

IDE2410 ATA-100 IDE RAID Card

Version 1.0

User Manual



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Introduction

The PCI Ultra ATA/100 IDE RAID Controller Card provides an inexpensive way for users to increase the speed or fault-tolerance of their PC. RAID levels 0 (striping), 1 (mirroring) and 0+1 (mirroring a stripe set) are supported on up to 4 IDE drives. The card supports Ultra ATA/100 hard drives for maximum performance, but is also compatible with older drives. This card is the perfect solution for adding the redundancy of mirroring to small business file servers, or improving the drive speed on workstations with striping.

1.0 Features

The PCI is a true 32-bit PCI-Bus IDE card. It supports the following I/O features:

- ✂✂ PCI "Plug and Play" compatibility
- ✂✂ Fully Ultra ATA/100 compatible
- ✂✂ Supports bus master DMA at 100Mbytes/sec PCI burst rate
- ✂✂ Supports maximum IDE/ATA data transfer rate of 100 MB/sec
- ✂✂ Supports to 4 IDE/ATA devices
- ✂✂ Fully backward compatible with Ultra ATA/66, Ultra ATA/33, EIDE/Fast ATA-2, IDE and ATAPI devices
- ✂✂ Compliant to ATA/ATAPI-5 specification and PCI specification version 2.1
- ✂✂ Auto identifies and configures drive type
- ✂✂ Auto detects and supports Ultra Mode (ATA/EIDE) transfers

2.0 System Requirements

- ✂✂ The device must support Ultra ATA/100 mode.
- ✂✂ The motherboard and system BIOS or an add-on IDE controller card must support Ultra ATA/100 mode.
- ✂✂ The operating system must support Direct Memory Access (DMA) such as Windows 98.
- ✂✂ The IDE cable must be 80 wires/40-pin and the length of the cable should not exceed 18 inches (44.1 cm).
- ✂✂ Driver support Windows 95/98/ME, Windows NT4.0, Windows 2000 and Windows XP.

3.0 Installing the ATA/100 IDE Controller Card

1. Turn off your computer and all external devices connected to it.
2. Disconnect your computer from the power sources.
3. Open the computer case.
4. Find an available PCI slot (these are usually the white slots found on the motherboard) and remove the slot bracket. Save the bracket screw for later.
5. Align the ATA/100 IDE controller card horizontally with respect to the PCI slot and insert it into the slot firmly and evenly. Take care not to force it into the slot. Once you have properly positioned the ATA/100 IDE controller card into the slot, fasten it to the computer case with the bracket screw you have saved.
6. Connect the HDD LED connector of the computer case to the HDD Busy LED (J4) connector on the ATA/100 IDE controller card.
7. Connect any Ultra DMA/100 device to the connector(s) of the ATA/100 IDE controller card with the 80 wires/40-pin IDE cable. The BLUE connector of the 80 wires/40-pin IDE cable must be connected to the IDE connector on the ATA/100 IDE controller card.
8. Replace the computer case. Make sure to reconnect all external devices to your computer.

4.0 Driver Installation

⚡ Windows 2000/XP Fresh Installation Instructions

Follow these instructions in this section if you are freshly installing Windows 2000/XP.

You may start up Windows 2000/XP installation from CD. If your CD-ROM drive is not bootable, you can start up with floppy diskettes.

1. If you choose to install Windows 2000/XP from floppies, create four Windows 2000/XP set up floppy diskettes from CD before installation.
2. Power off the system and connect hard drives and CD-ROM drives to the CMD IDE controller. Insert IDE2410 IDE controller to a PCI slot.
3. Put the diskette #1 into drive A or put the CD into CD-ROM/DVD drive if you choose to boot up from CD. Turn on your computer system.
4. Press 'F1' key to enter IDE mode when IDE controller BIOS is scanning devices.
Notes: This step is required only when you are using a controller BIOS that default to RAID mode.
5. Continue to insert floppy diskette #2, #3, #4 if you are installing from floppy diskettes.

