INTERFACE CONCEPT
ADVANCED ELECTRONIC SOLUTIONS

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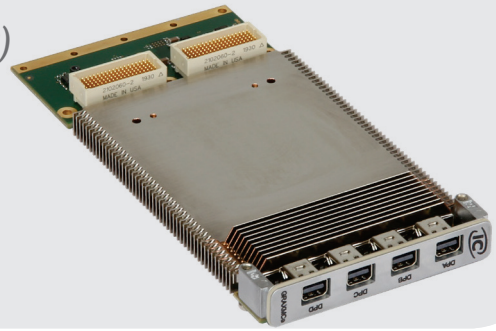
IC-GRA-XMCe

AMD E9170 GPU XMC board

- *XMC 1.0 (VITA42.0) or XMC2.0 (VITA61.0)*
- *AMD Radeon™ E9170 GPU*
- *8-lane PCIe Gen2/3*
- *5 DisplayPort v1.4 video outputs*
- *OpenGL™ 4.5*



Overview

The **IC-GRA-XMCe** is an ultra-low-power graphics XMC mezzanine board providing cutting-edge video quality and performance for military/aerospace (radar, SIGINT, ELINT, COMINT, medical imaging applications and industrial applications.

In addition, its dedicated Unified Video Decoder (UVD) and 4K HEVC/H.265 Video Encoding acceleration enables High Definition decoding of H.264, VC-1, MPEG4, MPEG2 and MVC compressed video streams.

Description

Designed in accordance with the VITA 42.0 and VITA 61.0 standards, the **IC-GRA-XMCe** is based on an AMD Polaris-based Radeon™ E9170 GPU providing 1248 GFLOPs peak single-precision floating point performance and 78.02 GFLOPs peak double-precision floating-point performance.

The AMD Radeon™ E9170 GPU is based on the 14nm microchip technology that brings various enhancements over the previous GPU generations. With 8 CUs and 4GB video memory, this power-efficient and advanced 3D graphics engine supports Microsoft® DirectX® 12 technology for superior graphics rendering. The Radeon™ E9170 multi-display controllers deliver up to 36-bpp (bits per pixel) throughout the display pipes allowing the **IC-GRA-XMCe** to leverage up to five DisplayPort 1.4 interfaces.

The support of OpenGL™4.5 and OpenCL™2.0 as an open standard programming software, makes this XMC module the ideal solution for demanding graphics and video applications in low power environments.

The on-board high-bandwidth 8-lane PCIe Gen2/3 interface ensures fast data throughput to the CPU board, and auto-negociation allows 1, 2, 4 or 8-lane width and polarity inversion on the Pn5 connector.

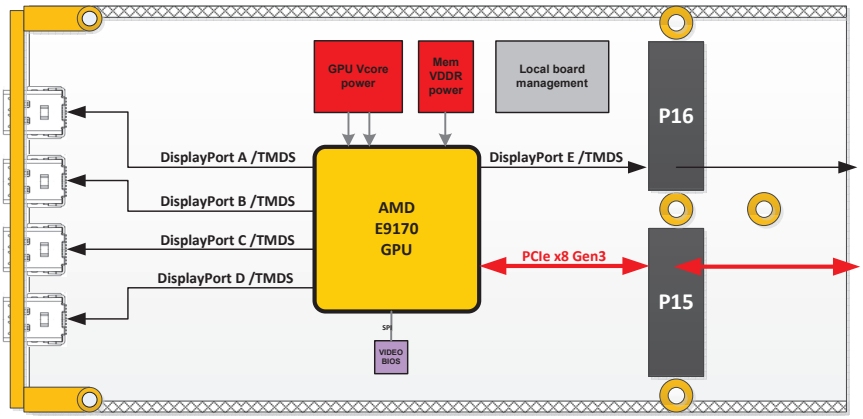
The **IC-GRA-XMCe** can drive up to four front-panel and one rear displays through five DisplayPort 1.4 interfaces.

The **IC-GRA-XMCe** is available in 2 configurations:

- two XMC1.0 (VITA 42.3) connectors, with a Gen2 PCIe 8-lane interface
- two XMC2.0 (VITA 61.0) connectors with a Gen3 PCIe 8-lane interface (default configuration)

The **IC-GRA-XMCe** is available in standard, extended and rugged air-cooled grades. Refer to the IC-GRA-XMCd product datasheet for the conduction-cooled version.

