Digital video recorder

Pace Twin

It's the 21st century. You'd think that by now we'd be experts at recording TV shows. Instead we still frantically search though a mass of unlabelled video tapes desperately trying to find a half-hour space. And who can program their VCR anyway?

Enter Pace with its Twin digital recorder – no tapes, no rush, no loss of quality. Thanks to its hard drive, the Twin can record digital TV direct to the drive – and it's all just a button press away. Sound familiar? Oh yeah, there was the now-defunct Tivo where you had to pay £10 a month for programme listings.

The frugal among you will relish the fact that the Pace Twin has no monthly listings charge due to the fact that there are no listings – just now and next info. This means you can only record something an hour away. If not then you're back to the old day/time/channel interface.

Conflicting issues

Of course, Freeview will have a seven-day programme guide soon. No really, any day now. Honest. But even when (or if) it appears, the current guide took a fair amount of time to load up with just the now and next feature. Unless it changes drastically, if you want to tape something on next week it'll take you until next week to find it.

Now it's a little unfair to compare the Pace Twin to Tivo since you can't actually buy the latter anymore (unless you're adept at eBay). But having seen Tivo in the past, it rather emphasises the inadequacies of the Twin: some of its features could have been great but sadly aren't.

Take conflict resolution, for example. You have already set a programme to record from 9pm to 10pm. You then remember you want to tape something that starts at half past nine.

Enter the details and it tells you that you already have a programme scheduled – there's no 'Which one would you like to record?' option. Instead you must back up, delete the existing recording then start again and enter the new one. The words 'hoops' and 'jumping through' spring to mind.

Forewarned is forearmed

Then there's what to do when the Pace Twin runs out of disk space. It keeps everything until you delete it, so once the hard drive is full it will record no more. You can continue to add timers, though, and it will only tell you when it attempts to record a programme that there's no space (great if you're on holiday).

Some forewarning would be nice. It would be even better if it removed the oldest programmes first (with obviously the facility to save specific ones) if it needed more hard drive space.

Then there's the interface, which is similar to the DTVA's interface (see October 02) – fine for an £85 box, but clunky on a £300 one. Little things are frustrating too – for example, not being able to surf through the now and next info without changing channel and not even showing what programme is on when you switch channels.

The Twin also has the showy but only relatively useful live pause option. Going back to Tivo comparisons, it only starts recording when you press pause. There's no constant running buffer which means that action replay is only available if you've predicted you'll need it and paused the show from the outset.

> The Twin records a digital stream so what you play back is the same quality as the original broadcast. However its software lets it down. The box crashed at least five times over a month of testing

Verdict

In its favour, the Twin records a digital stream so what you play back is the same quality as the original broadcast. However its software lets it down. The box crashed at least five times over a month of testing (losing two recordings in the process). Compare this to Tivo and, after using it for eight months, it's crashed once and not lost a recording. If you want a modern VCR replacement then the Twin is for you. If you expect more then write to Pace and ask them to make a Twin with Tivo software. ■

Will Head

Pace Twin

☐ Pace: 01274 532 000
☐ www.pacefreetoview.co.uk
☐ £298 ex VAT

Specifications

DTT receiver; twin tuners; hard disk; remote control; 2 x scart sockets; interactive digital text; card slot; subtitles

Good points

No loss of quality; twin tuners

Bad points

Poor conflict resolution; clunky interface; unstable

Build quality
■ ■ ■ ■ ■ ■ □ □

Features
■ ■ ■ ■ ■ ■ □ □

Value for money
■ ■ ■ ■ ■ ■ □ □

Digital terrestrial TV receiver
Packard Bell TCX 170

Best known for its home PC bundles sold through Dixons, Packard Bell is the first PC maker out of the blocks with a digital TV receiver. Expect a rash of these in the run-up to Christmas as the handbrake is eased off the digital home entertainment bandwagon and the PC hardware monkeys scamper aboard.

The Packard Bell box certainly won't win any aesthetics awards, though. The smoked perspex frontage hides two monster LEDs – red for off, green for on – very teasmade circa 1972.

Setting up the TCX 170 is ridiculously easy but, then, so it should be – this is a TV product not a PC peripheral, after all. The box has two scart ports, handily labelled TV and VCR, and two RF ports – one connects to the outside aerial, while the other passes through to the VCR or TV allowing you to watch in analogue mode. There's also a pair of audio jacks so you can output to stereo speakers.

Once powered up the TCX 170 automatically scans for channels, yielding 27 video and 19 audio channels in South East London where we tested it. When you change channel, onscreen info tells you what's on and its running time.

You can look at now and next info for the channel you're watching or use this facility to surf other channels without leaving the current show.

An electronic programme guide shows what's on the other channels over whatever period of time the broadcaster sees fit to supply. Everything works through the remote control, but there's no buttons on the box so don't lose it down the back of the sofa.

Customisation comprises deleting unwanted channels and organising the ones you do want into favourites. You can also attach a PIN to channels you want private access to.

Verdict

The TCX 170 behaves like a consumer electronics product should. Connection and automatic tuning takes a maximum of 10 minutes. Thereafter you can fiddle and customise endlessly, surf programme info (more entertaining than some of the shows on offer) and set up personal profiles. ■

Andrew Charlesworth

Packard Bell TCX 170
☐ Available from Currys, Dixons and PC World
☐ www.packardbell.co.uk
☐ £85 ex VAT

Specifications
digital terrestrial tuner; 2 x scart sockets; RF-in/out; stereo audio jacks; interactive digital text; electronic programme guide; remote control

Build quality
■■■■■■□□□
Features
■■■■■■■□□
Value for money
■■■■■■□□□

Multiformat DVD writer
LG Super Multi DVD Writer Plus GSA-4040B

Not that long ago the debate among DVD enthusiasts was which writeable format would win out. Since then the fight has ended in a draw, with a glut of new DVD writers supporting both major standards. LG has gone one better, introducing a drive that's compatible not just with DVD+R/+RW and DVD-R/-RW, but also with the increasingly obscure DVD-RAM.

At first glance the addition of DVD-RAM would appear little more than a helpline thrown to those unlucky enough to have picked the wrong standard. Despite this being the fastest DVD-RAM drive available, its tri-speed write facilities come up short compared to the zippy quad-speed capabilities of the DVD+R/-R formats.

But DVD-RAM has its advantages – for a start there's no need for burning software. By loading up the small packet drivers, files can be copied across as though you're working with a floppy disk or hard drive. And with 4.7GB (9.4GB using both sides) of storage space, DVD-RAM is clearly an economical solution.

Then there's the improved number of rewrites – you can write to DVD-RAM over 100,000 times,

which gives it a potential lifetime 100 times greater than that of DVD+RW/-RW.

