

£499 BUDGET SYSTEMS >>

group test



The best for less

How much does a top-notch PC system with all the trimmings cost? Thousands? No. £499 is nearer the mark. Here's **ten top budget contenders for serious bargain-hunters to consider.**

Fancy a 333MHz Pentium II processor? How about 64Mb of 100MHz SDRAM to go with it? How about watching DVD films on your PC's DVD-ROM drive, or playing games using the superb Millennium G200 graphics card from Matrox? If I said you could get all this kit in a PC for £499 ex VAT, what would you say?

Ever attentive to the needs of our readers, we have come up with the ideal solution for affordable computing. With prices in freefall, we thought the £499 price tag still seemed one of those outer limits that it was unwise to approach. How wrong we were. Our latest (and cheapest) round-up shows how easy it really is to get top-notch kit for very few pounds.

But it's not just consumers who might think twice about buying a PC at that price: we talked to a few computer manufacturers which declined our invitation to supply such a cheap PC, despite advertising budget PC systems. At that price, companies are relying on selling in volume before they can think about making money, and some are hesitant about their presence in the budget market.

What our group test undoubtedly shows is that following the incredible drop in the price of computing, you can now get your hands on a PC with a configuration that would have been considered high-end until a few months ago. What follows is a pretty good argument for buying a £499 PC before manufacturers come to their senses...

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• Systems tested and reviewed by Paul Trueman

Illustration by David Whyte

Carrera Capricorn

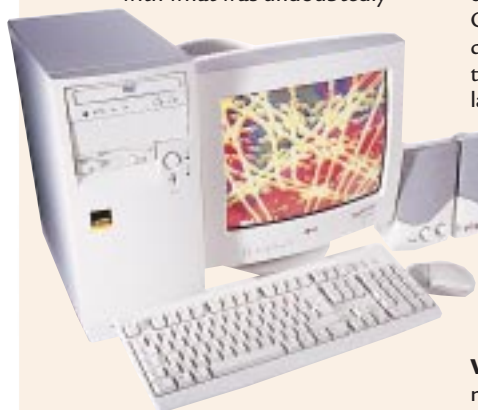
Carrera is one of the few British manufacturers that sells both direct and over the counter, and its PC prices stay competitive despite the added overheads of selling retail.

Carrera sent us a PC with the AMD K6-2 processor for this test, utilising a 100MHz Super Socket 7 motherboard. We assumed the reason for having just 32Mb of RAM was because the money had been spent elsewhere. In fact, the system designers at Carrera had come up with what was undoubtedly

one of the most interesting machines in this group. They had installed the LG DRD-820B DVD-ROM drive rather than a cheaper CD-ROM drive, and Zoran Soft-DVD software. The new DVD-enabled 8Mb Diamond SpeedStar AGP card shared the decoding work with the processor but the results were nevertheless jerky, with far too many dropped frames for the film to be watchable.

The SpeedStar is a new graphics card just out on the market, and Carrera assured us that the finalised drivers from Diamond would iron out the frame-rate problems. The problem lay with incompatibility between the Zoran software communicating with the DVD-enabled card. Sound was provided by the VideoLogic SonicStorm PCI card, and this left both ISA slots free if you wanted to buy a modem for internet access, plus one free slot for a PCI card.

We liked the 14in LG StudioWorks monitor included with the



Capricorn. The picture was pin-sharp in all four corners of the monitor at a resolution of 800x600, and while there was slight blurring with a 1024x768 display, it is inadvisable to set a 14in monitor at this resolution anyway.

PCW DETAILS

Price £586.33 (£499 ex VAT)

Contact Carrera 0171430 0486
www.carrera.co.uk

Good Points DVD drive for future-proofing.

Bad Points Not your bag if DVD doesn't interest you.

Conclusion An ambitious, highly individual machine, ultimately flawed by budget constraints.

Build Quality	★★
Performance	★★★★
Value for Money	★★★★
Overall Rating	★★★★

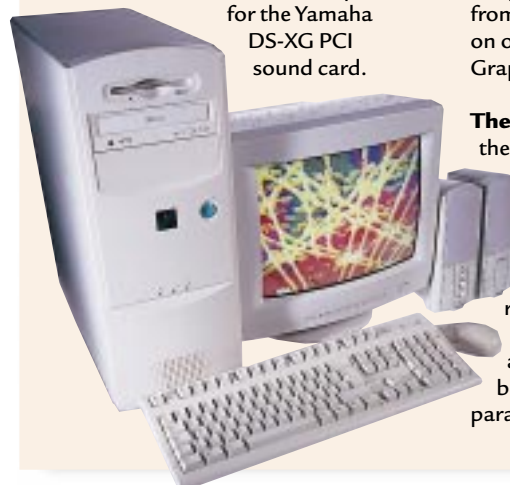
Dotlink Magnum Entro 200

Dotlink is a rapidly expanding company with a reputation at PCW for submitting good all-round machines. The PC it sent in for this group test eschewed power for completeness, and while it might not be the fastest PC ever, it has a lot to commend it.

Internet access won't be a problem with the 56K modem installed in one of the three ISA slots, and Dotlink opted for the Yamaha DS-XG PCI sound card.

The Magnum was the only PC in this group without an AGP card, instead using ATI's PCI 3D Charger which isn't the best card you could hope for. It uses ATI's venerable Rage II chip, and it has only 2Mb of RAM on the card rather than the 4Mb that is now standard. However, Dotlink had still used a relatively expensive motherboard, with a spare AGP slot: if a keen gamer wants to upgrade in the future, they can always purchase a top-notch AGP card and benefit from the higher data transfer rates on offer from the Accelerated Graphics Port.

