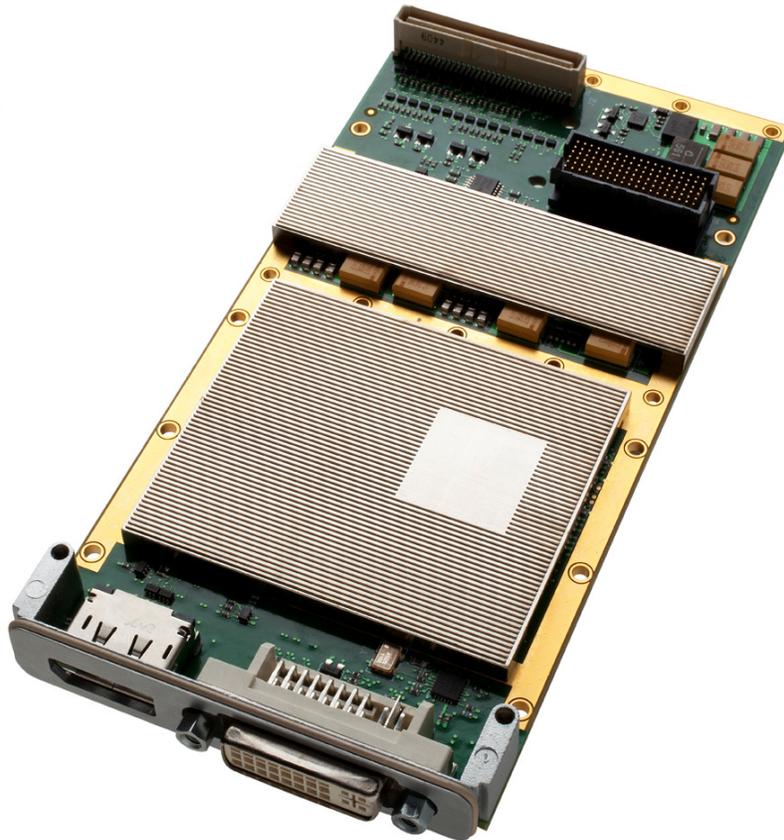


Tech Source

An EIZO Group Company

Condor 3000 Series User's Guide



Addendum Information

Changes made to:

Revision Number	Changes	Date
A	Initial Release	12-13-2011

The Tech Source logo and Tech Source Condor are trademarks of Tech Source, Inc. and X Window System is a trademark and product of X.org. AMD and Radeon are registered trademarks of Advanced Micro Devices, Inc.

All other products or services mentioned in this document are identified by the trademarks or service marks of their respective companies or organizations. Tech Source, Inc. disclaims any responsibility for any references to those trademarks herein.

All rights reserved. No part of this work may be reproduced in any form or by any means without prior written permission of the copyright owner.

RESTRICTED RIGHTS LEGEND: Use, duplication, or disclosure by the U.S. Government is subject to restrictions of FAR 52.227-14(g)(2)(6/87) and FAR 52.227-19 (6/87); or DFAR 252.227-7015(b)(6/95) and DFAR 227.7202-3(a).

The product described in this manual may be protected by one or more U.S. patents, foreign patents, and/or pending applications.

Table of Contents

1	Introduction	1
1.1	Purpose of This Guide	1
1.2	Overview of Condor 3000 Series	1
1.3	Overview of AMD Radeon E6760 Embedded GPU	1
1.4	Minimum System Requirements	2
1.5	Related Documents	2
2	Hardware Installation	2
2.1	Installation Instructions	2
3	Linux Display Driver Installation	3
3.1	System Overview	3
3.2	Linux Installation Requirements	3
3.3	Linux Installation Procedure	4
4	Windows Display Driver Installation	6
4.1	System Overview	6
4.2	Windows Installation Procedure	6
5	RTOS Support	7
6	Technical Assistance	7
6.1	Who to Call for Help	7
6.2	Company Website	8
Appendix A:	Warranty	8

1 Introduction

1.1 Purpose of This Guide

- To provide information about the Condor 3000 Series cards.
- Confirm the user has the necessary system requirements required for the 3000 series card.
- Provide instructions for obtaining and installing the AMD Catalyst Proprietary Display Driver.
- How to install the Condor 3000 Series card in a SBC (single board computer).
- Better understand the use of this product.

