

## XMC Graphics Adaptor, Rugged Conduction-Cooled



### APPLICATIONS

The XM 403/x33-RC is a high performance ruggedized conduction-cooled graphics adaptor suitable for any XMC compliant host board (CompactPCI®, VME, VXS, VPX etc). The on-board 3D/2D triple display controller manages the graphics processing. The XM 403/x33-RC independently supports, via a Pn4 or Pn6 connector, a digital flat panel (DFP) display with a Transition Minimized Differential Signaling (TMDS) interface, up to 2560 x 1600 pixel resolution, and a CRT with an RGB

interface, up to 2048 x 1536 pixel resolution. The interfaces can be driven with the same or two different images. Applications include industrial, control, transportation and defense sectors. Examples include high resolution color graphics, CAE/CAD/CAM, image processing as well as mapping systems. This board is rear I/O plug compatible with the XM 403/x33 and XM 403/x33-RA families.

### HIGHLIGHTS

- Ruggedized XMC Graphics Adaptor:
  - conduction-cooled to ANSI/VITA 20-2001 (R2005)
  - conformally coated
  - -40°C to +85°C operating temperature
- High performance 3D/2D triple display controller:
  - 256 Mbytes of gDDR2 DRAM
  - resolutions up to 2560 x 1600
  - color depth up to 32-bit
- Supports DVI, VGA and TV-out:
  - DVI-I, VGA, TV-out (PAL, NTSC) and HD TV (1080p) output via rear I/O Pn4 connector
- Supports composite video capture via TV-in:
  - PAL, NTSC and SECAM formats
  - video overlay capability
- Two independent display engines:
  - simultaneous display on any two interfaces
- 1 Mbits Flash EPROM for video BIOS
- XMC (Switched Mezzanine Card) format:
  - single size CMC (Common Mezzanine Card)
  - x8 PCI Express® interface
- Ruggedized air-cooled version (RA-Series):
  - -40°C to +75°C, conformally coated
  - see separate XM 403/x33-RC-RA datasheet
- Non-ruggedized air-cooled versions:
  - see XM 403/x33 datasheet
  - rear plug compatible with ruggedized versions
  - useful for bench development
  - use in commercial (non-rugged) applications
- Supported by Windows® XP, Windows® XP Embedded, Windows® 2000 and Linux®
- For use with ruggedized VME, VXS, CompactPCI, and other XMC host boards

## Ruggedized XMC Graphics Adaptor

- conduction-cooled to ANSI/VITA 20-2001 (R2005)
- conformally coated
- non-ruggedized version:-  
→ see XM 403/x33 datasheet
- air-cooled version:-  
→ see XM 403/x33-RA datasheet

## Graphics Processor

- utilizes S3 Graphics 2300E 3D/2D triple display controller, which provides:-  
→ 2 independent display engines  
→ multi-display capability  
→ digital resolutions up to 2560 x 1600  
→ analog resolutions up to 2048 x 1536  
→ 32-bit true color  
→ 256 Mbytes of 64-bit dual channel gDDR2 DRAM  
→ dual integrated RAMDAC  
→ 128-bit graphics engine  
→ PCI Express® interface  
→ supports video overlay
- 350MHz graphics engine clock:-  
→ depending on the application the RC-Series can be run at a reduced clock rate
- 375MHz gDDR2 memory clock:-  
→ depending on the application the RC-Series can be run at a reduced clock rate

## Digital Interface

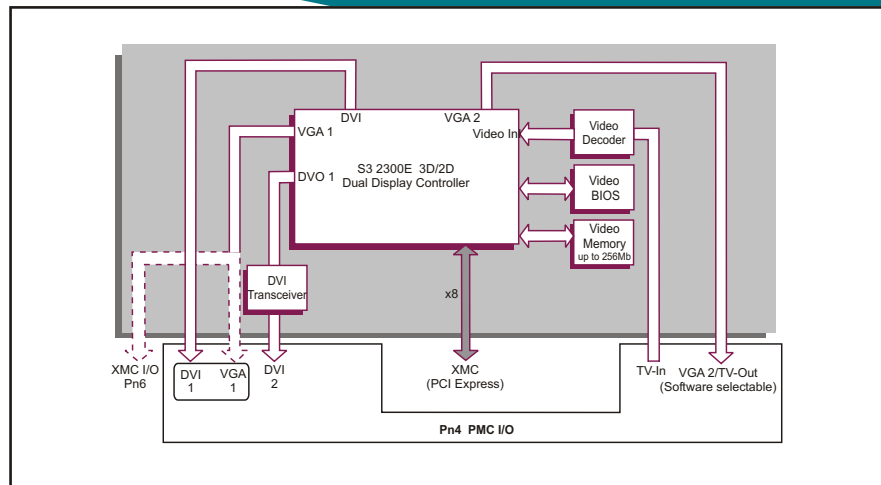
- supports 2 x TMDS compliant displays via:-  
→ DVI 1 accessible via rear I/O PMC Pn4 connector  
→ DVI 2 accessible via rear I/O PMC Pn4 connector
- supports active matrix (TFT) and passive (DSTN) panels
- up to 2560 x 1600 pixels
- up to 32-bit color
- 60Hz refresh rate