The drive connects to Ultra DMA33 as well as standard EIDE interfaces, but the 145ms access time and 2MB data buffer are acceptable rather than stunning. The installation routine is smooth and a DVD-RAM disc is included, although there's no bundled DVD+R/-R media. LG's burning software, B Recorder Gold 5.0, isn't as good as Nero but users with a modicum of Windows knowledge should find it usable.

In performance the LG isn't the fastest on the market. Despite having quad-speed DVD+R/-R facilities, it could only manage to copy our 3GB test files in 17 minutes 34 seconds. DVD-RAM was less impressive, requiring almost 22 minutes to perform the tests.

Verdict

The ease of use afforded by DVD-RAM makes the LG a great choice for those who value flexibility and seamless recording above speed. ■

Robin Morris

LG Super Multi DVD Writer Plus
☐ LG: 0870 607 5544
☐ www.lge.co.uk
☐ £169 ex VAT

Specifications
4x DVD+R; 2.4x DVD+RW; 4x DVD-R; 2x DVD-RW; 3x DVD-RAM; 12x DVD read; EIDE; 2MB buffer; 32x/24x/16x CD (read/write/rewrite); B Recorder Gold 5.0; NeoDVD; CyberLink PowerDVD; B Clip UDF; 145/165ms DVD-ROM/RAM access time; 940g; 2-year warranty

Build quality
■■■■■■■□□
Features
■■■■■■□□
Value for money
■■■■■■□□

Personal digital assistant
Palm Tungsten T2

The Tungsten T was the first PDA to feature Palm's new operating system, Palm OS 5.0, when it was launched last year. It was a relative success, but as with all first-generation products there are always improvements that can be made. Enter the Tungsten T2, a revised version of the original T.

Change for the better

There are three principal changes to the T2. The most noticeable is that it now uses the same screen technology featured in both the Zire 71 and Palm's other recent high-end launch, the Tungsten C. The transflective LCD screen provides a significantly clearer, sharper and brighter image than the reflective display used by the original Tungsten T. By combining the illumination effects of both the ambient light and a backlight, the screen looks equally as good in all lighting conditions.

Memory has been beefed up from 16MB to 32MB, so there's plenty of space to store your own applications and media files. Storage capacity can also be easily expanded with a Multimedia Card or Secure Digital card. To enable the additional internal memory, the operating system has been updated to OS 5.2.1, which also features a revised version of the Graffiti handwriting recognition system (see *Text input,* below). Another new feature in 5.2.1 is Colour Themes, which allows you to change the appearance of your applications and menus.

Like Tungsten, like son

Aside from these changes, the T2 is pretty much identical to the Tungsten T. It has built-in Bluetooth facilities along with a good range of communication software. There's also an integrated voice recorder and it can be used as a portable music player.

The down side of sticking to the Tungsten's original design is that the T2 suffers from the same flaws. The transparent plastic screen cover has a hole to allow access to the five-way navigator button. But this seems useless since you can't get to any of the other application buttons or use the stylus on the screen. The cover also has to be fully removed and then reattached to the back of the device when not in use, rather than just flipping out the way like it does on other PDAs.

As with the Tungsten T, the Graffiti area (Palm's handwriting recognition technology) is concealed behind the lower portion of the unit and is only revealed when you slide the buttons down and out of the way. This keeps the unit compact and stylish, but in compact mode there's no simple way to get to the Applications screen. A double-tap of the stylus will take you there, but it's not an obvious shortcut.

Graffiti 2.0 lets you input text without having to use the Graffiti area (see *Text input,* left) so, in a manner of speaking, the Tungsten T2 is fully functional in both normal and extended modes.

Verdict

The Tungsten T2 offers a handful of improvements that make it a welcome update to the Tungsten T, but there's nothing groundbreaking here. It's a reasonable all-rounder PDA but, compared to Palm's more specialised products, it's unclear who is the T2's target market. ■

Alex Katz

Text input

One of the major changes to the Tungsten T2 is that it uses the latest version of Palm's handwriting recognition technology, Graffiti 2.0. Designed to make writing more natural, you can now input most characters as if you were writing on paper rather than having to learn a whole new system. However it will take some time to relearn if you're an experience Palm user, and we would have liked to see a way to revert to the original method.

Graffiti 2.0 also makes it easier to write capitals. Rather than having to write a Shift stroke first, you simply write the character across the letter/number divider line and it will automatically be capitalised. You're no longer restricted to writing in the Graffiti area below the screen, too. Instead you can opt to write anywhere on the screen and have your strokes displayed as you write. A discreet button at the bottom righthand of the screen lets you select between standard and write-anywhere modes.

Palm Tungsten T2
☐ Palm: 0118 927 8700
☐ www.palm.com
☐ £280 ex VAT

Specifications
144MHz Texas Instruments Omap 1510 ARM; Palm OS 5.2.1; 32MB RAM, 8MB Flash memory; TFT transflective display with backlight; 320x320 pixels; 65,536 colours; integrated Bluetooth; infrared/IrDA port; SD/MMC slot; integrated voice recorder; built-in lithium-ion battery; 102x75x15mm; 157g

Good points
Great screen; 32MB of memory; built-in Bluetooth facilities

Bad points
Awkward screen cover; unintuitive operation in compact mode

Build quality

Features

Value for money

Personal digital assistant
Palm Zire 71

Palm has obviously had enough of being beaten at its own game by the likes of Sony, whose Clies have won acclaim by combining traditional PDA functionality with a range of value-added features and typical Sony style. With the Zire 71 Palm has caught on to the fact that consumers want different things from their PDAs than business users.

What's the difference?
The Zire 71 is the second product in Palm's revised consumer range following last year's launch of the original Zire. But the two have little in common.

For starters, the 71 is more attractive with a metallic blue front panel and a chunky, robust feel. It has the traditional row of four application buttons along the bottom, although the To-Do list button has been replaced with a photo button (more on this later). And in place of the up and down buttons there's a miniature joystick which Palm call the 5-Way Navigator.

Whereas the Zire is a bog-standard organiser, the Zire 71 is a fully fledged PDA with plenty of advanced features. It runs Palm's OS 5.0 on a 144MHz Omap processor. This enables it to support multimedia features such as music and video playback. Then there's its full-size high-resolution display that uses transflective TFT technology for vibrant colour, excellent contrast and impressive brightness.

You've been framed
This is especially useful for the Zire 71's main selling point – its built-in digital camera. Sliding the front panel of the unit upwards reveals the camera's lens embedded in the back of the device. Opening the camera automatically starts the Photo software and you use the screen as a viewfinder. The photo button mentioned earlier takes you to this software when not in camera mode so that you can view images.

Image quality from the built-in camera is impressive, especially considering it only has a 640x480 pixel CCD – approximately 0.3Mp (megapixels). However we found the lengthy delay between pressing the shutter and the image being recorded frustrating.

