

Say cheese!

To complement this month's *pcwexpert* on digital cameras we've put 14 snappers – from budget to fully featured – to the test

Digital cameras have certainly come a long way in a remarkably short time. In just a few years we've seen the quality of their images increase over ten-fold. Today's top of the range models boast 3.3 megapixel CCDs, which are easily capable of making great looking A4 inkjet prints and really giving film cameras a run for their money in terms of photographic control.

But let's not forget the unique qualities only a digital camera can offer. The pictures are ready to view in an instant, and since they're already in digital format, there's no need to bother with all that tedious scanning to get them into a PC for retouching, emailing or uploading to a website.

With re-usable memory cards, you'll never have to worry about buying and developing film again, not to mention finishing a roll before seeing your pictures. Virtually all digital cameras also feature video outputs, allowing you to make an instant slide show on your TV. Many models can even grab short clips of audio and video, perfect for capturing a multimedia moment. They're truly some of the most versatile devices on the market today.

Best of all, there's never been a better time to buy, with highly desirable compact models available, or those packed with every feature a photographic enthusiast desires. While traditionally more expensive than their film-based counterparts, you may be surprised to learn of budget digital cameras that are low-cost in every sense of the term. With this in mind, we've

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• *Digital cameras tested and reviewed by Gordon Laing*

rounded up no fewer than 14 digital cameras, representing the entire market. We've got eight of the latest fully featured high-quality models, and four totally irresistible pocket-sized beauties.

To round off the test, we looked at a pair of budget models just to see if it's possible to buy a usable digital camera for as little as £100. Also in this issue is our *pcwexpert* on digital cameras, explaining their past, present and future, along with tips on how to get the best out of this new technology – see page 241.

ILLUSTRATION Simon Brown

Agfa ePhoto CL18

BUDGET



CL18 is going to be a pretty basic model. With a maximum resolution of only 640 x 480 pixels, the CL18's CMOS sensor only musters one-third of a megapixel. Considering most colour inkjet printers like being fed around 200 pixels per printed inch, you're only looking at making photos up to 4 x 3in at best before losing detail. Then again, while VGA resolution is very low for photographic prints, it's huge for online use. Most pictures on websites

TO ACHIEVE POSTCARD-SIZED prints, you're looking at a digital camera with a resolution of at least one megapixel, and these models start at over £200. But there are several models available for as little as £100 ex VAT.

The best representative of rock-bottom digital cameras is Agfa's ePhoto CL18, which costs £118, around five to six times less than the fully featured models elsewhere in this group test.

Clearly for this kind of money, the

measure no more than 200 pixels wide, which makes a VGA camera more than sufficient – so long as you're not cropping in too much. It's also an ideal image size for emailing pictures or viewing them on a TV screen.

The 640 x 480 resolution is offered at two levels of jpeg compression, and the CMOS sensor is rated at 200 ISO sensitivity. There are no removable cards, with the CL18 instead employing 2MB of built-in memory, squeezing in

16 pictures at best quality, or 32 at the lower-quality setting.

There's no colour screen, with composition relying on the optical viewfinder. Power comes via a pair of alkaline AA batteries, although you're advised to buy a charger and a set of NiMHs. The CL18 has a USB interface, so you that can also draw power from your PC.

Weighing 117g without battery, the CL18 is a compact, but basic camera. VGA resolution is sufficient for online or TV use, but doesn't cut the mustard for anything but the smallest prints. You may be better off with the flexibility of a model designed as a VGA webcam featuring still capabilities.

DETAILS

PRICE £118 (£100.43 ex VAT)

CONTACT 020 8231 4903

www.agfa.co.uk

PROS One of the cheapest digital cameras on the market; USB interface

CONS Low 640 x 480 0.3megapixel resolution; no manual control

OVERALL Undeniably cheap, but a dedicated webcam may prove more flexible

FEATURES

PERFORMANCE

VALUE FOR MONEY

OVERALL RATING

★

★

★★

★★

Epson PhotoPC 650

BUDGET



Compact Flash card, and though there's no CF slot to accommodate the IBM Microdrive, it's still an impressive capacity. While 8MB isn't much for more upmarket cameras, the lower-resolution 650 considers it almost palatial. You'll get around 30 best-quality jpegs, 47 medium quality and 88 at the lower VGA resolution. Composition is with the optical viewfinder or 1.8in screen.

Unsurprisingly at this price there's no zoom lens, with the 650 instead

THE SECOND OF our budget digital cameras costs £225, and features a 1.09megapixel CCD. With a maximum resolution of 1,152 x 864 pixels, you'll be able to produce colour inkjet prints approaching 5 x 7in before you start losing detail. This resolution is offered at two levels of jpeg compression and, impressively for a camera of this price, also in an uncompressed mode. A lower 640 x 480 pixel mode is also available.

