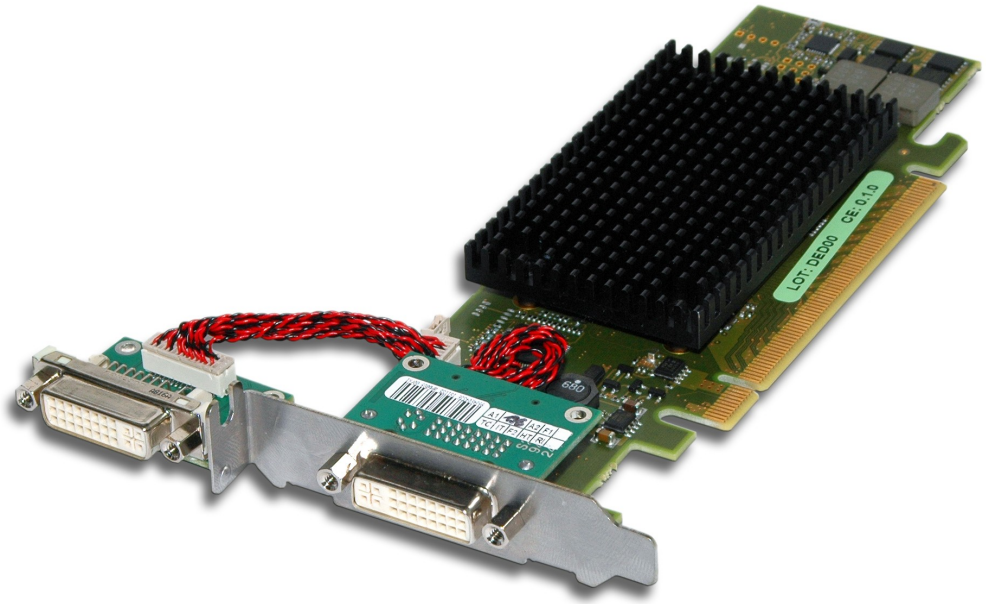
User's Guide



dFlat-PEG-M72

Document Revision 1.1

kontron

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1 Introduction

dFlat-PEG-M72 is a high-performance PCI Express graphics card based on the AMD/ATI Mobility Radeon HD2400 graphics processing unit. Its key properties are 3D, HD video/audio and dual independent display support at a very low power consumption. Combined with the low profile mechanics it is the ideal choice for multimedia / entertainment solutions.

2 Description

2.1 GPU Technology

- 65nm process
- 40 Stream Processing Units
- 128 Bit Floating Point Precision
- 2 independent display controllers

2.2 Hardware Acceleration Functions

2D

- Hardware acceleration for BitBLT, line drawing, polygon and rectangle fills.
- DirectDraw support: Double Buffering, Virtual Sprites, Transparent/masked BLT.
- Hardware cursor support up to 64x64x32-bpp.

3D

- DirectX 10.0 / Shader Model 4.0
- OpenGL® 2.0
- Anti-Aliasing (2x/4x) and Anisotropic Filtering (2x/4x/8x/16x).
- Advanced Texture Compression (3Dc+™).

Motion Video

- UVD (Unified Video Decoder) for H.264 and VC-1 decode
- support for video scaling and color space conversion
- motion compensation
- Advanced Video Processor (AVP)

2.3 Display Interfaces

- DVI A, single link, HDMI / Audio support (Option#), max.resolution 1920x1200
- DVI B, single link, max.resolution 1920x1200
- CRT A & B, 3x10Bit DAC each, 400MHz

2.4 System Bus

- PCI Express 1.1 compliant. Native x16 PCI Express bus interface.
- Supports x1, x2, x4, and x8 lane widths, too.
- Supports “Mobile Graphics Low-Power Addendum to the PCI Express Base Specification 1.0”.

2.5 Power Management

- Supports: ACPI 1.0b, APM, VESA DPM, OnNow, IAPC, Energy Star
- Full POWERPLAY™ 7.0 support.