6. Wait while files are copied from floppy or CD in the text mode installation.
Caution: Do not press F6 for third party SCSI or RAID driver installation during this time. CMD PCI0648 controller does not use SCSI or RAID driver under Windows 2000/XP.

7. Follow setup instructions to select your choices for partitions and file system.

8. After setup examines your disks, it would copy files to Windows 2000/XP installation folders and restart the system.

Again, Press 'F1' key to enter IDE mode when IDE controller BIOS is scanning devices if you are using a controller BIOS that default to RAID mode.

The setup program would continue to finish installation after restart.

9. Wait until Windows 2000/XP finishes installing devices, regional settings, networking settings, components, and final set of tasks, reboot the system.

10. Go to device manager and install CMD IDE controller driver for Windows 2000/XP by the following steps

a. Right click on my computer icon, select properties, left click on 'Hardware' tab, and then on 'Device Manager' button.

b. Double click on 'IDE ATA/ATAPI controllers', then on 'Standard Dual Channel PCI IDE controller', left click on 'Driver' tab, then on 'Update Driver' button to bring up 'Upgrade Device Driver Wizard.'

c. Select 'search for a suitable driver for my device' and click 'next' when install hardware drivers.

Insert the Driver CD with IDE2410 driver.

Select 'CD-ROM drive' and click 'next' when locate driver files.

At search results, the Driver Wizard either found the driver to install.

Click 'OK' to copy driver file from CD-ROM.

You must restart the computer for the IDE2410 driver to take effect.

Notes: Make sure the transfer mode settings is "DMA if available" in the IDE channel properties under device manager to get maximal performance.

✎ Install Windows 2000 on Windows NT4.0

Follow these instructions in this section if you are upgrading from NT4 to Windows 2000.

1. Boot up your system to the Windows NT 4.0 desktop.

2. Insert Windows 2000 CD to the CD-ROM/DVD drive.
3. Double click the SETUP icon in the CD root directory.
4. Double click "install Windows 2000" and select "upgrade to Windows 2000", then follow the instructions prompted by the setup program to upgrade Windows 2000.
5. After the setup program copies installation files to disk, the system would restart.
6. Press 'F1' key to enter IDE mode when IDE controller BIOS is scanning devices.
Notes: This step is required only when you are using a controller BIOS that default to RAID mode.
7. Wait while files are copied from CD in the text mode installation.
Caution: Do not press F6 for third party SCSI or RAID driver installation during this time. CMD PCI0648 controller does not use SCSI or RAID driver under Windows 2000.
8. Follow step 8,9,10 of section I) to finish upgrading and driver installation.

- Notes: a. Do not forget to press 'F1' key to enter IDE mode in step 8.
b. install IDE2410 driver for Windows 2000 following instructions in step 10.

Upgrade Windows 2000/XP

Follow these instructions in this section if you are installing newer version of Windows 2000/XP to your current Windows 2000/XP.

1. Boot up your system to the Windows 2000/XP desktop.
2. Insert the newer version of Windows 2000/XP CD to the CD-ROM/DVD drive.
3. Double click the SETUP icon in the CD root directory.
4. Click "install Windows 2000/XP" and select "upgrade to Windows 2000/XP", then follow the instructions prompted by the setup program to upgrade Windows 2000/XP.
5. After the setup program copies installation files to disk, the system would restart.
6. Press 'F1' key to enter IDE mode when IDE controller BIOS is scanning devices.

Notes: This step is required only when you are using a controller BIOS that default to RAID mode.

7. Wait while files are copied from CD in the text mode installation.
Caution: Do not press F6 for third party SCSI or RAID driver installation during this time. CMD PCI0648 controller does not use SCSI or RAID driver under Windows 2000/XP.
8. After setup examines your disks, it would copy files to Windows 2000/XP installation

folders and restart the system.

Again, Press 'F1' key to enter IDE mode when IDE controller BIOS is scanning devices if you are using a controller BIOS that default to RAID mode.

The setup program would continue to finish installation after restart.

9. Wait until Windows 2000/XP finishes installing devices, regional settings, networking settings, components, and final set of tasks, reboot the system.