Epson supplies the 650 with an 8MB

employing fixed focal length optics equivalent to 33mm on a 35mm camera; the actual specification is 6mm, f2.0, while the closest macro focusing distance is 15cm.

Exposure is almost entirely automatic, without the option to manually adjust compensation or white balance. The camera, however, has a number of shutter speeds, from 1/4 to 1/750 second, along with four apertures up to f11. You can manually force the flash on, off or

for red-eye reduction. There's no movie or audio capture, but you can connect the 650 to your TV for a slide show.

The 650 weighs 315g without batteries. It consumes four AAs, and Epson supplies a set to get you started, but we'd recommend investing in a charger and a set of NiMHs.

Sadly there's no USB interface, with the camera instead relying on an old slow serial connection. Fortunately the 650's images are sufficiently small for this not to be too big an issue.

If you can afford £350, then go for the 2.1megapixel Kodak DC3800 and make bigger prints. Otherwise, Epson's 650 is a great entry-level digital camera.

DETAILS

PRICE £225 (£191.49 ex VAT)

CONTACT Epson 0800 220 546

www.epson.co.uk

PROS Plenty of capacity for pictures; cheap for a digital camera

CONS No USB interface; virtually no manual control

OVERALL The cheapest digicam worth having, but £350 gets you the Kodak DC3800

FEATURES

PERFORMANCE

VALUE FOR MONEY

OVERALL RATING

★★

★★

★★★

★★★



Canon Digital Ixus

COMPACT



x 1,200 pixel images. The Digital Ixus offers two levels of jpeg compression and a lower 640 x 480 pixel mode, but no uncompressed tiffs. Like other Canon models, the best-quality jpegs employ relatively mild compression. Canon supplies an 8MB Compact Flash card, but the Type I CF slot won't accommodate the IBM Microdrive.

The supplied lithium-ion battery fully recharges in around 120 minutes and is good for around 85

DESPITE NOW BEING (only just) the oldest of the four mini cameras in this section, Canon's Digital Ixus remains the smallest at 87 x 57 x 27mm, and weighs a mere 190g without its battery.

Canon has squeezed in a 2x optical zoom lens, equivalent in focal length to 35-70mm on a 35mm camera; the actual specification is 5.4-10.8mm, f2.8-4.0 and the closest macro focusing distance is 10cm.

A 2.1megapixel CCD produces 1,600

shots using the 1.5in screen, or more with the optical viewfinder. There's no LCD status panel, so you have to use the main screen to check battery life.

The Digital Ixus is almost entirely automatic. You can, however, choose a black and white mode, set the white balance and adjust exposure compensation. The flash can also be forced on/off, reduce red-eye, or slow-synchro to complement long exposures up to one second. There's also TV

output, but no video capture mode. Finally, a neat stitch-assist mode helps you align multiple frames for later joining together in software for a nice panoramic effect.

Connection is across USB only, and Canon's supplied ImageBrowser software lets you browse, manage and download images. Picture quality is pretty good, but there's a little electronic noise on smooth coloured graduations like blue skies. Then again, we produced fairly respectable 10 x 8in prints, and postcard-sized output looked great. Anyone after a good-quality snapper in the smallest possible case won't be disappointed.

DETAILS

PRICE £529 (£450.21 ex VAT)

CONTACT Canon 0121 666 6262

www.canon.co.uk

PROS Tiny, gorgeous, and more than adequate for snappy situations

CONS Not 3.3megapixel; slight noise on images; must use screen to check status

OVERALL Highly desirable, but Kodak's 3800 is cheaper and Sony's P1 is better quality

FEATURES ★★

PERFORMANCE ★★

VALUE FOR MONEY ★★

OVERALL RATING ★★



Fujifilm FinePix 40i

COMPACT



provides 150 minutes of music playback.

Yes, the 40i also uniquely boasts MP3 audio playback, and Fujifilm supplies it with a pair of earphones and remote control.

The 40i's lens is fixed at 8.3mm, equivalent to a 36mm lens on a 35mm camera; it can focus as close as 6cm. The fixed lens allows the 40i to be ready for action in just over a second.

Exposure compensation is offered between +/-1.5EV in 1/3 EV steps,

and the flash can be forced on, off, set for red-eye reduction or slow-synchro with shutter speeds down to 1/4 second. The movie mode captures 320 x 240 video at 10fps with audio; clips can be up to 80 seconds each.

Fujifilm supplies an 8MB SmartMedia card, and the highest resolution images can be saved at three levels of compression, along with 1,280 x 960 and 640 x 480 pixel modes – no uncompressed tiffs though.

THE FINEPIX 40i houses Fujifilm's proprietary Super CCD imaging technology, claimed to deliver 4.3megapixel resolution (see *pcwexpert*).