1.2 Overview of Condor 3000 Series

The Condor 3000 Series graphics cards are XMC/PMC based products designed for the embedded, defense and avionics markets. While these cards offer very high performance graphics, they are primarily designed for GPGPU applications. Products in this series offer outputs, normally through rear I/O connectors. The output types and formats that are supported depend upon the model. The products come in several variations: air cooled or conduction cooled and commercial (standard) or rugged. All technical information is discussed in detail in the **Condor 3000 Series Technical Manual**.

The Condor 3000 Series is based on the AMD E6760 Embedded GPU. The Windows and Linux display drivers for the product are available for download from AMD's support side (discussed in **Section 3** and **Section 4**). If RTOS (real time operating system) drivers are needed they can be developed separately at additional cost and are beyond the scope of this manual. Please contact Tech Source directly for details on how to purchase the RTOS driver for your application, project or program.

While Condor series products are commercial off-the-shelf (COTS) products, in some instances, products may be customized to meet the application requirements. In these instances, separate software or hardware specifications may be provided.

Tech Source also offers some resources for OpenCL programming. A white paper on GPGPU is available on our website.

1.3 Overview of AMD Radeon™ E6760 Embedded GPU

The Condor 3000 series is based on the AMD Radeon™ E6760 embedded discrete graphics processor (GPU). The advanced 3D graphics engine and programmable shader architecture support Microsoft® DirectX® 11 technology for superior graphics rendering. The third generation unified video decoder enables dual HD decode of H.264, VC-1, MPEG4 and MPEG2 compressed video streams. Using the AMD Radeon™ E6760 GPU, designers of casino gaming, arcade and medical imaging systems can deliver products with a compelling, competitive advantage.

Delivering 576 GFLOPs of peak single precision floating point performance, the AMD Radeon™ E6760 GPU is ideal for general purpose, graphics processing unit (GPGPU) applications such as ultrasound, radar and video surveillance. Supported by the industry standard OpenCL™ 1.1 programming language, GPGPU application software development is accelerated with the AMD Stream Software Development Kit (SDK). The AMD Stream SDK includes developer tools such as compiler, debugger, code profiler and math libraries.

1.4 Minimum System Requirements

The Condor 3000 Series graphics cards require the following minimum system hardware and software capabilities

- Single Board Computer with a XMC interface (VME, VPX or cPCI).
- AMD, Intel or PowerPC CPU.
- 1GB System RAM.
- Some level of system integration will be required to handle heat dissipation in both conduction and convection cooled environments.
- The Condor 3000 Series cards can consume up to 43W from the chassis' power supply at peak performance (5V or 12V rail depending on the SBC). The cards can be configured for lower max power consumption. Please contact Tech Source to discuss such configurations.

1.5 Related Documents

Condor 3000 Series Technical Manual – Provides complete technical specifications, including exact pin-out, interface information and ordering information.

2 Hardware Installation

2.1 Installation Instructions

The Condor 3000 Series graphics card installation is simple and consists of a few easy steps.

- Step 1: Shut down the system and turn the power OFF. Remove the single board computer. Be mindful of ESD, and be sure to use proper ESD precautions.
- Step 2: Install the Condor 3000 Series graphics card in a XMC site using the provided mounting hardware. Attach the Condor graphics card to the PMC/XMC connectors and screw down the standoffs. For a conduction cooled board, the SBC company should have provided mounting screws. Note that Thermal gap-pad material can be installed inbetween the condor card and the SBC heatsink to help with cooling.
- Step 3: Re-install the single board computer, attach any previously removed cables and connect a video cable from the Condor outputs to a monitor.

The Condor 3000 Series graphics card is now installed and the system is ready for display driver installation.

Refer to **Section 3** for installing and configuring the software on Linux.

Refer to **Section 4** for installing and configuring the software on Windows.

NOTE: Once cables are connected, you may want to label them and the connectors to avoid any confusion should they need to be disconnected.

NOTE: Rear I/O will require a special/custom cable, RTM or PIM to get a video output. For rear I/O pin-out info, please refer to the **Condor 3000 Series Technical Manual**

3 Linux Display Driver Installation

3.1 System Overview

The following section describes how to install and configure the display driver for the Condor 3000 Series graphics cards for the Linux operating system.

ATI Catalyst Proprietary Display Driver can be obtained from AMD's support page :
<http://ati.amd.com/support/driver.html>

From the choices provided, select the type of system (Embedded Graphics), the product family (Radeon Embedded), the product (E6760), your Linux operating system, and then select 'Display Results'.