Block Diagram



Main features

Front panel

• 4 * display ports (ports A, B, C and D)

XMC interfaces

XMC P16

• 1 * display port (port E)

Each of the 5 display ports (front panel & rear connectors) features the following pixel display resolution and timing:

- **DisplayPort 1.4** (including the DisplayPort Dual-Mode - DP++)
  - one 5120 × 2880 px @ 60 Hz refresh rate (dual-cable configuration) or
  - one 5120 × 2880 px @ 60 Hz refresh rate (single-cable configuration) or
  - up to five 4096 x 2160 px @ 60 Hz refresh rate (single-cable configuration) or
  - up to five 3840 × 2160 @ 60 Hz refresh rate or
  - up to five 4096 × 2160 @ 60 Hz refresh rate

The above ports can also be used with DisplayPort++ to HDMI (or DVI) adapters (active or passive) to allow connection with HDMI or DVI Displays, offering thus:

- **HDMI™ 2.0b (6 Gbit/s)**
  - up to five 3840 × 2160 px @ 60 Hz refresh rate or
  - up to five 4096 × 2160 px @ 60 Hz refresh rate (outputs)
- **Dual-link DVI**
  - up to two 2560 × 1600 px @ 60 Hz refresh rate or
  - up to two 1920 × 1200 px @ 60 Hz refresh rate
- **Single-link DVI**
  - up to five 1920 × 1200 px @ 60 Hz refresh rate

XMC P15

Graphic processing unit

• AMD embedded Radeon™ E9170 GPU
• 8 Compute Units (CU)
• 1248 GFLOPs (single-precision)
• 78.02 GFLOPs (double-precision)
• 4GB on-chip GDDR5 memory (1GHz 128-bit)

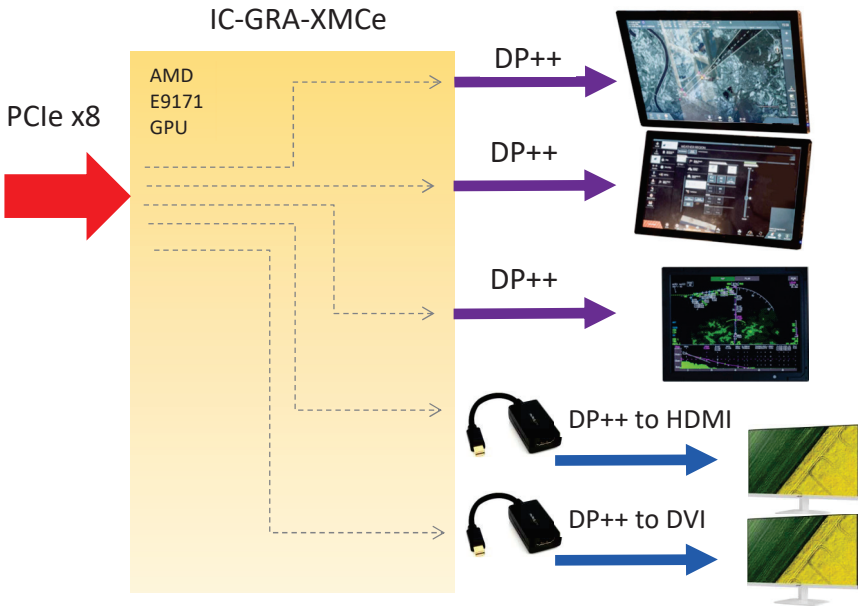
Interface features

• XMC1.0 – VITA 42.0 – 10mm stack (optional)
• XMC2.0 – VITA 61.0 – 12 mm stack (factory settings)

Board dimensions

• length: 150 mm
• width: 75 mm
• weight: 200 gr

IC-GRA-XMCe
AMD E9170 GPU XMC board



In this case, the solution takes advantage of 3 Display Port interfaces of the 9171 GPU for very high resolution displays.

One DP++ port is used with a DP++ to HDMI converter to attach an HDMI Display.

The last DP++ port is used with a DP++ to DVI converter to attach a DVI Display.

Grades

Criterion	Coating	Operation Temperature	Rec. Airflow	Oper. HR% no cond.	Storage Temperature	Sinusoidal Vibration	Random Vibration	Shock 1/2 Sin. 11ms
Standard	Optional	0 to 55°C	1 .. 2 m/s	5 to 90%	-45 to 85°C	2G [20..2000]Hz	0.002g2 /Hz [10..2000]Hz	20G
Extended	Yes	-20 to 65°C	2 .. 3 m/s	5 to 95%	-45 to 85°C	2G [20..2000]Hz	0.002g2 /Hz [10..2000]Hz	20G
Rugged	Yes	-40 to 75°C or 85° C (*)	2 .. 5 m/s	5 to 95%	-45 to 100°C	5G [20..2000]Hz	0.05g2 /Hz [10..2000]Hz	40G

(*) : Temperature grades are subject to availability according to IC products. Please consult us.

All information contained herein is subject to change without notice.

For more information, please contact:

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