The 40i is the same width and thickness as the Digital Ixus, but about 14mm taller. It's lighter at only 210g including its pair of rechargeable 1,600mAh NiMH AA batteries, good for around 80 shots with the 1.8in LCD; the display can also superimpose handy framing guides. Or a fresh charge

The camera certainly outputs large 4.3megapixel, 2,400 x 1,800 images, but the fact remains that it started with 2.4megapixels. The 4.3megapixel files also measure around 12MB, which means Fujifilm has to increase the compression to deliver the 1,700KB jpegs on the 40i's best-quality mode.

In our tests, most of the 40i's images suffered from higher than average electronic noise, with speckling in smooth graduations and shadows. In our optical tests, it resolved between 2.1 and 3.3megapixel models.

The 40i is a quick and small snappy camera and uniquely doubles as a personal stereo.

DETAILS

PRICE £549 (£467.23 ex VAT)

CONTACT Fujifilm: 020 7465 5745

www.fujifilm.co.uk/di

PROS Small; light; very quick start-up and shutdown; can play MP3 audio

CONS No optical zoom; MP3 needs more memory; above average electronic noise

OVERALL Cute and versatile, but also consider the other three compacts tested here

FEATURES ★★

PERFORMANCE ★★

VALUE FOR MONEY ★★

OVERALL RATING ★★



Kodak DC3800

COMPACT



THE COMPACT DIGITAL camera market is hotting up. Others on test here cost between £529 and £699; the DC3800 is just £349.

It's certainly compact, measuring 94 x 61 x 33mm and weighing just 165g without batteries. Like the Fujifilm 40i, the DC3800's lens is a fixed focal length, equivalent to 33mm on a 35mm camera; the actual specification is 6.9mm, f2.8, and the closest macro distance is 20cm. Not having to pop out or retract its lens

allows the DC3800 to be ready for action quickly.

Behind the lens lies a 2.1megapixel CCD, although unlike the 1,600 x 1,200 resolution of other models, Kodak has once again opted for one of its own 3:2 aspect ratio chips, delivering 1,792 x 1,184 pixel images. Best-quality jpegs measure around 500KB, and Kodak supplies the DC3800 with an 8MB Compact Flash card. Interestingly, the camera itself has no direct connection to a PC, with Kodak instead including a separate USB Compact Flash reader with the package.

Kodak is certainly playing the ease-of-use card, with the DC3800 offering the bare minimum of controls and options. A dial selects either record, playback, macro or setup modes, with the latter essentially offering just three quality settings, and the choice of activating burst mode or quick view.

Unusually, there's no exposure compensation or white-balance options,

although in our tests the images came out remarkably well. There are no tiff, audio, movie or manual exposure modes either, and rather infuriatingly the video output is NTSC only, requiring a multi-standard TV. You can at least manually force the flash on, off, or set for red-eye.

The DC3800 uses a pair of AA batteries which come with the package. The DC3800, however, consumes these at an alarming rate, forcing you to invest in a recharger and a set of NiMHs – a fresh charge should last about one hour.

Eliminating almost all control, the DC3800 will appeal to snappers who want a small, simple, 2.1megapixel camera at a low, low price.

DETAILS

PRICE £349.99 (£297.86 ex VAT)

CONTACT Kodak: 0870 243 0270

www.kodak.com/go/dc3800

PROS Relatively cheap and compact 2.1megapixel camera

CONS The barest of controls, even for a basic compact; battery-hungry

OVERALL Point-and-shoot snappers on a budget will love the DC3800

FEATURES

PERFORMANCE

VALUE FOR MONEY

OVERALL RATING

★★

★★★

★★★★

★★★★

Sony Cyber-shot DSC-P1

COMPACT



SONY'S NEW P1 IS slightly longer and thicker than our other three compacts, measuring 113 x 54 x 44mm and weighing 210g without battery, but it thrashes them in features and quality.

Remarkably, Sony has squeezed a 3x optical zoom into the P1, equivalent to 39-117mm on a 35mm camera. When powered down, it retracts entirely.

The P1 boasts nothing less than 3.3megapixels. That's 2,048 x 1,536 pixels, with 1,600 x 1,200, 1,280 x 1,024

and 640 x 480 modes also offered. There's an uncompressed tiff mode, along with mono gifs for cleanly capturing documents. Best-quality jpegs weigh in around 1,300KB, and Sony only supplies a measly 8MB Memory Stick.

Composition is with an optical viewfinder, or crisp 1.5in screen, which can smoothly zoom in up to five times during playback. The screen doesn't quite show 100 per cent coverage during capture though, and the

displays only indicate number of pictures taken, as opposed to number remaining.

