hardware

Test

TEST CHIP HARDWARE

Featured this month: Pentium III-500 PC, AMD K6-III, Iomega 250MB Zip and more

Compaq Deskpro PIII-500
The compact and feature-packed choice

A powerful processor makes this PIII-500-based computer the fastest desktop computer ever tested in the CHIP Test Centre. Apart from its sheer computing power, the Deskpro also impresses by its sturdy design and intelligent component layout.

Another interesting feature of this computer is that the cabinet can be used vertically or horizontally. Rubber pads have been provided on both the side and the base of the system. Using a special mechanism you can re-orient the floppy and the CD-ROM drive. The instructions for changing the form factor (horizontal or vertical) of the drive are indicated on the clasp.

The 440BX-based motherboard is very compact and the arrangement of components offers easy access and ample upgrade possibilities. The power supply, the drive bays and the components on the motherboard do not interfere with each other, unlike most other systems, where in order to remove the processor or the RAM you have to wrestle with the hard disk and CD-ROM cables.

The PIII-500 is located immediately in front of the system fan. Even though there is no specific fan on the CPU, the large heat sink enables the system to retain a moderate CPU temperature. Three PCI slots, single ISA and AGP slots and a shared PCI/ISA slot offer much room for expansion. The motherboard features two USB ports, two serial ports and a single parallel port. A miniature LED on the board indicates whether the board is powered or not.

The graphics sub-system is handled by a Matrox MGA G200 with 8 MB of graphics RAM. This serves as a perfect complement to the 15-inch NEC V500 monitor, which features an impressive 1280x1024 resolution at 85Hz. Even at this high resolution, the display was crisp, without any sign of blurring.

The four-button OSD (on-screen display) offers access to all the common monitor and screen features like brightness, contrast and other advanced features like moiré correction, raster rotation, colour temperature, pin-cushioning and trapezoidal correction.

The multimedia sub-system consists of a 32x IDE CD-ROM drive with an ISA ESS 1869F soundcard. External speakers have not been supplied, but the internal speaker is directly connected to the soundcard. Users get a PS/2 mouse and keyboard.

As with all Compaq machines, the documentation is very extensive and comprises the user manual, the Windows 95 Users Guide, and a support manual.

A Compaq Recovery CD helps you initialise the system. This bootable CD-ROM features a batch installation option that functions well and requires little user intervention. The operating system bundled with the system is Windows 95 and not Windows 98.

VERDICT A+

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  Good price/performance ratio
  HDD makes noise
Processor: PIII-500
RAM: 64 MB SDRAM
Video: Matrox MGA G200
Slots: 3 PCI, 1 ISA, 1 AGP, 1 shared
PCI/ISA
Price: Rs 1,20,000 + monitor
Contact: Text 100
Phone: 011-3367080
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A4 Tech 4D

This serial 3-button mouse is different from conventional pointing devices—it features two integrated wheels. You can scroll both horizontally and vertically in common Windows-based applications like spreadsheets and Internet browsers. The wheels also allow you to zoom into the work areas. The buttons can be configured to launch applications. The set-up of these functions is through an intuitive interface, which visually indicates the effect of the configuration changes.

Drivers are provided on the accompanying 1.44 MB floppy disk. Installing the drivers was very simple and the configuration was effortless.

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Verdict: A
Price: Rs 150
Contact: Micro Masters
Phone: 022-3880597
Fax: 022-3800998
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Quickshot Pro Wheel

A perfect game controller for flight simulations and racing games, the Pro Wheel features six buttons and two switches on the yoke.

Though the piece received for test was configured as a 2-axis, 4-button joystick, this fact was not mentioned anywhere in the measly one-page documentation. The yoke features a telescopic motion and can be pushed in or pulled out to mimic the action of a joystick. The switches on the yoke are used for controlling the fire button modes: single, continuous and normal. The controller is very firm, but the suction cups on the base of the unit are not powerful enough to anchor the controller—it tends to wobble when in use.