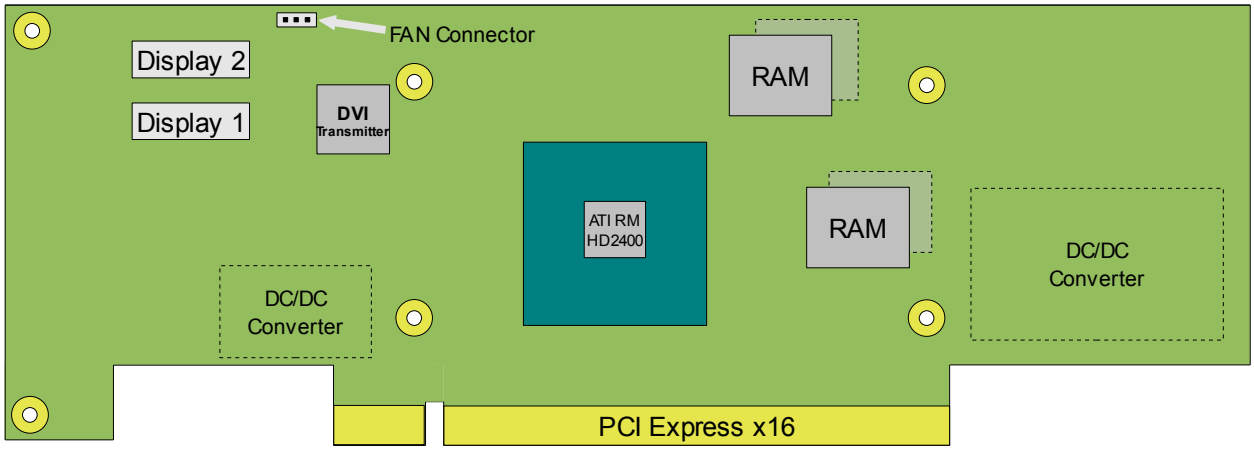
2.6 Other Features

- HD Audio via DVI A (in HDMI mode)
- integrated HDCP content protection (Option#) on DVI A
- Integrated thermal sensor for power management, FAN speed and critical temperature.

contact Kontron for more information /details

3 Signal Descriptions

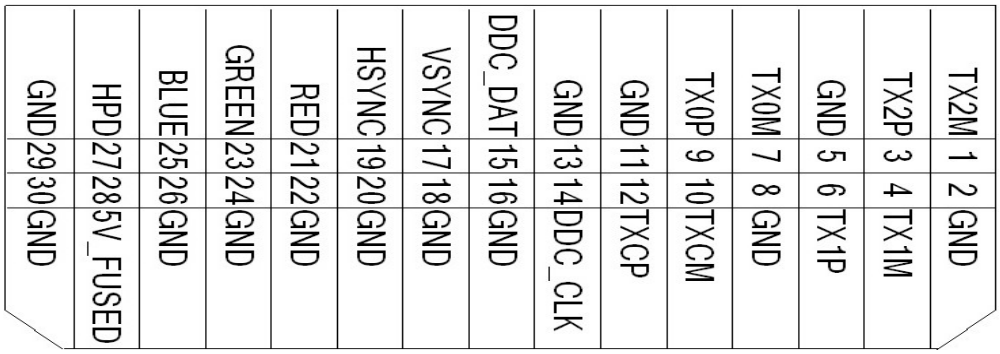
3.1 Connector Locations



3.2 Connector Signals

3.2.1 Display Connectors

Manufacturer / Type: HIROSE DF20G-30DP-1V, 30 position / 1mm pitch / dual row
These pin-headers carry TMDS, CRT and supporting signals. e.g. as needed on a typical DVI-I connector. Both connectors have identical pinout.
CAUTION: Pin1 location does not match Pin1 marker on connector housing !!



Signal	Description
5V_FUSED	5V / max.400mA supply for DDC EEPROM typically
DDC_CLK DDC_DAT	Display Data Channel Signals for DVI / HDMI / CRT 5V I/O
RED, GREEN, BLUE	RGB DAC Outputs for CRT Interface. Drives 75Ω load.
HPD	Hot Plug Detect Signal, Active High, 5V tolerant
HSYNC, VSYNC	Sync Signals for CRT Interface, 5V level
TX[0..2]M/P	TMDS Data Pairs 0..2 for DVI / HDMI
TXCM/P	TMDS Clock Pair

3.3 Fan Connector

Currently unused (Passive cooling)

3.4 Card Edge Connector

dFlat-PEG-M72 uses a standard card edge connector according to PCI Express Rev.1.1. The configuration is x16, electrically and mechanically. Lane widths of x1, x4 and x8 are supported, too. Please refer to PCI Express Specification for any signal details (www.pcisig.org)