There is an obvious trade-off in the Magnum Entro between components such as the speedy modem and the PCI sound card, and the processing power. The WinChip C6 from IDT is a respectable budget processor option, but its 200MHz looked a little weedy next to some of the beefy 333MHz K6-2 processors paraded in the other PCs here.



Dotlink chose an unbranded 14in monitor to companion the system, with 13.2in viewable area. This afforded a pretty awful picture at 1024x768 resolution with a maximum 60Hz refresh rate. Even at 800x600 there was colour bleeding at the sides of the picture, although it was much sharper.

PCW DETAILS

Price £586.33 (£499 ex VAT)

Contact Dotlink 0181 200 9933
www.dotlink.co.uk

Good Points All the components you need in a multimedia PC.

Bad Points Ageing PCI card means that you can't expect top 3D graphics performance.

Conclusion A decent all-round PC.

Build Quality	★★★★
Performance	★★
Value for Money	★★★★
Overall Rating	★★★★

Elonex MCX333

Elonex submitted a squat but well-built PC based around a Celeron processor. The original incarnation of the Celeron, crippled by its lack of L2 cache, has been abandoned by OEMs in favour of the new version, codenamed Mendocino. Its 128Kb of L2 cache is on-die (on the same piece of silicon) and runs at the same core speed as the processor. Because the L2 cache on a PII isn't on-die, it runs at half the clock speed of the processor, which is one of the reasons why Mendocino/PII

performance is comparable in floating-point operations. The front-bus bandwidth, which connects the CPU with the system memory, is still only 66MHz, as this is the fastest speed supported by the LX chipset in this machine. Neither does this chipset support processors running faster than 333MHz, so the LX cuts off a potential upgrade path to a PII 350 or higher. Elonex kitted out its PC with the Celeron 300A, the "A" denoting the Mendocino version. If Elonex wants to upgrade RAM from the 48Mb currently supplied with the MCX333, it will need to dump at least one of the DIMMs too, because there aren't any free RAM slots — both are filled.

On the plus side, the LX chipset does accommodate an AGP slot and Elonex filled it with the V3000ZX card from Asus. The Asus card uses the impressive Riva 128ZX chip with 8Mb of SGRAM. Both ISA slots were left free, and one of the two PCI slots was filled with a 56K modem using the near-ubiquitous Rockwell chip.



Elonex branded the monitor with its own badge, a 15in model with a decent OSD controlled from underneath the screen. It was capable of a 70Hz refresh rate at 1024x768, although at this resolution the image lost some of its sharpness.

PCW DETAILS

Price £586.33 (£499 ex VAT)

Contact Elonex 0181 452 2444

www.elonex.co.uk

Good Points A generous amount of video memory for a budget machine.

Bad Points LX rather than BX chipset limits upgradeability.

Conclusion A well-built machine with decent kit.

Build Quality	★★★★
Performance	★★★★
Value for Money	★★★★
Overall Rating	★★★★

Hi-Grade Winputer PV

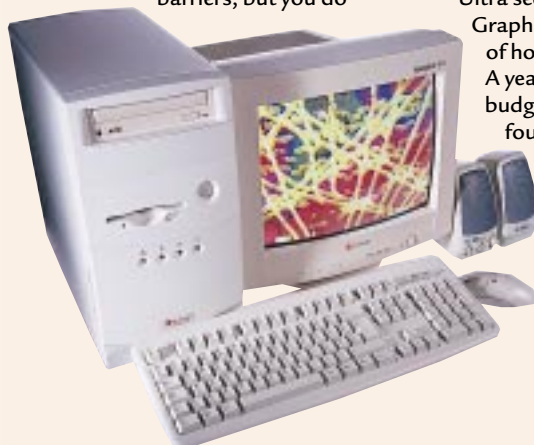
Hi-Grade has submitted excellent, affordable PCs to our group tests in the past, and is another company which has only recently begun to address the new budget market. Hi-Grade has recently rebranded its main range of PCs, now calling them Winputers. While they might be the standard beige, the smoothed-out edges of the new case are a welcome move.

The Winputer might not be about to break any processing speed barriers, but you do

get a good all-round package for your dosh. Under the hood is an IBM 8x86 MII processor clocked at 300MHz, partnering the 32Mb of SDRAM held on one of two DIMM slots. The Fujitsu hard drive isn't really a contender: its 3.2Gb isn't going to last long when up to 1.5Gb can be swallowed up just installing a game.

Similarly, when we received so many graphics cards holding 8Mb of memory, the 4Mb CirrusLogic 3D Ultra seemed a little under-powered. Graphics cards are another example of how quickly the market moves. A year ago 2Mb was the norm in budget machines; now, cards with four times that much memory are commonplace.

A 56K modem had been installed, as well as an ESS sound card, leaving a single ISA and a PCI slot free. Most machines in this group had either a sound card or a modem; few had both.



Hi-Grade featured its own brand of monitor with the Winputer, the 14in AlphaScan 411. While it couldn't produce a healthy refresh rate at 1024x768, the picture was sharper than most. It didn't have an OSD but its manual controls were pleasantly user friendly.