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Verdict: A
Price: Rs 4,200
Contact: JS Equipment
Phone: 022-4922384
Fax: 022-4940685
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HP Pavilion 4407
In a tight squeeze

This Celeron 366 home computer features a 4.1 GB IDE hard disk and 48 MB of SDRAM. This is rather unconventional as most systems either provide 32 or 64 MB of RAM. The cabinet is compact and well designed, with a footprint that is much smaller than that of most tower systems. To save space, the components have been tightly packed—so much so that the hard disk is mounted vertically on the inner front surface and the ATi Rage IIc graphics chipset has been integrated on the mainboard. 4 MB of video RAM gives the system good graphics capabilities while an internal V.90 56K PCI modem facilitates communication.

The ISA soundcard supports an onboard power amplifier, which drives the external speakers. Audio connectors for linking the card to the speakers have also been included. A 32x CD-ROM drive completes the multimedia sub-system. Most of the multimedia controls such as volume adjustment and audio and video CD player controls can be programmed on to the keyboard. The keys can also be programmed to launch certain applications.

A 15-inch monitor features adjustments for the screen and colour temperature control. It also has clasps to attach the speakers and a videoconferencing camera to the top of the monitor. However, the bundled Polk Audio stereo speakers are not exceptional and require you to configure the audio settings for a reasonably powerful output.

With two PCI slots and one each of ISA and AGP slots, this system offers no scope for expansion. But the biggest plus point is that the system integrates nearly all the devices a conventional home computer needs and is ideal for a user who does not intend to upgrade soon. As with most home systems from HP, the specifications are written on the front of the cabinet.
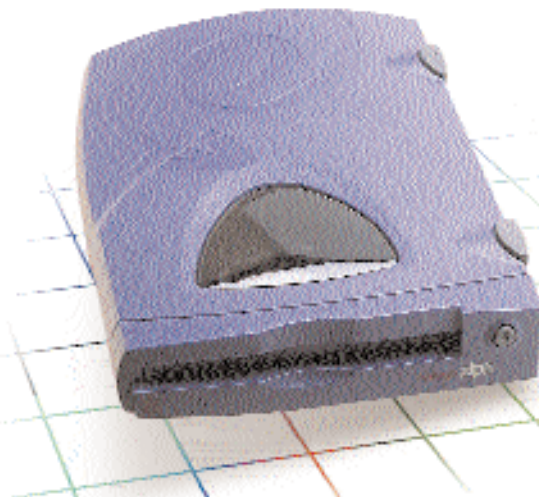
VERDICT A+

+ Feature-packed system
- Very limited expansion capability
Processor: Celeron 366
RAM: 48 MB SDRAM
Video: ATi Rage IIc with 4MB RAM
Slots: 2 PCI, 1 ISA, 1 AGP
Price: Rs 51,999 + Tax
Contact: Sam 7
Phone: 022-6301386
Fax: 022-6301385

Iomega 250MB Zip
A worthy successor

The successor to the very popular 100 MB Zip drive, the Iomega 250MB Zip drive looks attractive and is built so that it can be used both horizontally and vertically. Another interesting design feature is a groove that holds the power cable.

A connecting cable, power adapter, driver, application CD and an extremely well-designed user manual are supplied with the drive. Installing the device is easy; all the drivers load without any problem.

During installation, the software allows you to assign a letter to the drive. Applications for the drive are also contained on the CD and these allow the user to control a host of features. Once the device is installed, a utility configures the drive to use the parallel port with the fastest available transfer rate. In fact, the drive works best when set in the ECP (Enhanced Communication Port) mode.

A quick format of the disk took 10 seconds while a full-format with a surface scan took nearly 17 minutes. To test speeds, nine binary files that summed up to 72.9 MB were written to and from the Zip media with the drive set in the ECP mode. The read process took 2.23 minutes giving a data transfer rate of 535 Kbps, and the writing process took two minutes and 38.16 seconds with a transfer rate of 483.52 Kbps.

The Zip disk has no write-protect notch, all read and write protection is accomplished through the software. Right-click on the Zip drive letter in Windows Explorer and the drop-down menu allows you to access options such as drive diagnosis, compression and read-write protection. The 250 MB Iomega Zip drive is ideal for transferring graphical data, sound files and other applications that involve moving large amounts of data between computers.