To take further advantage of its multimedia capabilities, the Zire 71 comes with a wide range of software. There's Acrobat Reader for viewing PDF documents and Palm Reader, an e-book reader. Kinoma lets you view movie clips, while RealOne Player play backs music in MP3 or Real Audio format (stored on an optional expansion card) through the Zire's headphone socket.

Verdict
With the Zire 71 Palm has followed Sony's lead by building multimedia features into a mass-market PDA. It may not be quite as stylish as a Clie but Palm has thought it out well and produced a fun and versatile consumer device. ■

Alex Katz

Palm Zire 71
☐ Palm: 0118 927 8700
☐ www.palm.com
☐ £209 ex VAT

Specifications
144MHz Texas Instruments Omap 310 ARM; Palm OS 5.2.1; 16MB RAM; 8MB ROM; TFT transflective display with backlight; 320x320 pixels; 65,536 colours; infrared/IrDA port; SD/MMC expansion slot; integrated digital camera; 640x480 pixel res; built-in lithium-ion battery; 114x74x17mm; 150g

Good points
Built-in camera; powerful processor; Palm OS 5.0

Bad points
More than twice the price of previous Zire model

Build quality
■■■■■■■■□□
Features
■■■■■■■□□□
Value for money
■■■■■■■□□

Palm's built-in camera

As the mobile phone industry has shown recently, the best way to attract consumers to new technology products is by building in a digital camera. The Zire 71 is not the first PDA to do so, but Palm's solution is an elegant one. The camera is nicely hidden by the Palm's sliding design and only becomes the focus of the device when you want it to.

The camera is simple to operate: use the Zire 71's screen as the viewfinder and simply press the shutter button to take a picture. White balance and brightness are automatically adjusted, but we found manual selection using the brightness and contrast sliders faster. Options are limited compared to a proper digital camera, but obviously this device is not intended for professional photography.

The top resolution is a default 640x480 and results are pretty impressive, with good colour balance and reasonable sharpness. Of course, at this setting you won't be able to see the full details of the picture on the Zire 71's screen – for that you'll need to transfer the pictures to your PC using the versatile yet easy-to-use Palm Photos module in Palm Desktop.

Pocket PC handheld
ViewSonic Pocket PC V35

There is another pretender to the crown of the low-cost Pocket PC device in the shape of ViewSonic's V35. This handheld joins the company's array of diversified products that lifts the brand out of its familiar monitor maker niche. Fortunately for ViewSonic it has come up with a product that is genuinely competitive in a marketplace that is fast becoming cluttered since the launch of Dell's low-cost Axim earlier this year.

The V35 certainly breaks the cost barrier, coming in at under £200 ex VAT, and it provides an attractive bundle of features for the price. It uses a 300MHz XScale chip, has 64MB of RAM, runs Pocket PC 2002 and offers a 3.5in 240x320 resolution screen. Expansion is handled by a Secure Digital/Multimedia Card slot. All this compares favourably with its closest rivals, the Dell Axim X5 and HP iPaq h1910.

In use the V35 works smoothly, although the power button was a little unresponsive. The audio controls (located down the side of the device) work the voice recorder and were simple to use. Playback from the small speaker was also surprisingly clear.

In terms of portability the V35 is both slim and light, weighing in at just 120g and measuring 120x75x13mm. The iPaq pips it to the post in terms of size, though, with slightly smaller dimensions. Dell's Axim, on the other hand, matches its generous features with an equally hefty girth, weighing in at 196g and 18mm thick. We know which device we'd rather carry around.

Verdict
The V35 is a worthy entry into the market and a solid choice if you're on the lookout for a Pocket PC. Nothing about the ViewSonic struck us as outstanding but it's affordable, houses good features and is highly portable. ■

Ursula Seymour

ViewSonic Pocket PC V35
☐ ViewSonic: 01293 643 900
☐ www.viewsoniceurope.com
☐ £195 ex VAT

Specifications
300MHz XScale processor; Microsoft Pocket PC 2002; 64MB RAM; 32MB ROM; lithium-ion battery; USB sync; built-in MP3 player and audio recorder; SD/MMC expansion slot; infrared; 120g; 120x75x13mm

Build quality
Features
Value for money

Intermediate digital camera
Canon PowerShot G5

Canon's PowerShot G3 was a great digital camera and the G5, with its specification tweaks and stylish black finish, builds on the heritage of its sibling. This new model is ideal for anyone moving over to digital who demands top-quality shots and full control.

At 410g the G5 is one of the heaviest 5Mp (megapixel) cameras available. The sturdy build is good to hold, though, and its hefty size is a great help in the quest for unblurred shots.

Impressively at f2.0, the G5 has the largest maximum aperture we've seen on a 5Mp model. We were surprised to see the top right corner of the lens through the optical viewfinder but it doesn't impede shooting too much. Still, it's a strange design choice. Canon has kept the excellent 1.8in twist-and-swivel LCD so composing shots from any angle is a breeze. We were equally impressed to see a rechargeable lithium-ion battery powering the camera.

The G5 has a maximum resolution of 2,972x1,944 and has several Jpeg compression settings as well as the high-quality lossless RAW format. Be warned, though – the bundled 32MB CompactFlash card is barely enough storage to cope with top-resolution Jpegs let alone the large file sizes generated by the RAW format. And why did Canon stick with USB 1.1 rather than the faster 2.0 standard?

While the G5 can be fully automated, people will be buying it for the array of manual configurations. It has 12 shooting modes to cover every photographic condition and the results speak for themselves. Our test shots taken in full automatic mode demonstrated a great dark-to-light dynamic range with sharp detail and natural colours.

Verdict
If you're after style over substance then look elsewhere as the G5 is about benefitting from the versatility of digital photography. The well-priced PowerShot is responsive and fairly easy to use given the amount of options it offers. ■

Spencer Dalziel

Canon PowerShot G5
☐ Canon: 0800 616 417
☐ www.canon.co.uk
☐ £560 ex VAT

Specifications
5Mp; max res 2,972x1,944; min res 640x480; 32MB CompactFlash; lithium-ion battery; movie/audio capture; 4x optical zoom; 4x digital zoom; 11/337 min/max photos on 32MB; 121x70x74mm; 410g; 1-year warranty

Build quality
Features
Value for money

Personal digital assistant
Sony Clie PEG-TG50

Sony's Clie range has won a great deal of praise (not least from the pages of *PC Advisor*) for excellence in design, functionality and value for money. Having made both entry-level and top-end PDA manufacturers take notice with its SJ22 and NZ90 models respectively, Sony is now turning its attention to middle-range devices.

The TG50 succeeds the T675C (don't ask us to explain the naming conventions) and it has two major differences. The first you'll notice as soon as you lift the attractive, spring-loaded cover: the TG50 does away with the Graffiti area for text input and instead has a miniature keyboard.

Text matters

There's an increasing trend for this among PDA manufacturers. The logic must be that as technology gets more advanced, people are increasingly using their PDAs for emailing, composing text messages and writing documents. It therefore follows that text input should be a focus.

