Computer Tear Down & Build back Lab Stephen Smith

METC 10641C Introduction Engineering Technology April 20, 2012

Computer: HP desktop – ID: D320033 S/N: 2UA714UWNJ P/N: EN227UT #ABA

Found from the web Site: <https://h10057.www1.hp.com/ecomcat/hpcatalog/specs/provisioner/05/EN227UT.htm>

The following information on the computer follows:

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| https://h10057.www1.hp.com/ecomcat/hpcatalog/images/LOGO.gif | EN227UT - HP dx5150 AMD Athlon 64 X2 4200+ 1GB/160G DVD+/-RW WXP Pro SP2 Small Form Factor PC |

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| **Summary** |
| Offering the perfect combination of performance, reliability and investment protection to any IT environment. For businesses that require superior stability and manageability with low lifecycle costs, or desktops with proven technology, superior price/performance and a wide choice of features, or even entry-level PCs that balance price and essential computing capabilities – the HP Desktop family holds the solution. |
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| [**Related products**](https://h10057.www1.hp.com/ecomcat/hpcatalog/specs/provisioner/05/EN227UT_link.htm) |
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| **Key Features** |
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| * At the heart of the HP dx5150 are the award-winning AMD Athlon™ 64 and Sempron™ processors, designed to handle the most challenging business applications. Combining an ATI RADEON® XPRESS 200 chipset, Broadcom NetXtreme Gigabit NIC, dual monitor capability, and a wide range of additional features, the dx5150 delivers the performance required of the most demanding user.
* New technologies found on the latest AMD processors help increase productivity and reduce ownership costs. The AMD Athlon 64 processor is fully compatible with existing user software and also provides a seamless transition to next-generation 64-bit applications. AMD Cool ‘n Quiet™ technology significantly reduces processor power consumption and fan noise to create a quieter work environment.
* The HP dx5150 features AMD Enhanced Virus Protection technology, which used with Windows XP SP2 provides business data security against a number of dangerous viruses. HP Protect Tools Embedded Security is a hardware/software solution that provides platform authentication, cryptographic functions and data transmission verification. Physical security features include a security loop and Kensington lock support, which allow the PC to be secured to a fixed structure.
* The expandable chassis is designed to fit neatly into any workspace and features tool-less covers and drives enabling quick and easy access for upgrades and general service. The HP dx5150 is backed by a one-year warranty with award-winning HP Service and Support as standard to ensure maximum productivity and return on investment.
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**Technical Specifications**

**Audio:** Integrated Realtek AC97 audio with premium internal speaker

**Expansion slots:** 2 low-profile PCI, 1 low-profile x1 PCI-E and 1 low-profile x16 PCI-E

**Faxing:** Optional Hi-Speed 56K PCI SoftModem

**Input devices:** PS/2, USB or USB BG1650 2004 standard keyboard

 2-Button PS/2 scroll mouse or 2-button USB optical scroll mouse

**Memory:** From 256 MB to 4 GB DDR1-Synch DRAM PC-3200 non-ECC (dual channel

configurations); Expandable to 4 GB through four industry-standard DIMM slots up to Maximum 4 GB DDR1-Synch DRAM.

**Ports:** Rear: 6 USB 2.0, 1 VGA, 1 DVI-D, audio in/out, 1 microphone, 1 serial, 1 parallel, 2

PS/2, 1 RJ-45; Front: 2 USB 2.0 headphone and microphone

**Power:** Input voltage 90 – 132 / 180 – 264 VAC, 50/60 Hz, passive PFC (115v / 230v line)

 200 watts maximum

 **Processor:** ATI RADEON® XPRESS 200 Chipset

 **Software:** In all models: Adobe Acrobat Reader and Help & Support, Maple Restore CD and

 Norton Antivirus 2005; In some models only: DVD Editing & Authoring Software, Dantz Retrospect, Altiris Deployment Solution, PDF Complete and DVD Playback Software, CD Editing & Authoring.