## Analog Interfaces

- supports 2 x RGB compliant display:-  
→ VGA 1 interface configured to either the rear I/O PMC Pn4 connector or the rear I/O XMC Pn6 connector  
→ VGA 2 interface to rear I/O PMC Pn4 connector
- VGA 2 interface cannot be used simultaneously with TV output interface:-  
→ uses same Pn4 pins  
→ software selectable
- up to 2048 x 1536 pixels
- up to 32-bit color

## TV Output Interface

- composite, S-Video or YPbPr (YUV) outputs via rear I/O PMC Pn4 connector:-  
→ HD-TV capable  
→ internal CE class encoder for, NTSC, PAL and HD-TV (all 18 DTV ATSC and DVB standards, including 1080p)
- TV output interface cannot be used simultaneously with VGA 2 interface:-  
→ uses same Pn4 pins  
→ software selectable



## Multiple Displays

- 2 independent display engines:-  
→ up to 2 displays driven simultaneously with the same or 2 different images  
→ the same or 2 different resolutions  
→ the same or 2 different refresh rates
- dependent on operating system software
- using multiple displays lowers the maximum available resolution, color depth and refresh rate

## TV Input Interface

- supports multiple standards including PAL, NTSC and SECAM
- automatic detection, supports 50Hz and 60Hz field frequency
- suitable for video capture and video stream input
- supports video overlay

## XMC Interface

- complies with PCI Express 1.1 protocol and electrical specification:-  
→ supports link training for x1 to x8 lane widths

## BIOS EPROM

- 1 Mbits Flash EPROM

## Software Support

- support for Windows® XP, Windows® XP Embedded, Windows® 2000, and Linux®

## Electrical Specification

- requires 3.3V and 5V supplies only:-  
→ +5V @ 1.5A; +/-5% (typical)  
→ +3.3V @ 500mA; +/-5% (typical)
- -12V supply not utilized
- +12V supply cannot be used

## Safety

- PCB (PWB) manufactured with flammability rating of 94V-0

## Environmental Specification

- operating temperature (VITA 47 Class CC4):-  
→ -40°C to +85°C
- storage temperatures (VITA 47 Class C4):-  
→ -55°C to +105°C
- 5% to 95% Relative Humidity, non condensing (operating and storage)
- altitude (operating):  
-1,000 to 50,000 feet (-305 to 15,240 metres)
- ruggedized and commercial air-cooled versions, see separate datasheets:-  
→ rear plug compatible  
→ air-cooled: XM 403/x33-RA  
→ commercial: XM 403/x33

## Mechanical Specification

- single size CMC (Common Mezzanine Card) 74mm x 149mm
- 10mm height stack module
- operating shock (VITA 47, conduction-cooled): 40g, 11ms, 1/2 sine
- operating random vibration (VITA 47 Class V3): PSD increasing at +3dB/octave (5Hz to 100Hz) PSD = 0.1 g<sup>2</sup>/Hz (100Hz to 1kHz) PSD decreasing at -6dB/octave (1kHz to 2kHz)

(PSD = Power Spectral Density)

## ORDERING INFORMATION

### Order Number Product Description (Hardware)

XM 403/133-10RC Ruggedized conduction-cooled XMC Graphics Adaptor, S3 Graphics 2300E 3D/2D triple display controller, VGA 1 via XMC Pn6 rear I/O  
 XM 403/233-10RC Ruggedized conduction-cooled XMC Graphics Adaptor, S3 Graphics 2300E 3D/2D triple display controller, VGA 1 via PMC Pn4 rear I/O

For commercial or ruggedized air-cooled versions, see separate datasheets or contact your local sales office