs in P64s connection scheme to P2/P3.
*(refer to the **IC-CMC-VPX6a** Data Sheet for details)*

The FPGA, the GPU and the optional PMC/XMC slot are interconnected with the OpenVPX Data Plane through a PCI Express switch offering one or two ports on P1 and one port on P2.

Main features

Graphic Processor Unit:
- AMD Radeon E8860
- 2GB on-chip GDDR5 memory (1GHz 128-bit)
- 6 independent display controllers

FPGA:
- **Xilinx Kintex-7** 325T
- 1 GByte DDR3 SDRAM memory bank
- 1 user SPI Flash Eeprom

PCIe Switch:
- One PCIe x8 port to P1, One PCIe x4 port to P2
- One PCIe x8 port to GPU, One PCIe x4 port to FPGA
- One PCIe x8 port to optional XMC (or PCI-X PMC)

Rear:
- up to 6 TMDS/DisplayPorts on P5/P6 (4 exclusive with front interfaces)
- up to 3 VGA interfaces (1 from GPU, 2 from FPGA), configurable as :
  - RGB (Sync on green, composite or seperated sync)
  - STANAG3350B/C

  (one of them available in Composite or S-Video - NTSC/PAL)
- 12 GTX TX lanes (from FPGA)
- 24 LVDS (from FPGA)

Front:
- 4 mini DisplayPorts (*option*)
- Console and USB port

Note: some configurations require factory settings

Miscellaneous
- PIC µ-controller for System Management (VITA 46.11)
- Power supply monitoring / Temperature sensor...
- Status LEDs
- Engineering kit for debug: JTAG/COP...
- 6U Rear Transition Module

The **IC-GRA-VPX6b** is a 6U x 4HP VPX board compliant with 6U module definitions of the VITA 46.0 standard, available in air-cooled and conduction cooled (without front I/O) versions.

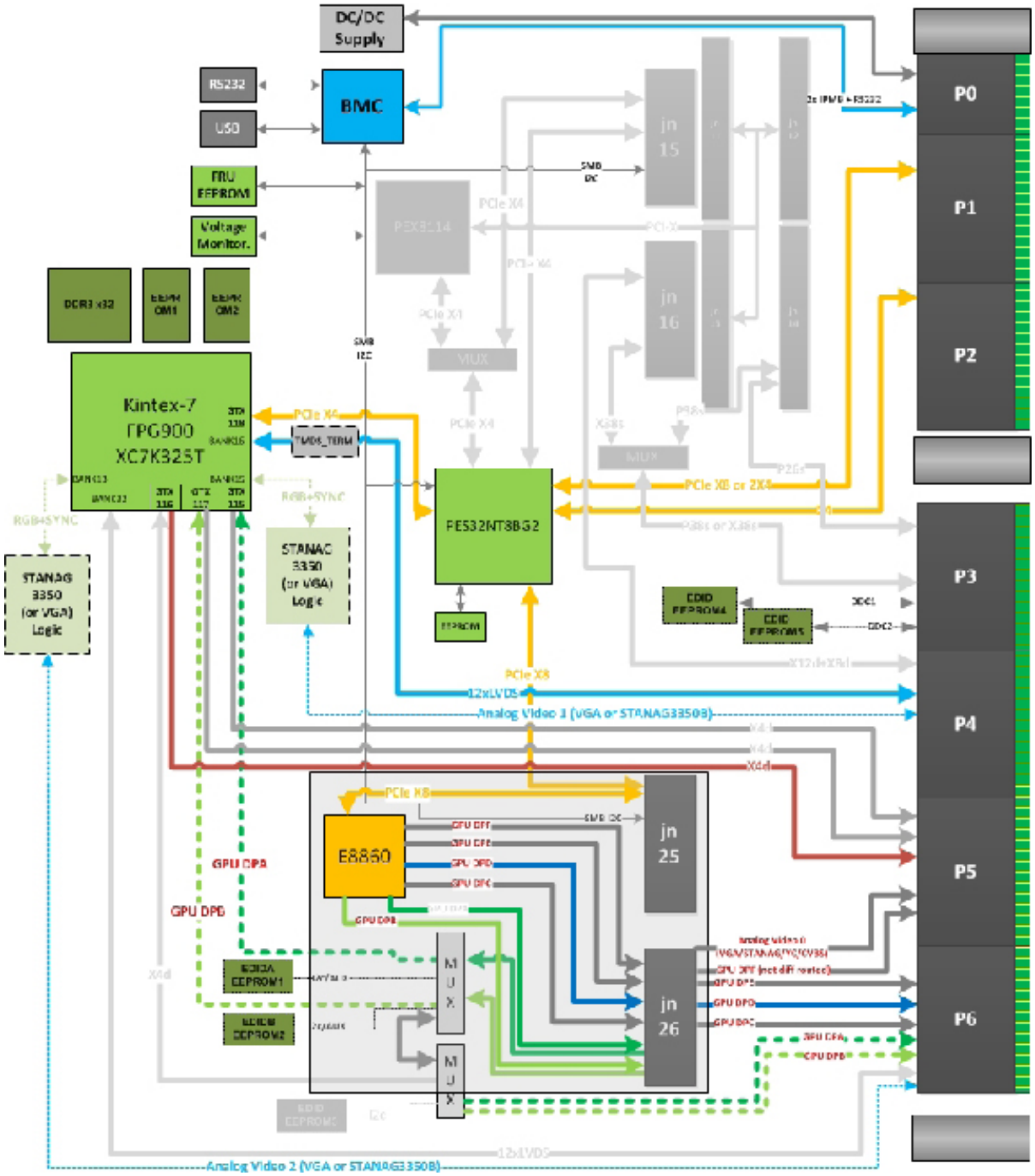
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Drivers / Firmware

Graphic Driver: For x86 architecture, the **IC-GRA-VPX6a** board is compatible with the Linux and Windows editions of the Catalyst drivers provided by AMD. For other configurations - architectures / OS (Linux/OpenSource, VxWorks, Integrity, etc) - please consult us.
FPGA Firmware: concerning video processing, Interface Concept has developped a set of IPs allowing to perform HDMI or DisplayPort video decoding, Camera Link decoding / frame buffering, Video scaling, Video interlacing, Timing/Synchronization control, HDMI/DP/VGA/STANAG3350 encoding. Those example designs can be used to match customer needs. Furthermore, the FPGA can be used by the customers as an open platform to implement their own IPs.

Block Diagram



Environment Specifications:

Please consult the **IC-GRA-VPX6a** page at **www.interfaceconcept.com**.

Ordering Information:

Please contact our sales department : tel. **+33 (0)2 98 577 176** - email : **info@interfaceconcept.com**

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