**Operating Software:** Genuine Windows XP Professional x64 Edition

**Storage:**

Optical drives: 48X Max CD-ROM Drive, 48X/32X/48X CD-RW Drive, 16X/40X DVD-

ROM, 48X/32X/48X/16X Combo DVD-ROM/CD-RW Drive, 16X DVD+R/-RW Drive

Flexible disk drive: Optional 1.44 MB Diskette Drive

Hard disk drive: 7200 rpm

Disk subsystem controller: SMART III Serial ATA 1.5 Gb/s

Internal drive bays: 1 internal 3.5 inch

External drive bays: 1 external 5.25 inch and 1 external 3.5 inch

**Video:** ATI RADEON® XPRESS 200 chipset with integrated ATI RADEON® x300 graphics

**What was found during the tear down of the CPU:**

**Processor:** AMD64 Athlon 64 X2: ADA4200DAA5CD; LCBQE; 0646UPMW: Z220477K60568

Found on line about the processor:

The **Athlon 64 X2** is the first dual-core desktop CPU designed by AMD. It was designed from scratch as native dual-core by using an already multi-CPU enabled Athlon 64, joining it with another functional core on one die, and connecting both via a shared dual-channel memory controller/north bridge and additional control logic. The initial versions are based on the E-stepping model of the Athlon 64 and, depending on the model, have either 512 or 1024 KB of L2 Cache per core.

The benefit of dual-core processors like the X2 is their ability to process more software threads at the same time. The ability of processors to execute multiple threads simultaneously is called thread-level parallelism (TLP). By placing two cores on the same die, the X2 effectively doubles the TLP over a single-core Athlon 64 of the same speed.

Having two cores, the Athlon 64 X2 has an increased number of transistors. The 1 MB L2 cache 90 nm Athlon 64 X2 processor is 219 mm² in size with 243 million transistors [[4]](http://en.wikipedia.org/wiki/Athlon_64_X2#cite_note-3) whereas its 1 MB L2 cache 90 nm Athlon 64 counterpart is 103.1 mm² and has 164 million transistors [[5]](http://en.wikipedia.org/wiki/Athlon_64_X2#cite_note-4). The 65 nm Athlon 64 X2 with only 512 KB L2 per Core reduced this to 118 mm² with 221 million transistors compared to the 65 nm Athlon 64 with 77.2 mm² and 122 million transistors. As a result, a larger area of silicon must be defect free. These size requirements necessitate a more complex fabrication process, which further adds to the production of fewer functional processors per single silicon wafer. This lower yield makes the X2 more expensive to produce than the single-core processor.

**Memory:** Found 2: Qimonda 512MBAMD64 DDR 400 CL3: P/N: HYS64D64320HU-5-6 Chips are ATI-1XP 400 SB400 218S4EASA32HG. This would be a total of 1GB of system memory.

Found on line about Qimonda:

**Qimonda** AG, was a memory company split out of Infineon Technologies on 1 May 2006, to form at the time the second largest DRAM company worldwide. Headquartered in Munich, Germany, Qimonda was a 300 mm manufacturer, and one of the top suppliers of DRAM products for the PC and server markets. At its height in 2007, Qimonda employed approximately 13,500 personnel worldwide, from whom 1,800 were employed in R&D with access to four 300 mm manufacturing sites and operating six major R&D facilities, and included a chip packaging complex in Vila do Conde, Portugal and its lead R&D center in Dresden, Germany, in total covering three continents. During this time, and on into 2008/09, the price of DRAM continued to decline due to market oversupply, resulting in significant corporate financial losses throughout 2008. In May 2010 the Qimonda signs were permanently removed from the Sandston, Virginia facility.

**CARD:** HP – M/N KU-204IN USB PCI card Ver. 10 P/N: 412839-001 This is a USB expansion card for the computer. A search on the internet only found websites selling these cards from $50 to $100 dollars.

**Hard drive:** Western Digital WD1600 JS; MDL: WD1600JS-60MHBS – 12V DC 0.90A 160GB P/N: 381653-002. 200 Obviously the hard drive worked for I could access the programs and I played Minesweeper before teardown and after teardown. This test confirmed, at a limited scope, that the hard drive was functioning

**Power Supply:** Bestec Hewlett Packard P/N: 4A422-111 Model: FLX-250FIL Input 100-127V 6Amps 50-60Hz. 200Watt Max - Output 12Volts.

**DVD:** Hewlettt Packard – Lightscribe DVD Writable CD-RW Drive Model: GSA-H21L 12 volt 1.3Amp. Did not have a DVD to test the drive. Therefore function not known. The CPU did recognize the drive and did not note and error in function

**OTHER ITEMS:**

 Smartmedia XP card drive: for external memory cards and flash drives, Compact Flash 1/11 drive, MS PRO/MS PRO Duo, SD/MMER/ Mini SD Slots