PCW DETAILS

Price £586.33 (£499 ex VAT)

Contact Hi-Grade 0181 532 6100

www.higrade.com

Good Points Both sound card and 56k modem.

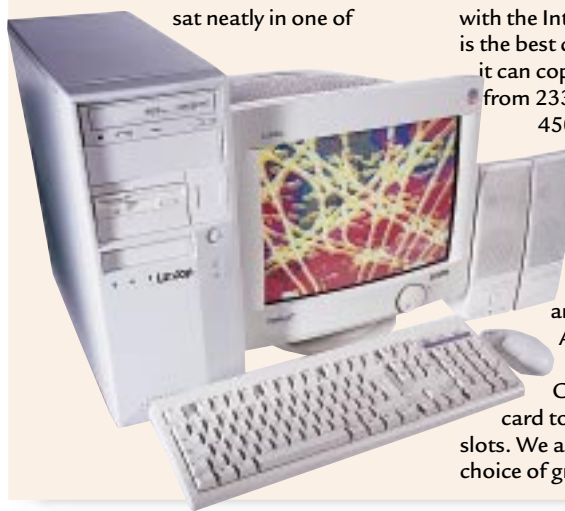
Bad Points Not a massive hard drive or RAM.

Conclusion A well-balanced PC.

Build Quality	★★
Performance	★★★★
Value for Money	★★★★
Overall Rating	★★★★

Lexon Entra 333

Lexon supplied us with a very impressive machine for this group test, proving irrefutably that it is possible to get your hands on attractive kit even at budget prices. Celeron 333, hefty RAM and an excellent graphics card made the Entra an undoubted front-runner. Our attention was first taken by the generous amount of system memory the Entra 333 had been endowed with: its 64Mb of SDRAM sat neatly in one of



three DIMM slots. Lexon had opted for the new Mendocino version of Intel's 333MHz Celeron processor. This has 128Kb of Level 2 cache sitting on the die itself and running at the core processor speed, as opposed to the PII where the L2 cache runs at only half the core speed of the processor.

We were also impressed that Lexon had chosen a motherboard with the Intel BX chipset. This is the best chipset because it can cope with any PII processor from 233MHz to the latest 450MHz and supports 100MHz RAM, so you have a clear upgrade path if you wish to invest at a later date. The motherboard had one spare ISA slot and two free PCI slots. A 56K Rockwell modem filled one ISA slot, and a Creative Labs PCI64 sound card took up one of the PCI slots. We also appreciated Lexon's choice of graphics card, the

Millennium G200, Matrox's powerful and popular 2D/3D card with 8Mb of SGRAM as standard.

Lexon hadn't stinted on the monitor brand either. The 15in Mag Innovision XJ350 had excellent OSD and a sharp picture across its 13.8in viewable screen.

PCW DETAILS

Price £586.33 (£499 ex VAT)

Contact Lexon 0181 532 6100

www.lexonpc.com

Good Points Generous hard drive, excellent graphics card, lots of RAM.

Bad Points None worth mentioning at this price.

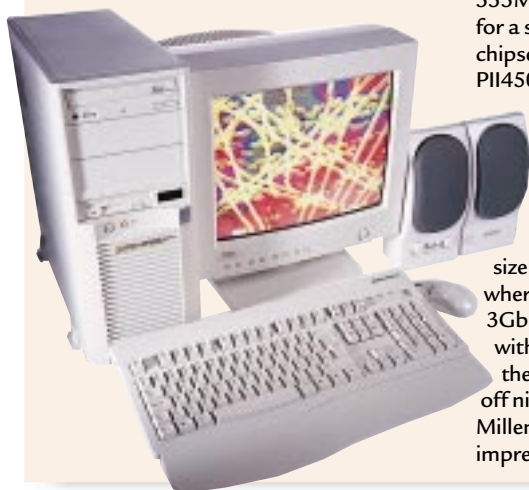
Conclusion Buy one before they change their minds.

Build Quality	★★★★
Performance	★★★★
Value for Money	★★★★★
Overall Rating	★★★★★



Panrix Micro 333

Panrix usually sends us fast, affordable machines for review, so we were keen to see if its budget PC would perform with the customary zip. No worries: the Micro 333 didn't let us — or Panrix — down. Panrix was one of the companies which went the prescribed Intel route when choosing a processor, with the Mendocino Celeron 333. When purchasing a PC, users should



ensure, if they are being sold a Celeron, that it is the Mendocino generation. With 128Kb of on-die L2 cache, it is considerably faster than the previous first-generation of cacheless, toothless Celerons.

Upgradeability is a key factor in the design of this PC, and Panrix scored Brownie points for its use of the KB-6130 motherboard built around the BX chipset. Despite the fact that the 333MHz processor is nearly a match for a similar-speed Pentium II, the BX chipset allows for an upgrade to a PII450MHz if you wish. Together with the 333MHz processor there was 64Mb SDRAM packed on to a single DIMM, leaving another two DIMMs free for system-memory expansion. Panrix hadn't stinted on the size of the hard drive either, and where some manufacturers used 3Gb units, Panrix trumped them with a generous 5.1Gb. Rounding the package of major components off nicely was the Matrox Millennium G200 graphics card, impressive on either 2D or 3D apps.

The bundled CTX monitor was impressively clear and sharp even at 1024x768 resolution, and the OSD was user-friendly and thorough. Although there was slight loss of focus in the corners of the screen, the refresh rate was a healthy 70Hz at 1024x768.