VERDICT A+

+ Easy to set up
- Parallel interface
Media Capacity: 250/100 MB ZIP
Price: Rs 11,990 + Tax
Contact: Neoteric Informatique
Phone: 022-4172600
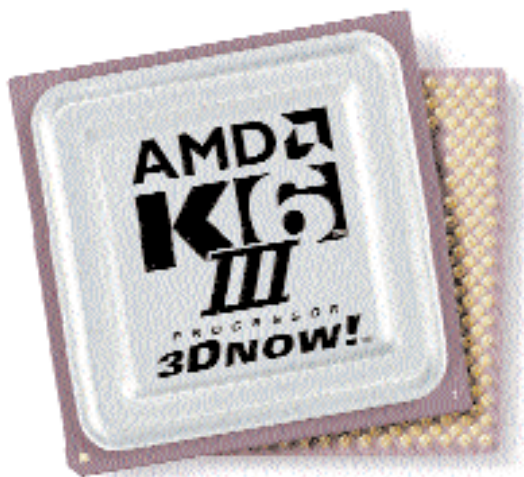Fax: 022-4163679

AMD K6-III
Reasonable price, radical power

This fast processor from AMD is a price-worthy alternative to Intel processors. The test system received at the CHIP Test Centre was rather overpowered as far as the peripherals were concerned.

It had 64 MB of SDRAM, an 8.3 GB Ultra Wide IBM SCSI hard disk and a 32x Plextor SCSI CD-ROM drive (controlled by an Adaptec 2940 Ultra Wide SCSI controller card). An Aureal Vortex-based Montego PCI soundcard handled the audio.

The AMD K6-III supports three PCI, a single ISA and AGP slot, and a shared PCI/ISA slot, allowing for expansion. Two 32 MB 72-pin modules make up the 64 MB of SDRAM, but then they also occupy two of the available three slots. Though processor clock speed and system bus speed settings were automatically and correctly detected, they could not be changed through the BIOS.

Especially interesting is the graphics sub-system—it is driven by a blazingly fast STB 3dfx Voodoo3 AGP 3D accelerator with 16 MB of onboard graphics RAM. This is one of the newest graphics processors from 3dfx. The sound system on the chip uses the new A3D sound extensions to simulate surround sound using only two conventional speakers.

A large heat sink and an attached cooling fan helps the processor keep its cool. The extra fan was provided in the test system but was not connected.

The Super Socket 7 motherboard integrates two serial, one parallel, two USB and two PS/2 connectors. It also supports a front side bus speed of 100 MHz. With 21.3 million transistors on board, it runs on a core voltage of 2.4V and features the MMX and 3DNow! instruction sets. These are aimed at optimising the performance of 3D graphics and multimedia software that support them.

Manufacturing process

The AMD K6-III is manufactured using the 0.25-micron technology and is a 321-pin Ceramic Pin Grid Array (CPGA) package. It also features 256 KB of full speed internal L2 cache that uses the write back process. This internal cache is designed such that it allows simultaneous 64-bit reading and writing of the L1 and L2 cache. The fabrication process used in this processor is the RISC86 Superscalar architecture.

The 3DNow! technology that was also present in the earlier K6-2 was aimed at optimising processes that involved 3D calculations if the software supported it. This is enabled by the 21 new instructions that are added to the existing instruction set and the MMX instructions that the processor also supports.

This processor is also fully compatible with the existing x86 instruction set and all operating systems and software that support it.

The floating point unit is able to process four instructions simultaneously in one clock cycle. The arithmetic logic unit (the part of the processor that handles mathematical operations) and the multiplier are separated, allowing superscalar instruction execution so that both these regions of the processor can operate independently and in parallel.

The AMD K6-III, unlike the Pentium II processor, supports a Tri-level cache design, where it can also make use of external L3 cache when used on a Super Socket 7 motherboard. Apart from the above features, the processor has a 6-stage pipeline for processing instructions, and like the Pentium class processors, it allows speculative execution where it is capable of 'guessing' what instructions are going to follow, and out-of-order completion in which instructions with greater weightage in priority are executed earlier than those with lower priorities.

This processor is a very good choice for users who are looking for Slot 1 performance at a Socket 7 price. It is also a good upgrade for users who already have Socket 7-based motherboards and do not want to make the move to Slot 1.

VERDICT A+

+ Cheap alternative to Intel
- Low on Cache
Processor: AMD K6-III 400
Core Voltage: 2.4 V
I/O Voltage: 3.3 V
On Board Cache: 256KB L2
Price: Rs 7,955 (only AMD K6 III)
Contact: Avnet Max
Phone: 022-4932003
Fax: 022-4930936
E-mail:
mumbai@maxel.wiprobt.ems.vsnl.net.in

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LG 40x CDROM
Makes no mistakes

This plug-and-play 40x LG CD-ROM drive provides very good features at a commendable price. The entire package consists of DOS mode drivers on a driver floppy, an audio and data cable, mounting screws and the user manual.