In use, though, we found the TG50's keyboard awkward and fiddly. It slows you down having to switch between your fingers on the keyboard and the stylus for interacting with items on screen. However, it really comes down to a matter of personal taste and we're sure there are users who prefer the keyboard.

The TG50's other principal difference over its predecessor is that it runs Palm OS 5.0, the latest version of Palm's operating system with a raft of improvements over earlier versions. A knock-on effect is that the TG50 has a huge array of built-in extras that make it a particularly versatile device. Its built-in Bluetooth functionality, combined with the system-level Bluetooth support in Palm OS 5.0, make it a breeze to connect to Bluetooth-enabled mobile phones for connecting to the web. It's also easy to perform wireless HotSync operations with a Bluetooth-enabled notebook.

Palm OS 5.0's multimedia features work well with the TG50's excellent 320x320 screen and there's also a reasonable sized speaker. Most of Sony's built-in software has been updated for enhanced image viewing as well as improved video and audio playback. A built-in headphone jack, combined with Sony Audio Player, means that the TG50 can be used as a fully functional MP3 player. Capacity is, of course, limited by the size of your Memory Stick expansion card.

Pressing the Rec button on the side starts the Voice Rec software, which can be used for recording memos, conversations, interviews and so on. Clips can be played back on the device itself or downloaded to your PC.

Verdict

The TG50 is yet further proof of Sony's excellence in PDA design. It looks stylish yet professional and it's also well proportioned. This is a superbly versatile device with built-in Bluetooth, music player and voice recorder functions. We only wish somebody would tell manufacturers that miniature keyboards are more trouble than they're worth. ■

Alex Katz

Sony Clie PEG-TG50
☐ Sony: 08705 424 424
☐ www.sony.co.uk
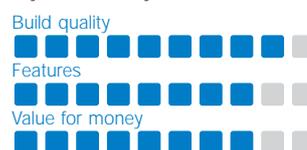☐ £254 ex VAT

Specifications
200MHz PXA250 processor; Palm OS 5.0; 16MB RAM; 16MB ROM; infrared/IrDA port; built-in Bluetooth; Memory Stick slot; TFT display with backlight; 320x320 pixels; 65,536 colours; built-in lithium-ion rechargeable battery

Good points
Palm OS 5.0; multimedia capabilities; built-in Bluetooth facilities

Bad points
Fiddly keyboard; switching between keyboard and stylus is awkward

Build quality

Features

Value for money

Palm OS 5.0

The Sony Clie PEG-TG50 is one of the crop of new Palm OS PDAs that runs Palm OS 5.0, the latest version of the Palm operating system. This OS has dramatically narrowed the gap between Palm and Pocket PC devices, which used to be easily distinguishable in terms of price and performance. Palms have traditionally been associated with low cost and ease of use, while Pocket PCs tended to be targeted towards power-hungry users.

Palm OS 5.0 enables Palm devices to use advanced processors and it has built-in support for Bluetooth, wireless networking, multimedia functionality and secure internet transactions. Palm OS devices still retain an updated version of Palm's traditional, simple and friendly interface. But adding all these extra features has also brought higher-end Palm devices much closer in price to their Pocket PC counterparts. For users who just want basic Palm OS functionality, both Sony and Palm still make devices based on the older Palm OS 4.0.

Colour inkjet printer
Canon Bubble Jet i470D

Canon's Bubble Jet i850 set a high standard in the April edition of *PC Advisor*. The i470D falls into a similar price bracket and, again, is aimed at the photo enthusiast. There's plenty that hasn't changed and the hardware resolution of 4,800x1,200dpi (dots per inch) and MicroFine Droplet technology are as welcome as ever. One small niggle is the smaller 100-page input tray.

The i470D's memory card slot allows you to print directly from all major flash types. At this price, though, we'd like to see an LCD panel. The Photo Viewer feature lets you display images on a PC at the touch of a button, but the need to have the computer switched on detracts from the usefulness of the memory card slot. This is a shame since the printer's onboard control panel is otherwise well equipped and offers a great deal of control over output. Another good feature is the ability to connect a Canon digital camera direct to the printer.

At its lowest quality setting the i470D prints out text quickly, exceeding 10.5ppm (pages per minute). Turn the quality up a couple of notches and the Canon generates crisp (if not particularly dark) printouts at a rate of 5.6ppm.

Colour graphics results are similar, although you'll need to invest in glossy or coated paper to see your multicoloured graphs at their best. At the higher quality settings output is colourful and detailed, while the 0.9ppm output rate is bearable provided print jobs aren't too large.

Print costs are economical, working out at about 3.1p and 5.4p a page for black and colour ink respectively. You will, however, have to change the small-capacity cartridges frequently. It's also a shame that its colour cartridge isn't split into three separate ink tanks – when one colour runs out you'll have to throw the entire cartridge away.

Verdict

Aside from the memory card slot, there's little here that you won't find in the cheaper i850. But for the photo enthusiast wishing to bring their camera and printer together, the i470D is the ideal choice. ■

Robin Morris

Canon Bubble Jet i470D
- Canon: 0870 514 3723
- www.canon.co.uk
- £152 ex VAT

Specifications
Optical res 4,800x1,200dpi; USB 1.1; 18ppm mono (10.5ppm real-world); 12ppm colour (3ppm real-world); 100-page input tray; black cartridge £4 (130 pages); colour £8.70 (160 pages each); 393x258x218mm; 4kg;

Build quality

Features

Value for money

Computer speakers
Bose MediaMate

Bose is one of those revered names in audiophile circles, so it's interesting to find it making a foray into the far less glamorous world of PC acoustics. What's more, current received wisdom seems to dictate that the more satellite speakers you have surrounding your PC setup the better the audio.

This two-speaker system gives the lie to this argument. There's no subwoofer to sit beside your PC tower, but you won't miss it – honest. The angled speakers direct the sound upwards towards your ears but also manage to disperse it across the room. The effect is quite deceptive.

Sit at your desk typing or shooting away and the audio envelops you. Retire to the sofa on the other side of the room and, while the MediaMate setup kicks out sound across the room, it's nowhere near as arresting.

Bose won't reveal the technical details of the MediaMate speakers, but at the top end of the range higher vocal notes sound crisp and clean while further down the scale bass distorts and notes sound woolly. Turn up your PC volume to the max and its limitations become clear. It wasn't our hardware, as swapping the Bose speakers for our stereo speakers proved.

Bundled connections allow you to plug in a second source such as a digital radio or MP3 player or listen through headphones. Such provision is thoughtful so we couldn't work out why Bose supplies the speakers with cables just three feet long, meaning they have to be positioned frustratingly near the PC.