Direct link to the Linux display driver:

http://support.amd.com/us/gpudownload/linux/Pages/radeon_linux.aspx

The ATI Proprietary Linux drivers are designed to support the following Linux distributions.

- Red Hat Enterprise Linux Suite
- Novell/SuSE Linux Enterprise
- Ubuntu

3.2 Linux Installation Requirements

Before attempting to install the AMD Catalyst proprietary driver, the following software must be installed:

- X.org 6.9, 7.0, 7.1, 7.2, 7.3, 7.4, 7.5 or 7.6
- Linux kernel 2.6 or above
- glibc version 2.2 or 2.3
- POSIX Shared Memory (/dev/shm) support is required for 3D applications.

The following packages must be installed in order for the AMD Catalyst driver for Linux to install and work optimally:

- XFree86-Mesa-libGL
- libstdc++
- libgcc
- XFree86-libs
- fontconfig
- freetype
- zlib
- gcc

When installing the Linux driver, make sure the kernel and kernel-devel package versions match. The YUM updater can be used as well as other update tools to get the packages above. The RPM utility should be installed and configured correctly on the system if the install will be done using RPM packages. Please contact Tech Source directly for more support

This information can also be found in the Release Notes for the ATI Catalyst Proprietary Display Driver for Linux.

3.3 Linux Installation Procedure

Follow the steps below to install the Linux ATI Catalyst Proprietary Display Driver on the system.

1. Install a supported Condor 3000 Series graphics card in the single board computer and boot the system. Refer to **Section 2** for steps.
2. Log in as root on the target system.
3. Uninstall any previous versions of the ATI software that may be on the system.

To remove the software, navigate to the folder such as /usr/share/ati which holds the uninstall file *fglrx-uninstall.sh* and type the following command:

```
prompt# sh ./fglrx-uninstall.sh
```

4. Create a local location for your ATI Proprietary Linux drivers, such as: /usr/share/ati
This is done by using the following command:
prompt# **mkdir /usr/share/ati**

5. The E6760 Linux driver can be obtained from AMD's website.

http://support.amd.com/us/gpudownload/linux/Pages/radeon_linux.aspx

6. Click on the **Release Notes** link for more advanced installation instructions.
7. Click on the download button to begin downloading the software. Save the software package to the local location you created in step 4.
8. Continue with the software download. A dialog window will appear. Follow each dialog prompt until the software is properly installed.
9. After the download is complete, change your directory to the local location and type '**sh**' followed by the package name.

For example :

```
prompt# cd /usr/share/ati  
prompt# sh ./ati-driver-installer-*.run
```

A software dialog box will open and prompt you to continue with the installation.

10. Read the License Agreement and then click 'I Agree' to continue the installation, or click 'Cancel' to terminate the installation. Select **Install Driver** and click **Continue**. The 'Mode of Installation' dialog box is displayed.
11. Select '**Automatic**' and click '**Continue**'. The ATI Proprietary Linux Driver is installed, and the 'Installation Complete' dialog box is displayed.
12. Click 'View HTML Release Note' for last minute driver information, or 'Exit' to close the ATI Proprietary Linux Driver Installer.
13. After downloading the software in the location, you then need to use '**aticonfig**' to configure all display devices.

14. Launch the Terminal Application/Window and, as super user, change directories to /usr/bin for X.Org versions newer than 7 or /usr/X11R6/bin for X.Org versions older than 7 and type one of the following commands:

For single screen mode type:

```
prompt# aticonfig --initial
```

For dual screen mode type:

```
prompt# aticonfig --initial=dual-head
```

If 'aticonfig' fails to work refer to the 'aticonfig' help by typing the command:
'aticonfig -help'

15. Reboot the system.
16. The ATI Catalyst Proprietary Display Driver is now installed.

4 Windows Display Driver Installation

4.1 System Overview

The following section describes how to install and configure the Condor 3000 Series graphics cards software drivers for the Windows Operating system.

AMD Catalyst Display Driver can be obtained from AMD's support page :
<http://ati.amd.com/support/driver.html>

From the choices provided, select the type of system (Embedded Graphics), the product family (Radeon Embedded), the product (E6760), your Windows operating system, and then select 'Display Results'.

Direct link to the Windows display driver :

http://support.amd.com/us/gpudownload/embedded/Pages/embedded_windows_all.aspx

The AMD Catalyst Display Driver for Windows is designed to support the following Windows operating system versions:

- Windows XP
- Windows 7
- Windows Embedded (Please contact Tech Source)

4.2 Windows Installation Procedure

Follow the steps below to install the AMD Catalyst Display Driver for Windows.