The device was automatically detected during Windows 95 startup. To test the drive, three parameters, namely the access time, the data transfer rate and the error correction capability were logged. The data transfer rate was determined by using a standard CD-ROM drive, and running a benchmark that reads from the entire surface of the disk in 15-step increments starting from the inner to the outermost sector, logging the data transfer rates even as the test is in progress. This is a self-running test that is invoked through a batch file that automatically runs the benchmarking programs.

Both the average data transfer rate (1877.2 Kbps), and the average access time (79.8ms) were among the most impressive figures logged for this category of drives.

To test for the error correction capability of the drive, a badly scratched CD-ROM was used and the data transfer rate of the drive was logged while reading the entire surface of the drive from the inner to the outer sector in increments of one percent. The drive missed only one error, the rest were satisfactorily detected even though the data transfer rate varied from 1912.5 Mbps to 128.8 Kbps at the point of the error.

With very reliable error-correction capabilities, the LG 40x is well-suited to applications where the CD media may have slight scratches. This makes the drive ideal for VCDs, especially those borrowed from libraries!

Like its predecessor, the LG 40x is an excellent general-purpose drive that will be ideal for both home and office use. The high-speed IDE drive is especially recommended for its commendable error correction.

VERDICT A+

✦ Very fast access, good error correction
Interface: IDE
On-board Cache: 512 KB
Avg. access time: 79.8 ms
Avg. data transfer rate: 1.88 MBps
Price: Rs 2,600
Contact: Micro Masters
Phone: 022-3880597
Fax: 022-3800998

Agfa ePhoto 1680
A perfect choice for semi-professionals

Like its predecessor, the ePhoto 1680 is a versatile portable imaging system. But for the silver matt finish, it looks almost exactly like the ePhoto 1280.

Images can be taken in four modes—1600x1200, 1280x960, 640x480 and a text mode monochrome format (for pictures of documents). For all these modes, the colour depth is 30-bit during capture and 24-bit while storing. The number of images that can be stored on the flash memory card varies from 6 images in the high-resolution mode to 48 images in the low-resolution mode.

At the heart of the camera lies a 1/3-inch CCD with a resolution of 1280 x 960 pixels. This camera also features a 4 MB (upgradable to 16 MB) flash memory card for storing images.

The focal length of the lens ranges from 38 to 114 mm and the flash features a number of modes, allowing you to choose between auto and manual flash modes with red-eye reduction and fill-in. The shutter speed can be manually varied from 1 second to 1/500th of a second. The images can be previewed on a 2-inch TFT LCD screen, which also doubles as a viewfinder. The camera also displays status information, and other readings like 'Low' battery, mode of focusing and flash.

The batteries bundled are AA-sized NiMH rechargeable cells that can power the camera for about 30 minutes during record and one hour during playback. The image quality is very sharp and the camera features quick playback and previews. Also, the rotary switch is very firm and does not let the camera switch off very easily.

Interfacing with a computer is facilitated through a serial cable with a standard RS-232 cable. The PhotoWise software enables you to view, download and also erase images from the camera.

With very intuitive and easy-to-use features, this digital camera is a good choice for applications that require high quality digital images.
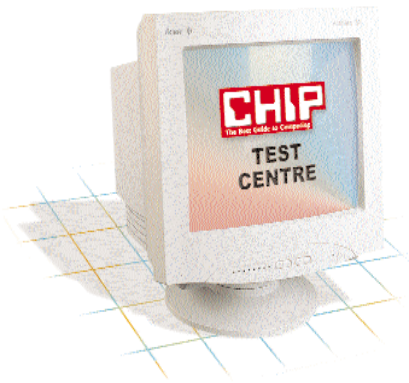
VERDICT A

✦ Easy to set up, feature packed
– Rather expensive
Resolution: 1600x1200
Storage capacity: 4 16MB
Focal length: 38 114mm
Interface: RS-232 serial
Price: Rs 77,000
Contact: Manoj Traders
Phone: 022-2083541
Fax: 022-2064458

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AcerView 7234e
Average performer, reasonable price

A four-page installation manual and a power cable accompany this 14-inch monitor. Although the on-screen display SD allows you to adjust brightness, contrast, pincushion correction, vertical and horizontal centering and sizing, a built-in degaussing or parallelogram correction feature is missing. Settings for up to 24 different screen modes can be stored with 16 user and 8 factory preset modes. Unfortunately, the manual does not care to indicate how these user settings can be stored.