PCW DETAILS

Price £587.50 (£500 ex VAT)

Contact Panrix 01132 444958

www.panrix.com

Good Points Excellent components, powerful processor.

Bad Points You sacrifice a modem for power.

Conclusion An impressive PC.

Build Quality	★★★★
Performance	★★★★
Value for Money	★★★★★
Overall Rating	★★★★★

Protek UltraMX

The UltraMX was the last of the group to be reviewed, and until we opened it up, we had given up all hope of seeing a Pentium II. After all, the Celeron is Intel's budget processor solution. Isn't it? Nevertheless, we were very impressed to find the 333MHz, the first of the Deschutes generation of Pentium II, in the UltraMX. The 333MHz was the first PII processor to be manufactured using the new 0.25 micron process, slimming down the silicon



wafer size from 0.35 microns, shortening the distances electrons have to travel across the silicon, speeding up CPU processes, and reducing power consumption.

It is to Protek's credit that it complemented the PII with 64Mb of PC100 SDRAM, allowed to run at 100MHz by the BX chipset. We were half expecting to find corners being cut in the RAM department to allow for the PII, but 64Mb should ensure future-proofing for a year or two at least. Protek had also budgeted for a decent 4.3Gb hard drive from Samsung, and we were amazed to find a 56K modem *as well as* a sound card. While the ATi 3D Charger is getting on a bit now, it should run your 2D/3D apps well enough, especially as it is backed up by a PII333 and 64Mb of SDRAM running at 100MHz. Still, committed gamers could always splash out on a PCI 3Dfx card and have themselves a first-rate polygon-monster.



After such generosity with the system, you might have expected an unbranded 14in monitor. But no: Protek provided the 15in D510 Mag Innovision. Pin-sharp at 800x600, it afforded decent focus and good refresh rates at 1024x768.

PCW DETAILS

Price £586.33 (£499 ex VAT)

Contact Protek 01884 822300

www.protek-europe.com

Good Points PII, 64Mb SDRAM, BX chipset.

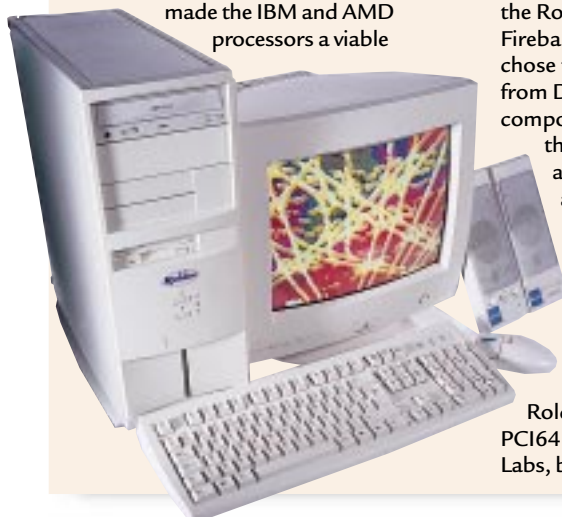
Bad Points There aren't any at this price.

Conclusion A super package.

Build Quality	★★★★
Performance	★★★★
Value for Money	★★★★★
Overall Rating	★★★★★

Roldec Puma

As well as the budget Intel processors, we were expecting to see a couple of rival processors in this group test. Roldec duly obliged, opting for AMD's latest-generation K6-2 3D Now! that, despite its bombastic title, is giving a few Intel executives sleepless nights. Presumably because of the budget constraints, Roldec had opted for the 300MHz model rather than the faster 333MHz processor. What has really made the IBM and AMD processors a viable



alternative are the new Super Socket 7 motherboards that can cope with the 100MHz front-side bus on the processors, meaning that PC100 system RAM can run at 100MHz rather than the slower 66MHz of the original Socket 7 boards, thereby giving a boost to performance.

All 64Mb of the SDRAM was on one DIMM, leaving the other two free for future upgradeability, and the Roldec had a generous Quantum Fireball 5.1Gb hard drive. Roldec chose the SpeedStar graphics card from Diamond, one choice of component that suffered because of the budget. The SpeedStar uses an S3 Virge chip that's getting a little long in the tooth now, and the 8Mb of SGRAM can't really disguise the fact that while it is a perfectly respectable 2D card, it doesn't cope too well with the latest generation of polygon-heavy 3D games. Roldec included the impressive PCI64 sound card from Creative Labs, but at the expense of a modem.

The Puma was bundled with a 14in ADI Provista E33 monitor. When we tried to view a resolution of 1024x768, the monitor couldn't produce a picture. This turned out not to be a problem with the PC, as it hooked up at 1024x768 to a different monitor with no trouble.

PCW DETAILS

Price £587.50 (£500 ex VAT)

Contact Roldec 01902 456464

www.roldec.com

Good Points Generous RAM and hard drive.

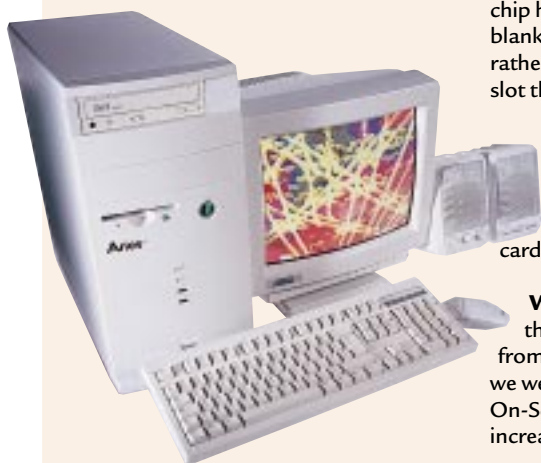
Bad Points Poor monitor performance, no modem.