Verdict

These solid, good-looking speakers sound best close up. The experience becomes less than enjoyable when the volume is cranked up. Your mates will admire these while you're trouncing them at Halo but won't be so impressed once you retire to the sofa with the beers. ■

Rosemary Haworth

Bose MediaMate
- Bose: 0800 107 4999
- www.bose.co.uk
- £119 ex VAT

Specifications
Stereo PC speakers; 2 x RCA jack connections; integrated signal processing; magnetic shield prevents interference with monitor; 1kg each; 89x191x216mm

Build quality

Features

Value for money

Mobile phone
Sony Ericsson T610

Some people buy mobile phones based on looks, price or brand, but for others it's the technology that matters most. Sony Ericsson understands this latter group better than almost any other company and its new T610 is probably the most feature-packed mobile phone to date.

It's got the lot

Take a deep breath: it's triband, has a big colour screen, built-in camera, GPRS, HSCSD, two gaming platforms, 32-voice polyphonic sound, infrared, MMS, email and more Bluetooth profiles than you can shake a stick at.

Measuring 102x44x19mm, the T610 is a tad larger than the curvy T68i but remains small and comfortable to hold. The front is dominated by a 1.8in colour screen, sporting 128x160 pixels and 16bit colour. It's a huge improvement over the T68i, although it does become faint in bright surroundings.

The keypad and central joystick are small but work well. It's a relief to see Sony Ericsson finally following its peers and employing a pair of soft keys, while a 'back' key returns you to the previous menu or option.

Sony Ericsson is making a big deal about its QuickShare technology, which lets you capture and share images with minimum effort. Sadly the T610's camera is poor even by mobile phone standards. The 288x352 resolution is modest, but it's the undesirable colour and compression artefacts which let it down. It's also unusable in low light, although a clip-on flash accessory is due soon.

Top-quality images measure around 20KB each and are stored in 2MB of unexpandable memory, shared between themes, sounds, games and messaging. In terms of downloadable software, there's support for Java and Mophun, the latter filling the screen and offering better sound. Of the supplied games, the Mophun Minigolf stands out.

Messaging is a strong point with support for MMS and both POP3 and Imap email. The email client checks for messages automatically and supports outgoing (but not incoming) attachments (see *MMS vs email* below). There's also good calendar and contact options that can synchronise with Outlook.

The T610's Bluetooth facilities are particularly impressive, supporting no fewer than eight profiles including the latest for imaging. This BIP (basic imaging profile) allows suitably equipped digital cameras such as Sony's DSC-FX77 to automatically shrink images to suit the phone during a Bluetooth transfer. The T610 can then email or MMS them without file size concerns.

In practice all this technology works well and unlike many advanced phones the T610 didn't crash once during our tests. It also feels quicker and more responsive than the sluggish T68i.

Verdict

With a big colour screen, built-in camera, great sound, Java and Mophun games, excellent messaging and the most extensive Bluetooth support yet, the triband T610 is unparalleled in terms of features. Admittedly the camera's not great and the screen washes out easily, but these are the only down sides of an otherwise superb handset.

Techies will be delighted but the T610's looks and features will also appeal to business users and consumers, making it one of the best all-round GSM mobiles on the market. ■

Gordon Laing

Sony Ericsson T610
☐ Sony Ericsson: 08705 237 237
☐ www.sonyericsson.com/uk
☐ £100 with contract

Specifications
Triband (900, 1,800, 1,900MHz); 128x160 pixel, 65K-colour screen; 2MB shared RAM; 32-voice polyphonic audio; GPRS, HSCSD, Bluetooth & infrared; built-in camera, 288x352 max res, optional flash; 14-hour talktime; 315-hour standby; 102x44x19mm; 95g inc battery

Good points
Feature packed; wide support for Bluetooth profiles; messaging facilities

Bad points
Screen hard to read in sunlight; camera's image quality useless in dim interiors; shared memory

Build quality
■ ■ ■ ■ ■ ■ ■ ■ ■ □

Features
■ ■ ■ ■ ■ ■ ■ ■ ■ □

Value for money
■ ■ ■ ■ ■ ■ ■ ■ ■ □

MMS vs email

Most networks charge the same flat rate of around 40p to send an MMS picture message to either another phone or someone's email account, but for the latter there's a much cheaper option. The T610's email program can attach images stored in the phone, whether captured by the internal camera or transferred by a PC or other device. These can then be emailed directly using GPRS, which for one of the T610's 20KB photos works out at around 4p. Unlike MMS messages sent to an email address the recipient can also reply, although note the T610 cannot open email attachments.

Flat-panel display
ViewSonic VP191b

While 15in and 17in flat-panels are the big sellers, manufacturers are increasingly turning their attention to larger screen sizes. Following hot on the heels of last month's cut-price Sharp LL-T19D1 (see page 56) comes this 19in model from ViewSonic. Offering a viewing area almost equivalent to that of a 21in CRT monitor, the 7.5kg VP191b brandishes a far from heavyweight £519 price tag.

Visually, the ViewSonic cuts an impressive figure. Its sleek black casing and height-adjustable stand means that, in terms of appearance, there isn't much to choose between this and the vastly more expensive Eizo FlexScan L695 screen. The menu system could, however, be easier to use.

No USB or speaker facilities are built into the ViewSonic, although you do get a DVI connector. Hardware pivot means that you can spin the screen through 90 degrees and, with the help of the bundled PerfectPortrait software, increase the number of lines going down the screen.

Most of the hardware specifications – 0.294mm pixel pitch, 250 cd/m2 brightness rating – are fairly standard, but the 600:1 contrast ratio indicates the ViewSonic has plenty of colour depth. The 25ms response rate (a measure of how quickly the screen can redraw the image) is reasonably fast, so the screen should be able to display games and video without the image blurring.

The VP191b's native resolution is 1,280x1,024, but in practice the screen is much happier at a lower resolution. Slightly fuzzy and unfocused at 1,280x1,024, the display is smooth and precise at 1,024x768 and below. This screen isn't going to win awards for its startling image quality – Sharp's screen (see page 56, September issue) is better, for instance. But the colour palette is fairly balanced and the clean text output ensures that it will satisfy in home and office alike.

Verdict

While £519 doesn't seem much for a 19in flat-panel, the ViewSonic is trumped by last month's Sharp LL-T19D1 which offers slightly better image quality for almost £30 less. If you're after a screen with looks that stands out from the crowd, though, the ViewSonic may fit the bill. ■

Robin Morris

ViewSonic VP191b
☐ ViewSonic: 01293 643 900
☐ www.viewsonic.co.uk
☐ £519 ex VAT

Specifications
19in flat-panel; native res 1,280x1,024; 0.294mm pixel pitch; 600:1 contrast ratio; 170/170-degree viewing angle; brightness 250cd/m²; 416x238x460mm; 7.5kg; digital connector; speakers not as standard; 25ms response time; 3-year warranty

Build quality

Features

Value for money

Flat-panel display
NEC-Mitsubishi LCD 1760VM

The NEC-Mitsubishi partnership has produced many stunning products in its time but, for once, here's one that doesn't quite hit the mark. The 1760VM is an attempt to deliver a high quality flat-panel at an extremely affordable price. Unfortunately LG didn't just get there first with the Flatron L1710B (see June 03, page 47) it also produced the better product.