Four buttons can be used to access these modes and the LEDs on the front panel indicate the function selected. The buttons are responsive and allow easy access to the features. This monitor can support a resolution of 1024x768 at 60Hz. In the tests, the monitor performed quite well and the convergence at the four corners was sharp with no visible blurring.

In the screen geometry test, the distortion along the edges or at the centre of the raster area was barely noticeable. However, the monitor did not perform well in the signal on/off switching—there was visible pumping in the raster, especially along the upper and the lower edge of the screen. This makes the monitor unsuitable for applications which involve rapid changes in the intensity of the display—the picture tube will be unable to respond quickly enough.

Also, during this test, a vertical scroll bar was observed to be moving along the raster. Changing from one mode to another was smooth and without any audible clicking sound.

For applications that involve non-intensive graphics tasks that need high resolutions, the AcerView 7234e is an excellent choice. It could also be used in point-of-sale computers where an economically priced 14-inch monitor is required.
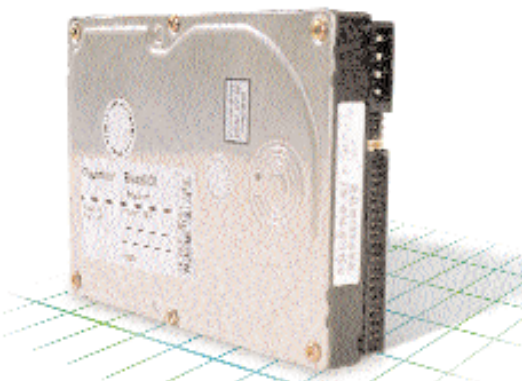
VERDICT **A+**

✦ Very economical
➖ Good OSD
Max Resolution: 1024x768
Screen Size: 14-inches
Programmable modes: 24
Price: Rs 7,250
Contact: Roop Electronics
Phone: 022-3887536
Fax: 022-3856772

Quantum Fireball CR
Cutting-edge performer

T his 3.5-inch IDE hard disk is part of Quantum's new Ultra ATA/66 or UDMA mode 4 range of hard disks. Though rather plain-looking, this hard disk has a formatted capacity of 8.4 GB and two platters that give it a total of four recording surfaces.

Like most IDE hard disks, the Fireball CR has a jumper block that allows it to be configured as a master or as a slave. However, there is no indication of these jumper settings on the hard disk. A tabular notation of the settings would have facilitated an easier installation, especially for the inexperienced user. The rotational speed of the drive is 5,400 rpm and the maximum data transfer rates supported are 66.6 Mbps in Ultra ATA/66 mode, 33.3 Mbps in Ultra ATA/33 mode and 16.6 Mbps in PIO Mode 4 and DMA Mode 2. The drive features an onboard cache of 512 KB.

To test the performance of this hard disk, we used an Ultra ATA/33-compliant motherboard, since Ultra ATA/66 compliant boards are not yet commercially available in India. However, until the time the newer motherboards are available, Quantum has provided a utility that allows the Ultra ATA/66 feature to be disabled, so that it behaves as an Ultra ATA/33 device. Hence, the drive was configured to operate as an Ultra ATA/33 compliant device prior to running the tests. The drive did well in the data transfer tests, clocking a rate of 11.9 Mbps in the sequential read and 9.07 Mbps in the sequential write test. In the access time measurement, the drive took 15 ms in the read access test and 7.34 ms in the write access test.

With impressive performance and new technology features, this drive is a very good choice for multimedia-intensive applications and others that require sustained high data transfer rates.

VERDICT **A+**

✦ Ultra ATA/66 support
Form factor: 3.5 inch
Interface: IDE Ultra ATA 66/33
Sequential read rate: 11.9 Mbps
Avg read access time: 15ms
Price: Rs 8,000
Contact: Exl Technology
Phone: 080-3337010
Fax: 080-3337010