Conclusion A sensible configuration, but it lacks essential components.

Build Quality	★★★★
Performance	★★★
Value for Money	★★★
Overall Rating	★★★

Watford Electronics Aries 3200

Watford has redesigned its system cases, and now, as well as the Aries trademark insignia, there is also a rather chunky large, green power button on the front of the case. We were impressed at the range of Intel-free computers in this group test: Watford had based its system around the Cyrix MII processor running at 300MHz. Complementing the processor was 32Mb of SDRAM and a Fujitsu Ultra hard drive with 3.2Gb capacity.



If the Aries 3200 wasn't going to win any points for raw power, one might have expected a wider array of components — a modem, for example. The system designers have used the small AT motherboard rather than the larger ATX design. Despite there being onboard sound courtesy of the ESS OPL3 chip, there were no sound sockets built on to the motherboard.

Connections from the onboard chip have been added to a spare blanking plate above the AGP card, rather than lower down, taking up a slot that a future PCI/ISA card might occupy. But while the hardware wasn't particularly spectacular, there was a generous selection of "edutainment" CD-ROMs and a decent AGP graphics card in the shape of the ATi Rage II.

Watford Electronics bundled the Spectrum Series 5 monitor from AOC with the Aries, and we weren't overly impressed. On-Screen Displays are becoming increasingly popular, but the

Spectrum had a set of finicky manual controls. Even at 800x600 there was blurring of the focus around the corners of the screen, and the colour bled away from the vertical edges.

PCW DETAILS

Price £586.33 (£499 ex VAT)

Contact Watford Electronics
01582 745577

www.watford.co.uk

Good Points Good software bundle, free card slots.

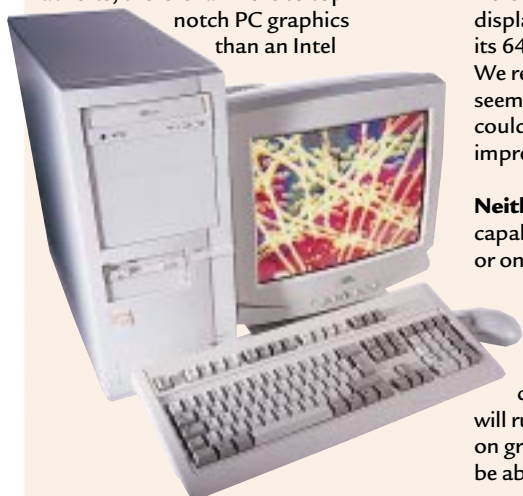
Bad Points Tiny motherboard, large box.

Conclusion A sound, if unspectacular, system.

Build Quality	★★★★
Performance	★★★★
Value for Money	★★★★
Overall Rating	★★★★

West One Stingray

West One submitted a powerful PC, although it was rather limited in terms of components. There was 64Mb of SDRAM (fast becoming industry standard) and AMD's powerful new K6-2 processor running at 333MHz. This is a powerful combination, as it is not simply the processor that is essential to top performance. Despite the groovy Pentium II adverts, there is far more to top-notch PC graphics than an Intel



bunny and a chunky black box: bags of system memory and a good graphics card are just as important as the CPU. It was with the latter component that we found fault on this PC, though, as the Diamond Stealth II AGP card wasn't properly set up when we first switched it on. Although Windows knew it was running a Diamond Stealth II card using the G460 chip, the drivers weren't working properly so the display was unable to change from its 640x480 resolution in 16 colours. We re-installed the drivers and this seemed to fix the problem, as we could then properly assess the impressive Stealth card.

Neither a modem nor sound capability is included, either as a card or onboard. However, capacity-wise the Stingray does offer a decent proposition, with a respectable 4.3Gb Maxtor Diamond hard drive. And that's it as far as components go. The Stingray will run your applications like they're on greased rails; just don't expect to be able to hear them. That said, at

£500 for the whole bundle, upgrading to sound and internet capability is certainly an option.

West One included the 15in AV2 monitor from Shinho. It presented an impressively thorough OSD and offered an excellent 85Hz vertical refresh rate at 1024x768 resolution.

PCW DETAILS

Price £586.33 (£499 ex VAT)

Contact West One 0171 878 1800

www.west-one.co.uk

Good Points Quick processor, plenty of RAM.

Bad Points Problems with the display and drivers.

Conclusion A fast machine that might need extra cash spent on it for full multimedia capability.