4 Specifications

4.1 Electrical Specifications

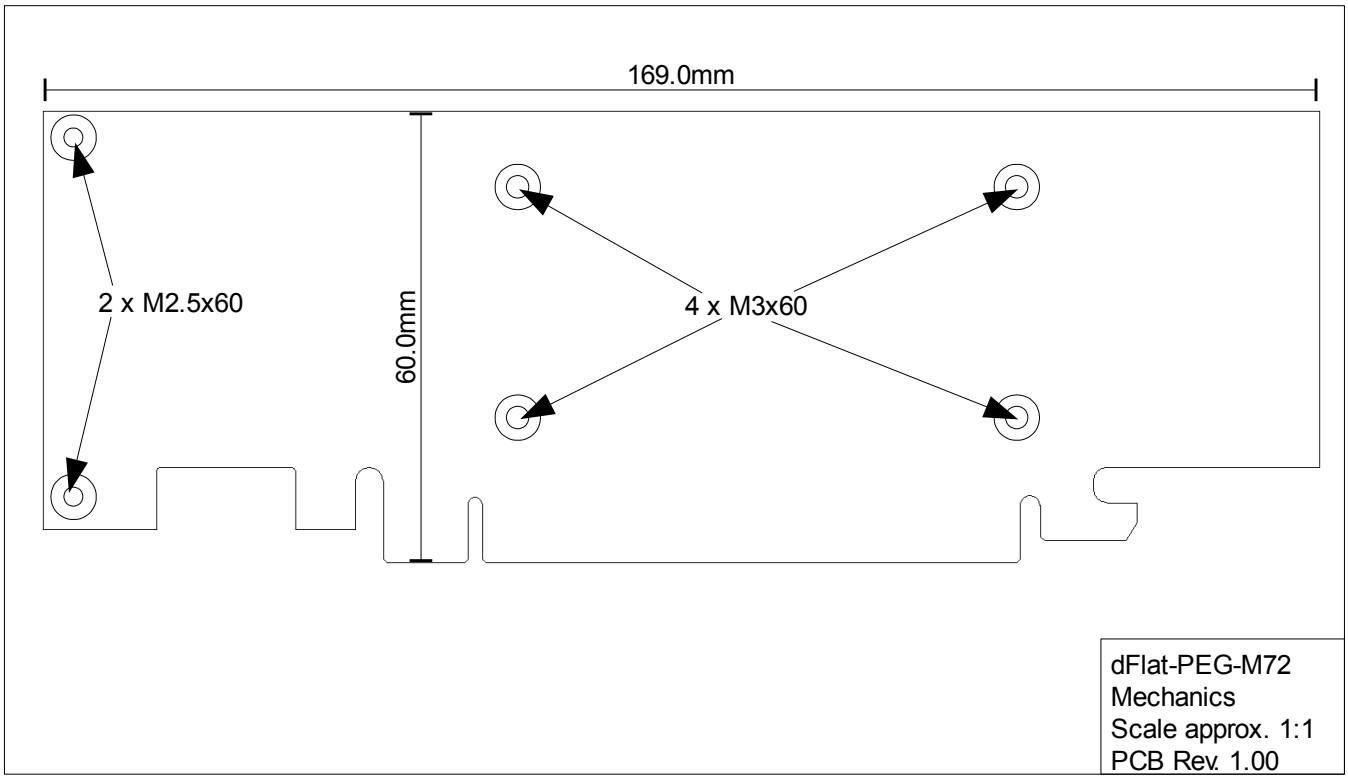
Supply Voltage.....12V / 3.3V DC from PCI Express
Voltage Ripple.....max.250mV peak to peak 0 – 20 MHz
Power Consumption.....max. 15W (application/memory dependant)

4.2 Environmental Specifications

Temperature (operating).....0 to +60 Deg.C
" (non operating).....-30 to +85 Deg.C
Humidity (operating).....10% to 90% (non condensing)
" (non operating).....5% to 95% (non condensing)

4.3 Mechanical Specifications

Overall dimensions comply with the low-profile PCI Express Card Electromechanical Specification 1.1. Please see the related documents for any details (www.pcisig.org).



5 Known Restrictions

PCB Rev. 110 & 120

No.	Description
1	Pin1 location on display connectors 1 & 2 wrong / mirrored (see above)
2	CRT on 2nd DVI-I not working during POST / DOS
3	HDCP on 2nd DVI not reliable

6 Document Revisions

Rev.	Date	Editor	Changes
1.0	02.10.2008	A.Kaudel	Initial Release
1.1	16.12.2008	A.Kaudel	DVI B clarifications, Security advice added

7 User Information

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Security advice

To protect the external power lines to peripheral devices the customer has to take care about:
- The wires to the external device have the right diameter to withstand the max. available current
- The housing of the external device fulfils the fire protection requirements of IEC/EN 60950.

8 Warranty / Support

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