Notes: No need to re-install IDE2410 driver again unless it did not exist before the upgrade.

⚡ **Windows 95/98/SE Fresh Installation Instructions**

Follow these instructions in this section if you are freshly installing Windows 95/98/SE.

You may start up Windows 95/98/SE installation from CD. If your CD-ROM drive is not bootable, you can start up with floppy diskettes.

1. Install Windows 95/98/SE using the onboard IDE controller. Do not plug in CMD PCI-IDE controller card at this time.
2. When the operating system installation is completed and system is up and running. Insert the installation driver CD into a CD-ROM/DVD.
3. Shut down the system.
4. Inset IDE2410 PCI-IDE controller into a PCI slot that supports bus-master DMA.
(Your computer's manual should identify the bus-master slots.)
10. Connect your IDE drives to the IDE2410 PCI-IDE controller card.
11. Power up the system. The IDE2410 PCI-IDE controller card on-board BIOS should automatically detect the drives connected to it once power-up is complete.
12. System will go through the enumeration process and detect new hardware. Click "Next" to step by step and install the driver from CD-ROM/DVD. Driver's directory is \IDE\IDE2410\
At the end of the process, Windows will prompt "to finish setting up your new hardware, you must restart your computer." Simply select "No" for this message and all the other messages that follow. Do a manual restart from desktop instead (start -> shut down -> restart).

⚡ **First time installing IDE2410 driver with existing Windows 95/98/SE**

Windows 95/98/SE will detect the addition of new hardware. Insert your driver CD into your CD-ROM drive. It will start the software installation process. Click "Next" to step by step and install the driver from CD-ROM/DVD. Driver's directory is \IDE\IDE2410\.

5.0 RAID Explained

⚡ **RAID - Redundant Array of Independent Disks**

RAID technology manages multiple disk drives to enhance I/O performance and provide

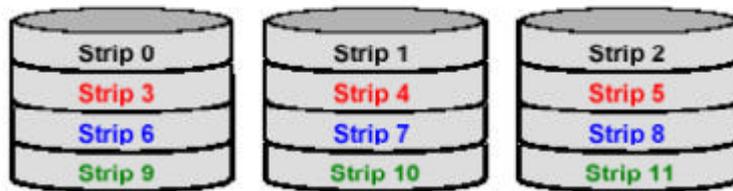
redundancy in order to withstand the failure of any individual member, without loss of data.

Medley provides three RAID Set types, Striped (RAID 0), Mirrored (RAID 1), and Mirrored-Striped (RAID 0+1).

✂ **Disk Striping (RAID 0)**

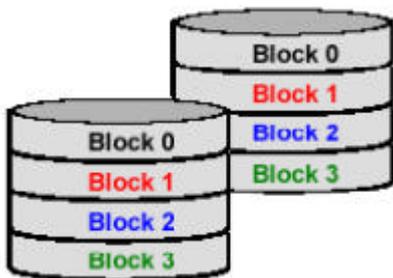
Striping is a performance-oriented, non-redundant data mapping technique. While Striping is discussed as a RAID Set type, it actually does not provide fault tolerance. With modern ATA bus mastering technology, multiple I/O operations can be done in parallel, enhancing performance. Striping arrays use multiple disks to form a larger virtual disk.

This figure shows a stripe set using three disks with stripe one written to disk one, stripe two to disk two, and so forth.



✂ **Disk Mirroring (RAID 1)**

Disk mirroring creates an identical twin for a selected disk by having the data simultaneously written to two disks. This redundancy provides instantaneous protection from a single disk failure. If a read failure occurs on one drive, the system reads the data from the other drive.



✂ **Mirrored-Striping (RAID 0+1 also known as RAID 10)**

A Mirrored-Striped Set does just what it says, combining both Striping and Mirroring technologies to provide both the performance enhancements that come from Striping and the data availability and integrity that comes from Mirroring. When data is written to a Mirrored-Striped Set, instead of creating just one “virtual disk” as Striping would do, a second, Mirrored “virtual disk” is created as well.

About creating or deleting RAID step, please see the 3700/3710 PDF file on the Driver CD.