Build Quality	★★★★
Performance	★★★★
Value for Money	★★★★
Overall Rating	★★★★

Table of features



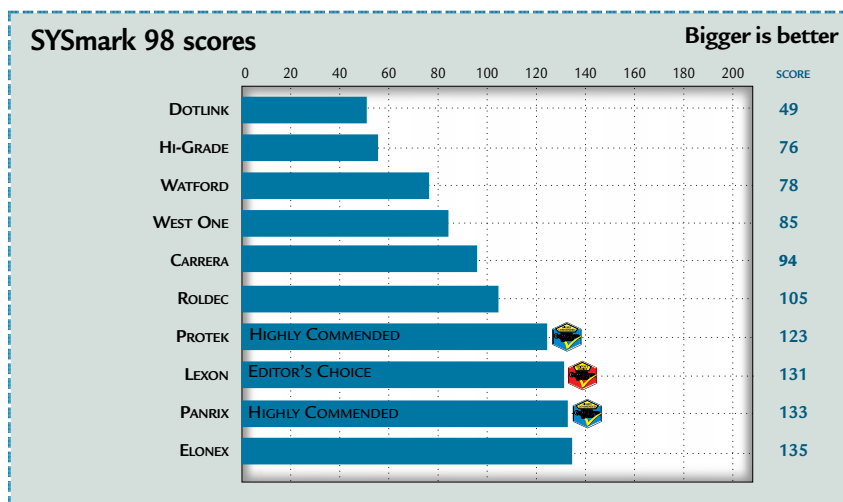
MANUFACTURER	CARRERA TECHNOLOGY	DOTLINK	ELONEX	HI-GRADE COMPUTERS	LEXON TECHNOLOGY
MODEL NAME	CAPRICORN	MAGNUM ENTRO	MCX-333	WINPUTER PV	LEXON ENTRA 333
Price (exc VAT)	£499	£499	£499	£499	£499
Price (inc VAT)	£586.33	£586.33	£586.33	£586.33	£586.33
Telephone	0171 430 0486	0181 902 5802	0181 452 2444	0181 532 6100	0181 667 1173
Fax	0171 299 6600	0181 903 6508	0181 452 7444	0181 532 6101	0181 667 1134
Web Address	www.carrera.co.uk	www.dotlink.co.uk	www.elonex.co.uk	www.higrade.com	www.lexonpc.com
Standard Warranty	3yrs RTB	3yrs RTB	1yr RTB	1yr onsite	2 yrs RTB
Warranty Options	Options up to 5 yrs	x	Upgradeable to 5 yrs	3yrs onsite	1st yr onsite £25.00 2nd yr £50.00
Technical Support	0171 430 0386	0181 795 3883	0181 452 6666	0181 532 6199	0181 680 6816
HARDWARE SPEC					
Processor	AMD K6-2 300MHz	IDT Winchip C6 200	Intel Celeron 300A	IBM II 300	Intel Celeron 300A
RAM / RAM type	32Mb / SDRAM	32Mb / SDRAM	48Mb / SDRAM	32Mb / SDRAM	64Mb / SDRAM
Hard Disk	Quantum	Seagate	Seagate	Fujitsu UDMA	Seagate Medalist
Size(Gb)/Interface	3.2Gb / UDMA	3.2Gb / UDMA	3.2Gb / UDMA	3.2Gb / UDMA	4.3GB / UDMA
M/BOARD COMPONENTS					
M/board Manufacturer	QDI Advance	Microstar	Elonex	Chaintech	Abit
M/board Model/Chipset	PSMVP3 / Via VT82C	MS5169 / Aladdin	LXMicroATX / LX	ALI M1541 / 1543	BX6 / 440BX
L2 Cache	512Kb	512Kb	128Kb	512Kb	128Kb
EXPANSION AND I/O					
Spare Bays 3.5"/5.25"	0/1	2/1	1/1	1/1	1/1
AGP Slot	✓	✓	✓	✓	✓
PCI Slots/ISA slots/Shared	1/1/2	2/1/1	1/1/1	2/2/1	4/3/1
USB/Serial/Parallel/PS2	2/2/1/2	2/2/1/2	2/2/1/2	2/2/1/2	2/2/1/1
MULTIMEDIA					
CD-ROM	LG DRD 820B IDE	Goldstar CRDA332B	Yamaha	Teac	Creative CD323le
CD-ROM Speed/Interface	24X / EIDE	32X / EIDE	32X / IDE	24X / IDE	32 X / IDE UDMA
Sound Card Manufacturer	Sonic Storm	Yamaha	Creative Labs	ESS Audio	Creative Labs
Sound Card Model	Storm PCI	PCI Waveforce	SoundBlaster PCI64	1869	SoundBlaster PCI64
Speakers	ACS90	Yamaha M7	Creative Labs CSW20	Labtec	CSW20
GRAPHICS & MONITOR					
Graphics Card	Diamond SpeedStar A70	ATi 3D Charger PCI	Asus RivaZX	Cirrus Logic 3D Ultra	Matrox Millennium G200
RAM/Max RAM/Type	8Mb / 8Mb / SGRAM	2Mb / 2Mb / EDORAM	8Mb / 8Mb / SGRAM	4Mb / 4Mb / SGRAM	8Mb / 16Mb / SDRAM
Monitor / Size	LG 44i / 14in	Hansol E14BL / 14in	Elonex / 15in	Sampo / 14in	MAG XJ530 / 15in
Refresh Rate - 1024x768	70Hz	60Hz	70Hz	60Hz	85Hz
BUNDLED EXTRAS					
Modem Speed (Kbps)	x	56K	56K	x	56K
Other Extras	x	Claranet ISP s/w	x	x	x
Office Suite	x	Lotus SmartSuite 97	x	x	Lotus SmartSuite 97
Other Software	x	IBM WorldBook	x	x	Supervoice
		Encyclopedia			