The 1760VM's case styling is functional and robust, but it lacks the glamour of the silver LG. It's also hampered by an infuriating menu system that makes it difficult to access the screen's onboard functions.

Although not equipped with USB ports or pivot facilities, the 1760VM does come with built-in speakers. The front-mounted headphone socket and volume control buttons are also useful. Though gamers and audiophiles will undoubtedly want a meatier set of speakers, these are still useful for anyone who wishes to preserve desk space. The digital DVI connector seems almost obligatory nowadays, but it's still good to see its inclusion.

Specifications are adequate, although the 140-degree viewing angle and 350:1 contrast ratio are notable deficiencies. Despite a claimed native resolution of 1,280x1,024, we found the display struggled to produce a clear picture at this level. The 25ms response time (a measure of how quickly the screen can redraw the image) is fast enough to allow for smooth games and video playback.

To be fair to NEC-Mitsubishi, the 1760VM makes a good job of displaying graphics and its gorgeous colour palette is packed with subtlety. However, those working with text will find the screen unfocused and uncomfortable to use for long periods.

Verdict

With such a low price tag, it seems churlish to complain about the 1760VM. However, it doesn't match the overall polish of the LG L1710B. ■

Robin Morris

NEC-Mitsubishi LCD 1760VM
- NEC-Mitsubishi: 0870 120 1160
- www.nec-mitsubishi.com
- £339 ex VAT

Specifications
17in flat-panel; native res 1,280x1,024; 0.264mm pixel pitch; 350:1 contrast ratio; 140/120-degree viewing angle; brightness 250cd/m²; 374x205x373mm; 6.8kg; digital connector; built-in speakers; 25ms response time; 3-year warranty

Build quality
Features
Value for money

Flat-panel display
Eizo FlexScan L695

Eizo's superior reputation for manufacturing high-quality monitors is unfortunately reflected in its prices. The 18.1in L695 has an actual viewable area that beats a typical 19in CRT monitor's by over half an inch. But £669 is still expensive when you consider that 19in flat-panels can be bought for almost £200 less. If price isn't an important factor, though, the L695 will repay you with sparkling image quality and a number of extra features.

With most graphics cards now allowing the connection of a second screen, an increasing number of users are stretching their Windows workspace. With Eizo's ActiveShot technology, the L695 can be hooked up to two PCs. You can view the contents of either PC in full-screen mode or use the picture-in-picture facility to watch both computers simultaneously.

Few flat-panels offer the physical flexibility of the L695. Not only is its height easily adjustable, the pivot facilities are more advanced than those of the typical display. The screen can be physically rotated through 90 degrees – increasing the number of lines going down the screen – making it ideal for web browsing and office applications. The ActiveRotation technology means there's no need for specialist software.

The Eizo can be comfortably viewed at its native resolution of 1,280x1,024 and the 0.2805mm pixel pitch and 400:1 contrast ratio are up to scratch. The L695's crisp colour palette and incisive character definition makes it adept at displaying both graphics and text, and the screen is bright and legible without straining the eyes. Eizo is aiming this screen at the office user rather than gamers – the 40ms response time isn't low enough to generate a smooth picture in fast-moving games titles.

Verdict

With its £669 price tag, only the wealthy need apply for the Eizo L695. Having said that, this is a top performer and advanced features like ActiveShot and ActiveRotation may well make it a hit with some users. ■

Robin Morris

Eizo FlexScan L695
- Eizo: 01483 719 500
- www.eizo.co.uk
- £669 ex VAT

Specifications
18.1in flat-panel; native resolution 1,280x1,024; 0.2805mm pixel pitch; 400:1 contrast ratio; 170/170-degree viewing angle; brightness 250cd/m²; 399x203x504mm; 7.6kg; digital connector; 40ms response time; 3-year warranty

Build quality
Features
Value for money

reviews

Multifunction device
Brother MFC-4820C

Thanks to the exhaustive external control panel, the MFC-4820C could easily double up as a standard fax machine although, inexplicably, Brother has chosen to saddle it with a pathetic 30-sheet output tray. So poor are the paper handling facilities that even 10-page print jobs appeared too much for the Brother. In practice you'll constantly be watching over the MFC-4820C to make sure that it isn't getting overloaded.

Brother has resorted to the older USB 1.1 standard in this MFD (multifunction device) and it lacks the basic throughput needed to print text and graphics at comparable speeds. Even at the fastest mode, the MFC-4820C managed just 5ppm (pages per minute) in our real-world tests.

The Brother produces high standard prints for graphics users. You'll probably want to skip the fastest mode as the lower setting mode produces acceptable results – even if it doesn't rival the output of the cheaper HP PSC 2175. Text isn't in the same class, though. You have to get to the higher quality settings (capable of no more than 1.5ppm) before characters are clearly formed.

The scanner's 36bit colour depth isn't cutting edge. While acceptable, scan quality can't compete with the output produced on the HP and Lexmark MFDs. At 150dpi (dots per inch) scans took just 25 seconds, while at 300dpi and 600dpi times lengthened considerably.

The software bundle is reasonable, though, and the memory card slot is excellent for outputting images directly from flash memory. Best of all, the Brother's running costs are enviably low. Printing in black is less than 3p a page and the three-cartridge colour ink system is just 6p per page.

Verdict

The Brother has its advantages, from attractive output and low running costs to the in-depth control panel. Unfortunately a distinct lack of performance and poor paper handling facilities fail to justify the hefty £249 price tag. ∎

Robin Morris

Brother MFC-4820C
- Brother: 0870 830 4000
- www.brother.co.uk
- £249 ex VAT

Specifications
13ppm mono; 11ppm colour; optical res 2,400x1,200; scanner max optical res 600x2400dpi; 36bit colour depth; 1,200x1,200dpi colour copy; 14.4 fax; 16MB RAM; USB; 100-page A4 input tray; black cartridge £13.99 (480 pages); 3 x colour £7.99 (400 pages each); 392x462x131mm; 8kg; 1-year warranty

Build quality
Features
Value for money

Sheetfed scanner
Fujitsu ScanSnap fi-4110E0X2

You may think that £350 for a 24bit scanner with no OCR (optical character recognition) software is a ridiculous deal, but then Fujitsu's ScanSnap is unlike any other scanner. Arguably one of the biggest steps towards the paperless office, the ScanSnap is aimed squarely at users who want to convert faxes, magazine articles and other documents to electronic format.

It uses Adobe Acrobat 5.0 to turn documents into PDF files. In practice, the electronic files were faithful reproductions – even at the lowest detail settings. The ability to use colour makes this a superior alternative to sending out documents and leaflets via standard fax machines. The additional program, CardMinder, converts business cards, allowing you to correct mistakes before saving the results.