1. Install a supported Condor 3000 Series graphics card in the single board computer and boot the system. Refer to Section 2 for steps.
2. Log in to the operating system as an administrator on the target system.
3. Uninstall any previous versions of the AMD software that may be on the system.
To remove the software, use the 'Add/Remove Programs' function found under the 'Control Panel' and select the appropriate AMD software to be removed.
4. Create a local location for your AMD Windows driver, such as: **C:\temp**
5. Open an Internet Browser in your Windows environment.
6. Navigate to the following link to install the software and drivers:
http://support.amd.com/us/gpudownload/embedded/Pages/embedded_windows_all.aspx
7. Click on the download button to begin downloading the software. Save the software package to the local location you created in step 4.
8. After the download is complete, change your directory to the "saved" file folder and unzip the compressed file:

For Example:

8.89-110810a2-124124C-EDG_Direct.zip

9. Double-click the uncompressed *setup.exe* file to begin installation. A software dialog box will open and prompt you to continue with the installation.

10. Read the License Agreement and then click 'I Agree' to continue the installation, or click 'Cancel' to terminate the installation. The 'Mode of Installation' dialog box is displayed.
11. For the type of installation, select Express and then click 'Yes' to install the AMD Windows driver. When the installation is finished, the 'Installation Complete' dialog box will be displayed.
12. Select 'Yes' to restart the system or 'No' to cancel restart. (A restart is necessary to allow the drivers to attach to the Condor 3000 Series board and to install the software changes).
13. The AMD Catalyst Display Drivers is now installed.

5 RTOS Support

There is no Real Time Operating System (RTOS) support for the Condor 3000 series available at this time. The driver can be developed specially at the customer's request.

RTOS support is available on our Condor 2000 Series products and comes at an additional cost

For further information please contact Tech Source at condor-support@techsource.com

6 Technical Assistance

6.1 Who To Call For Help

If you need help, please call our Technical Support Team at (800) 330-8301, or directly at (407) 262-7100 between the hours of **9:30am - 5:30pm EST** Monday through Friday.

Please have the software part number, version, and serial number for your Condor 3000 Series card(s) available when contacting Tech Source in order to expedite support. Please make a note of this information in the area below:

DETAILS OF YOUR CARD(S):

P/N: _____

Model Name: _____

Serial Number(s): _____

NOTE: Technical Assistance will be available only for products under standard or extended warranty.

Our email address is: condor-support@techsource.com

International customers may use email or our fax line at (407) 339-2554.

6.2 Company Website

Detailed product information and Frequently Asked Questions (FAQs) are available on our website located at:

www.techsource.com

If you need further assistance with any questions or concerns not found in this section, please contact our technical support group via condor-support@techsource.com

Appendix A: Warranty

The Condor products are warranted for one (1) year from date of shipment. During the warranty period, Tech Source, Inc. will, at its discretion, repair or replace a defective component at its expense. Freight charges associated with the repair or replacement of components under warranty are to be shared by Tech Source, Inc. and the customer. All customers, domestic and international, shall bear the freight charges for the product's return to Tech Source, Inc. Tech Source, Inc. shall bear the outbound freight charges up to \$20.00 (USD) per returned product, whether domestic or international. Any additional freight charge shall be the responsibility of the customer. Technical support (via telephone/facsimile/email) is provided free of charge for one (1) year from date of shipment. The installation of any Tech Source, Inc. hardware/software product is the sole responsibility of the customer.

Tech Source, Inc. offers a continuing hardware/software support program that provides telephone consultation and any required hardware repair after the expiration of the warranty period. Contact Tech Source, Inc. for further warranty information.

Customers will be charged an hourly rate plus materials (\$350.00 USD minimum) for repairs and/or maintenance performed by Tech Source, Inc. that are not covered by a Tech Source, Inc. warranty or maintenance contract.

DOCUMENTATION IS PROVIDED "AS IS" AND ALL EXPRESSED OR IMPLIED CONDITIONS, REPRESENTATIONS AND WARRANTIES, INCLUDING ANY IMPLIED WARRANTY OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE OR NON-INFRINGEMENT, ARE DISCLAIMED, EXCEPT TO THE EXTENT THAT SUCH DISCLAIMERS ARE HELD TO BE LEGALLY INVALID.