Table of features



MANUFACTURER	PANRIX	PROTEK	ROLDEC SYSTEMS PLC	WATFORD ELECTRONICS	WEST ONE CONSULTANTS
MODEL NAME	PANRIX MICRO333	ULTRAMX	ROLDEC PUMA	ARIES 3200	STINGRAY
Price (exc VAT)	£500	£499	£500	£499	£499
Price (inc VAT)	£587.50	£586.33	£587.50	£586.33	£586.33
Telephone	01132 444958	01884 822300	01902 456464	01582 745577	0171 878 1800
Fax	01132 444962	01884 822301	01902 452592	0870 729 5648	0171 734 2559
Web Address	www.panrix.com	www.protek-europe.com	www.roldec.com	www.watford.co.uk	www.west-one.co.uk
Standard Warranty	1yr RTB	5yrs RTB	5yrs RTB	5yrs RTB	3yrs RTB
Warranty Options	Upgrade to onsite	Various options	1-3yrs onsite	Upgrade to onsite	Various options
Technical Support	01132 444948	01884 822302	01902 451551	0870 729 5500	0181 560 5063
HARDWARE SPEC					
Processor	Intel Celeron 333	Intel Pentium II 333MHz	AMD K6-2 300MHz	Cyrix M2-300MHz	AMD K6-2 333MHz
RAM / RAM Type	64Mb / SDRAM	64Mb / SDRAM	64Mb / SDRAM	32Mb / SDRAM	64Mb / SDRAM
Hard Disk	Quantum Fireball	Samsung	Quantum Fireball	Fujitsu Ultra	Maxtor Diamond
Size(Gb)/Interface	5.1Gb / UDMA	4.3Gb / EIDE	5.1Gb / UDMA	3.2Gb / UDMA	4.3Gb / IDE
MOTHERBOARD COMPONENTS					
M/board Manufacturer	Fic	PC Chips	EliteGroup	Gigabyte TX	Microstar
M/board Model/Chipset	KB-6130 / BX	MB-729 / BX	P5VP	GA-586TX 3 / TX	MS5169 / Aladdin
L2 Cache	128Kb	512Kb	512Kb	512Kb	512Kb
EXPANSION AND I/O					
Spare bays 3.5" / 5.25"	1/2	1/1	2/1	2/2	1/3
AGP Slot	✓	✓	✓	✓	✓
PCI Slots/ISA Slots/Shared	2/1/01	3/2/00	2/4/01	3/3/01	4/3/01
USB/Serial/Parallel/PS2	2/2/1/2	2/2/1/2	2/2/1/2	2/2/1/1	2/2/1/2
MULTIMEDIA					
CD-ROM	Asus CDS360	Samsung SCR-3231E	Samsung SCR-3230	Artec	Goldstar
CD-ROM Speed/Interface	36X / EIDE	32X / EIDE	32X / EIDE	36X / IDE	32X / IDE
Sound Card Manufacturer	Yamaha	CMI	Creative Labs	Aries	-
Sound Card Model	OPL3 onboard	CMI-8330	SoundBlaster64 PCI	3D	-
Speakers	Arowana	MS691 80W	Arowana	Aries	-
GRAPHICS & MONITOR					
Graphics Card	Matrox Millennium G200	ATI 3D Charger AGP	Diamond SpeedStar	ATI 3D Rage II 4Mb	Diamond Stealth II
RAM/Max RAM/Type	8Mb / 16Mb / SGRAM	4Mb / 4Mb / SGRAM	8Mb / 8Mb / SGRAM	4Mb / 4Mb / SGRAM	8Mb / 8Mb / SGRAM
Monitor / Size	CTX / 15in	Mag D510 / 15in	ADI Provista E33 / 14in	AOC / 14in	Shinoh / 15in
Refresh Rate - 1024x768	70Hz	75Hz	85Hz (800x600)	75Hz	85Hz
BUNDLED EXTRAS					
Modem Speed (Kbps)	x	56K	x	x	x
Other Extras	x	x	x	x	
Office Suite	x	x	x	Lotus SmartSuite	x
Other Software	x	x	x	Comptons Multimedia	
				Encyclopedia 1999,	
				World Atlas,	
				Genius of Edison,	
				Cookbook &	
				Reference Collection	

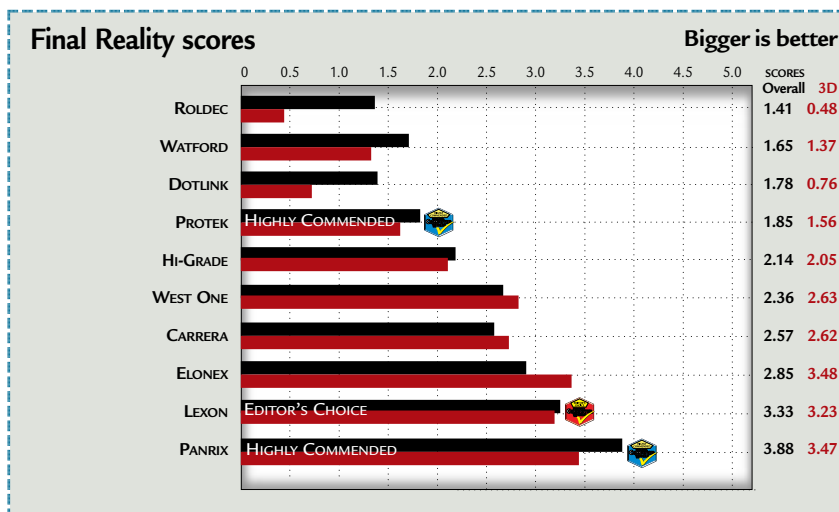
PCW Labs Report



In the Intel vs the World debate, it would appear that the microprocessor giant has the upper hand — at least in our group test. The top four scores were all achieved by Intel-powered machines, three Celerons and a Pentium II. Surprisingly, the Elonex was the office apps winner, despite having less RAM than the other three Intel PCs, and a 300MHz processor rather than the 333MHz of the Panrix, for example. This could be because the graphics card in the Elonex outperformed the cards in the other PCs, but there wasn't much between the four scores. The AMD, IDT and 6x86 processors brought up the rear.