The ScanSnap is a sheetfed rather than a flatbed model, so you'll have to feed the documents directly into the scanner (a bit like an inkjet printer) rather than placing them on a glass surface. This makes it difficult to convert magazine articles and books, since only single sheets (any size up to A4) can be fed into the ScanSnap. Thankfully, though, you can load it up with as many as 50 pages at once (either single- or double-sided) so for anything other than scanning a few sheets at a time the sheetfed design is perfect.

In tests the ScanSnap converted single-page graphics and text documents at a rate of 6ppm (pages per minute) on the lowest detail settings and almost 3ppm with full detail turned on. But it's with multiple documents that the ScanSnap excels. At the lowest and highest quality settings, it converted a 20-page brochure at a rate of 16ppm and 4.5ppm respectively.

Verdict

The lightweight Fujitsu offers top-notch performance, strong results and is an excellent alternative to having unruly piles of documents sitting around the office. It may be expensive, but to many office workers it could prove a priceless acquisition. ∎

Robin Morris

Fujitsu ScanSnap fi-4110E0x2
- Fujitsu: 020 8573 4444
- www.fel.fujitsu.com
- £350 ex VAT

Specifications
USB 1.1; Windows 98/Me/2000/XP; 24bit true colour depth; optical res 300x300dpi; 309x154x130mm; 2.5kg; Adobe Acrobat 5.0; A4 maximum scanning area; 1-year warranty

Build quality
Features
Value for money

Multifunction device
Lexmark X1150

The X1150 is pitched at consumers who want straightforward print and scanning facilities in one unit, but don't want to pay a huge amount for the privilege. And provided you're not comparing its speed and output to that of the HP PSC 2175 (see page 56), it does an excellent job for its incredibly low asking price.

On first glance the X1150 appears to match up to the HP. From the maximum print resolution of 4,800x1,200dpi (dots per inch) when using photo paper to the USB 2.0 interface, it shares many of the same specifications. Although the software bundle isn't as well integrated as HP's, the Lexmark suite and Abbyy FineReader OCR (optical character recognition) software remain a solid combination. The installation routine is quick too and its one-touch buttons that handle the main facilities are ideal for novices.

Considering the Lexmark's low price, graphics images are of a high standard. The colour palette was a little too dark, but results are still impressive. Skip the clear though overexposed output of QuickPrint mode – with a speed of 1.4ppm (pages per minute) for an A4 picture – and opt for the Normal setting instead. This pumps out strong graphics at almost 0.5ppm.

Text is also reasonable. Even in QuickPrint mode the X1150's output is easily legible and its real-world speed of 6.2ppm makes it suitable for running off rough copies. Normal mode offers reasonable results at the rate of 4.7ppm. As is the case with the majority of inkjets, though, outputting text at higher quality modes takes far too long.

The Lexmark's 48bit scanner colour depth and an optical resolution of up to 600x1200dpi culminate in realistic and colourful image reproduction. We scanned 150dpi and 300dpi images in 21 and 37 seconds respectively.

Inevitably the Lexmark has a drawback – its running costs are fairly steep. Unlike many models, the colour inks are supplied in one single cartridge – even if you use one colour far more than the others, you'll be forced to replace the entire cartridge every time. And with costs stretching from 4.9p for a page of mono text to 8p for a page of colour, you'll quickly become impoverished by this MFD if you use it on a regular basis.

Verdict

High running costs will take it out of you eventually, but in the short term this is an extremely well-priced MFD. Print times and performance are reasonable for a £67 device. ■

Robin Morris

Lexmark X1150
☐ Lexmark: 0870 444 0044
☐ www.lexmark.co.uk
☐ £67 ex VAT

Specifications
14ppm mono; 8ppm colour; optical res 2,400x1,200dpi (4,800x1,200 for photo paper); scanner max optical res 600x1200dpi; 48bit colour depth; 600x1,200dpi colour copy; 256KB DRAM; USB 2.0; 100-page A4 input tray; 445x488x276mm; 4.5kg; black cartridge £20.18 (410 pages); colour £22.04 (275 pages); 1-year warranty

Build quality
■■■■■■ ☐☐☐
Features
■■■■■■ ☐☐
Value for money
■■■■■■■ ☐

Digital photo viewer
SanDisk Digital Photo Viewer

SanDisk Digital Photo Viewer
☐ SanDisk: 001 408 542 0500
☐ www.sandisk.com
☐ £52 ex VAT

Specifications
Card reader for CompactFlash I and II, SmartMedia, Secure Digital, Multimedia Card and Memory Stick; remote control; video and S-Video cables

Build quality
■■■■■ ☐☐☐☐
Features
■■■■■■ ☐☐☐
Value for money
■■■■■ ☐☐☐☐

The Digital Photo Viewer is essentially a five-in-one card reader that lets you view photos, stored on various removable digital media cards, on your TV. It takes five minutes to set up, which is a good thing because if it took longer it wouldn't be worth bothering with.

You connect it to the TV using the supplied RCA video or S-Video cables, plug in a card and run through the onscreen menu using the remote control unit. It couldn't be simpler.

What's missing is a Scart port. Okay, having one isn't strictly essential but Scart is how we connect things to TVs in Europe (plus it makes setting up equipment extremely easy) and this lack of Scart facilities rather betrays SanDisk's Californian roots.

A lot of digital cameras have a video or S-Video connector that allows you to hook up straight to a monitor or TV anyway. So you would only use the DPV if your camera hasn't got this facility or if you have more than one camera and a variety of removable media cards.

Verdict

The DPV is simple to set up and use, cheap to own, but superfluous if your only camera is equipped with a video connector. ■

Andrew Charlesworth

Multifunction device
HP PSC 2175

Having scanning and printing facilities in a single unit is obviously a huge asset when space is at a premium. But MFDs tend to use older or cheaper technology, turning out unimpressive results that may have you running back to your bulky but powerful printer/scanner combination. The simple solution, then, is to buy the HP PSC 2175. It's not the cheapest option, but with its high-quality print, scan and copy facilities (but no fax) this is the perfect choice for those who need the best of all worlds.

Slot machine
What impresses about the HP PSC series is the way the software slots together. While other manufacturers bundle their MFDs with third-party applications, the 2175 comes with a complete photo and imaging suite specially designed by HP. Such thought is also displayed as you set up the HP although, in typical style, the long-winded installation process will test the patience of users with a modicum of experience.

The MFD connects via USB 2.0 for maximum performance, and the 100/50-sheet input/ output trays work effectively. A memory card slot is provided, allowing you to take photos directly from flash memory cards. The useful Photo Proof Sheet function lets you print thumbnails, so you can select the image you want.