While the SYSmark test gives a score that reflects the performance of several components in the computer, Final Reality focuses on the graphics card. This is reflected in the scores: while the Protek has the most powerful processor, the PII, it has the older ATi 3D Charger running in tandem. While the 3D Charger is a decent graphics card, it can't compete with the latest generation of purpose-designed 2D/3D cards like the Matrox series using the G200 chip. It's no surprise that the two best results were scored by PCs with the Matrox Millennium G200 card. Panrix has once again produced a fast machine.

■ Overall score ■ 3D score



How we did the tests

We ran two sets of tests on the PCs in this group test: **Final Reality** to test graphics capabilities, and **SYSmark 98** to test the speed of the machines when running 2D office applications.

➤ **The SYSmark test** measures the speed of the PC running 14 common office and content creation applications and the time it takes to perform a variety of tasks in each application. Each test is run three times to ensure consistent results.

The applications are divided into two categories:

➤ **Office productivity:** Corel CorelDraw 8, Microsoft Excel 97, Dragon Systems NaturallySpeaking 2.02, Netscape Communicator 4.05 Standard Edition, Caere OmniPage Pro 8.0, Corel Paradox 8, Microsoft PowerPoint 97 and Word 97.

➤ **Content Creation:** MetaCreations Bryce 2, Avid Elastic Reality 3.1, Macromedia Extreme 3D 2, Adobe Photoshop 4.0.1, Adobe Premiere 4.2, and Xing Technology XingMPEG Encoder 2.1.

The number of tests run, and the type of applications used in this benchmark, ensures that all PCs are pushed to the limit, and that even those machines with very powerful processors are given a thorough work-out. Performance depends on processor speed, RAM, graphics card and disk I/O. As the tests are based on widely available software packages, SYSmark scores accurately reflect how the machine will perform in a real-world situation.

➤ **Final Reality** is a suite of tests designed to gauge the processing power of the 3D accelerator on your graphics card, 2D image processing and AGP. It runs under Windows 95/98 and DirectX 5, and uses a 3D engine developed by Remedy. It supports Direct3D and looks at how the graphics accelerator handles the kind of data it would have to process when you are playing a game. The visual appearance factors are weighted in importance and combined with the overall processing speed to produce an overall mark.

Editor's Choice

You'd better believe it: there's some **very impressive kit** to be had for very little money.

We were honestly bowled over by some of the machines we received for this group test, half of the PCW team disbelieving, the other half amazed that £499 would be all it would cost to replace the ancient boxes sitting on their own desks. Leafing through previous copies of PCW, we saw that for nearly £900 a year ago you might have got 32Mb, an S3 Virge graphics card, P166MMX and a 33.6K modem. If you shopped around.

There really has never been a better time to buy a PC. But it may not last, with some dire predictions of component drought in Q3 1999 as a result of the Asian meltdown. So get out there and get yourself a fantastic bargain now, before PC prices start to climb.

What surprised us in this group test was the diversity of configuration we received. Group tests can be a horror to write, as machine after machine reveals exactly the same components and monitors. This time around we had the whole nine yards as far as processors and components were concerned, from the mighty PII to the lowly IDT Winchip C6. Goodness knows what Intel's pricing strategy is, when you can get your hands on a same-speed Celeron and a PII in otherwise similar configurations and sell them at the same price.

Before we get to the glittering prizes, it's time to pat some of the contenders on the back for their gallant efforts. Elonex and Dotlink produced well thought-out PCs aimed at families who need the PC to perform in a number of roles, from homework research tool to gamestation. Similarly, Carrera, with its DVD-ROM machine, the Capricorn, earned our admiration for being the only company that ventured to do something different.

When it came to the awards though, the three PCs picked themselves. The hard part was picking an Editor's Choice from the trio, as all are well worth consideration. The **Panrix Micro333** is **Highly Commended**. With its generous 5.1Gb hard drive and impressive Matrox Millennium G200 graphics card, it's a great buy for anyone. Also **Highly**

Commended is the **Protek UltraMX**, which almost stole the show with its CPU, a PII333. We have seen machines in group tests before, where manufacturers have obviously overspent on the processor and then had to cut corners on everything else. This obviously did not happen with the UltraMX, with its 56K modem, sound card and hefty 64Mb of 100MHz SDRAM. But this month's

Editor's Choice goes to **Lexon** for its superb **Entra 333**. A Celeron 333 and masses of RAM is combined with quality kit.

The excellent Matrox Millennium G200 card was confirmation that Lexon wasn't about to compromise on graphics, and the Creative Labs 64 PCI card showed that the company held sound in the same high regard. Topping off this

impressive package was a 56K modem using the Rockwell chip, for internet access. There's no higher praise I can give than to say that, if you had told me a few weeks ago that I could buy this system for £499, I wouldn't have believed you.

► PICTURED, FROM TOP: THE LEXON ENTRA 333, THE PANRIX MICRO333 AND THE PROTEK ULTRAMX