Even in the lowest quality mode and with a print speed of 2.7ppm (pages per minute), the PSC 2175's output sparkles in comparison to the competitions. Higher settings clock in at a solid 1.7ppm and 0.9ppm but generate superbly vivid pictures that happily eclipse those of its rivals. With the addition of photo paper, boosting the resolution from 1,200x1,200dpi (dots per inch) to an impressive 4800x1200dpi, there seem to be few heights the 2175 can't reach.

And while the HP wears its photo-printing credentials with pride, this MFD can just as easily slip into high-calibre text mode. Even in the lightning-quick 8.6ppm FastDraft mode, text is clean and precise. Higher quality Normal mode offers near flawless text reproduction at 4.5ppm.

The HP's scanning component is also of the highest order and its 48bit colour depth and optical resolution capabilities (up to 1,200x2,400dpi) are excellent. Results were packed with colour and it was possible to scan 150dpi and 300dpi images in 19 and 26 seconds respectively. Even a large 600dpi file could be conjured up in less than a minute.

Verdict
For anyone who believes that buying an MFD means sacrificing image quality, the PSC 2175 will come as a revelation. At £149 it isn't cheap, but its relatively low running costs compensate. Superb performance and glorious output make this MFD the perfect way of tapping into the market without having to compromise. ■

Robin Morris

HP PSC 2175
☐ HP: 0870 547 4747
☐ www.hp.com
☐ £149 ex VAT

Specifications
18ppm mono; 13ppm colour; optical res 1,200x1,200dpi (4,800x1,200 optimised for photo paper); scanner max optical res 1,200x2,400dpi; 48bit colour depth; 1,200x1,200dpi colour copy; 8MB RAM; USB 2.0; 100-page A4 input tray; 8.14kg; 463x370x220mm; black cartridge £14.64 (450 pages); colour £20.57 (400 pages); 1-year warranty

Build quality
Features
Value for money

Digital camera pen
Nikkai Digital Pen Camera

Nikkai Digital Pen Camera
☐ Maplin: 0870 264 6000
☐ www.maplin.co.uk
☐ £41 ex VAT

Specifications
Windows 95/98/Me/XP/; 160x120 res; 2MB SDRAM; 36 images; 2-pill batteries (4 included); BMP file format; serial cable; 30x86x21mm; 61g; 1-year warranty

Build quality
Features
Value for money

Nikkai's Digital Pen Camera is a well-made, stylish writing tool that delivers low-resolution covert images that will fill the remit of any budding James Bond.

Bulky but not too heavy, the Nikkai comes with two pill batteries for power and two extra for backup. Shots are at a set resolution of 160x120 and you'll get 36 images on to the 2MB of memory. The results are what you'd expect at this resolution, but no worse than mobile phone or PDA cameras.

The Digital Pen Camera connects to a PC by the somewhat archaic serial interface, but it's fast enough thanks to the small file sizes it generates. With Nikkai touting the pen as a spy gadget we found the built-in voice instructions strange. The last thing you want when you're alone on an undercover special ops mission is a loud metallic-sounding woman's voice saying you've just taken a photo.

Verdict
By the time this review is published you'd have just missed out on the special half-price deal so it's not the value for money it could have been. That said, it's a sturdy pen that takes good enough shots to email to friends or family. ■

Spencer Dalziel

36GB Serial ATA hard disk
Western Digital WD360GD Raptor

This new Western Digital drive has been raising a few eyebrows of late because it performs like an enterprise-class SCSI drive but uses the new Sata (Serial ATA) desktop interface. Capacity-wise the 3.5in Raptor drive is nothing special – it's a rather mean 36GB. This is largely due to the size of the SCSI drives it's designed to compete with. But the single platter inside it spins at 10,000rpm (rotations per minute) and it has a 5.2ms average data seek time. Its buffer-to-data transfer rate is a claimed 150MBps (megabytes per second), with a buffer-to-disk data transfer of 102MBps. An 8MB buffer also helps to eliminate file transfer bottlenecks, allowing quicker access to data.

A suitable port

As our test motherboard lacked any suitable ports, we plugged in the Adaptec 1210SA Sata Raid controller (£56). This has two 150MBps Sata ports, restricting you to either simple mirroring or striping over two drives using the same HostRaid technology found in Adaptec's Ultra 320 SCSI cards. It's easy to install and configure – either from the Bios or via the management software provided, Adaptec's Storage Manager browser-based GUI. If you don't require Raid, Adaptec also offers the SataConnect for £39.

The absence of Master/Slave jumpers makes Sata drive installation easy, though some mysterious jumpers are present. As well as a rather flimsy looking data interface, all Sata drives feature a new type of power connector – one that most current PSUs don't cater for. Luckily the Raptor also sports a traditional power

connector for these situations.

Testing it against a 60GB IBM/Hitachi Deskstar GXP ATA100 drive confirmed its raw power – it was one third faster on straight linear reads and almost twice as fast on buffered reads. It also ran fairly quietly without glowing red which is nice for a 10,000rpm drive.

It seems that the Raptor was originally developed as an Ultra ATA device – a 'bridge' chip on the PCB converts Parallel ATA to Sata. As a result certain exotic features much beloved by SCSI devotees, such as command queuing, are absent from this drive. But that is about the only niggle we have.

Verdict

The WD360GD Raptor may not be big but it is certainly very fast – if not the fastest desktop drive on the market. It's equal to the best and most expensive SCSI drives on the market but at a fraction of the price. Factor in some Raid 0 striping with a second drive and you'll have yourself a fairly awesome video editing platform. ∎

Roger Gann

Serial ATA 200w

Ultra ATA has reached the end of the road – it's just not feasible to squeeze any more throughput out of this 15-year-old technology. Serial ATA, the successor to Parallel ATA for data storage, is a point-to-point connection that delivers full throughput to each storage device by allowing a single controller to manage multiple ports. Sata is faster and starts at transfer rates of 150 megabytes per second (compared to Ultra ATA's 133MBps) with a roadmap up to 300MBps and, ultimately, 600MBps.

Sata cables are thinner, simpler to route and install, and provide better airflow for system cooling than parallel ATA cables. The cables can now be up to one metre long, over twice the maximum length of Ultra ATA cables and they're much cheaper than SCSI cables: an UltraSCSI cable can cost £40, whereas the same money buys you at least 10 Sata cables. Sata will be integrated into all Pentium 4 I/O Controller Hubs (ICH5) courtesy of the 865 and 875 chipsets, so you won't need an expensive controller card, either. As a result Raid will also be much cheaper to implement. And like SCSI, Sata drives are hot-swappable.

Western Digital WD360GD Raptor
☐ Western Digital: 01372 360 055
☐ www.wdc.com
☐ £101 ex VAT

Specifications
36.7 GB capacity; 10,000rpm; 5.2ms seek time; interface Serial ATA; cache memory 8MB; 5-year warranty

Good points
Excellent performance; easy to set up; long warranty

Bad points
Limited capacity; bridged design; unlabelled jumpers

Build quality
Features
Value for money