In its use and features, the P1 feels like a shrunk-down S70, although it's sadly missing aperture and shutter priority modes. Fans of night-shots must rely on the two extra-sensitive Twilight modes and a longest exposure of two seconds. There's compensation from +/-2EV in 1/3 steps though, and you can alter flash brightness.

The movie mode can capture up to

15 seconds of video at 320 x 240 or 60 seconds at 160 x 120, both at 15fps with mono audio; there's a built-in speaker too. The files are stored in MPEG-1 format and can fill a TV screen.

Unique to the P1 is a Clip Motion mode that can take up to 10 160 x 120 pixel images, then save them as an animated gif for online use. Rounding off the package is one of Sony's InfoLithium batteries, good for 90 minutes and indicating precisely how many minutes are remaining.

For £699 you could buy the Sony S70, but with great features in such a small case, the P1 will win many friends.

DETAILS

PRICE approx £699

(£594.89 ex VAT)

CONTACT Sony 0990 111 999

www.sony.co.uk

PROS Smallest 3.3megapixel/3x zoom camera; InfoLithium battery; great features

CONS 8MB memory is half the standard for 3.3 cameras; relatively expensive

OVERALL If you can live without manual control, this is a superb 3.3megapixel model

FEATURES

PERFORMANCE

VALUE FOR MONEY

OVERALL RATING

★★★★

★★★★

★★★★

★★★★

★★★★

★★★★

★★★★

★★★★

Canon PowerShot G1

FULLY FEATURED



CANON'S BACK and the new PowerShot G1 looks set to take no prisoners.

The G1 is a 3.3megapixel camera, supporting 2,048 x 1,536, 1,024 x 768 and 640 x 480 pixel modes. Our best-quality jpegs widely ranged from 800 to 1,800KB, and Canon supplies a 16MB Compact Flash card as standard; the CF slot welcomes the IBM Microdrive.

Rather than a tiff mode, the G1 employs Canon's proprietary raw format, also used by the Pro70 and

D-30. This literally takes the raw CCD information untouched by sharpening or white balancing, and losslessly compresses it to around 3MB – a lot more manageable than 9MB uncompressed tiffs. Canon supplies a TWIN driver to acquire and post-process raw files. The G1 also offers a great 50 ISO mode, which, while requiring twice as much light as standard 100 ISO, significantly reduces noise on images.

Joining the optical viewfinder is a flip-out 1.8in screen that can be twisted around for those tricky shots; during playback you can zoom in up to five times. The PowerShot also features a movie mode, recording 30-second 320 x 240 clips at 15fps with sound. The LCD information panel is comprehensive.

The 3x optical zoom is equivalent to 34-102mm on a 35mm camera. Canon throws in a tiny remote control and offers optional close-up, teleconverter

and wide-angle adaptors. Focusing can be set to single or continuous.

There's aperture and shutter priority, manual and auto control, with 40 shutter speeds from eight seconds to 1/1000, and 13 aperture settings; compensation is offered from +/-2EV in 1/3 steps, noise reduction kicks in below 1.3 seconds, and there's also a bracketing option. Along with the usual flash options is a full TTL hotshoe for external Canon Speedlites.

Weighing 470g with its lithium battery, the G1 is comparable with its direct competitor, the Nikon 990. The G1 lacks only a bulb and decent macro mode, but the 990 may have been toppled.

DETAILS

PRICE £799 (€680 ex VAT)
CONTACT Canon: 0121 666 6262
www.canon.co.uk

PROS Excellent control and quality; 50 ISO and raw modes; Microdrive compatibility
CONS Relatively modest macro; no bulb setting and slowish start-up time
OVERALL Arguably the best 3.3megapixel camera to date

FEATURES	★★★★
PERFORMANCE	★★★★
VALUE FOR MONEY	★★★★
OVERALL RATING	★★★★



Epson PhotoPC 3000Z

FULLY FEATURED



EPSON'S PHOTOPC 3000Z is a fairly chunky 3.3megapixel camera measuring 108 x 89 x 65mm and weighing 368g without batteries. It consumes four AAs, and Epson supplies a set of NiMHs and a charger that refreshes overnight.

The 3000Z has a HyPict mode that takes the standard resolution of 2,048 x 1,536 and interpolates it to 2,544 x 1,904 pixels. It won't reveal detail that wasn't captured in the first place, but is designed to smooth edges in big

enlargements. But in our tests we didn't notice much difference and recommend interpolating images inside your PC.

The 3000Z comes with a 16MB Compact Flash card, but is not certified for use with IBM's Microdrive. Epson uses strict compression, with best-quality 2,048 x 1,536 jpegs measuring around 800KB each. There's also an uncompressed 9MB tiff mode, along with 640 x 480 and cropped 2,048 x 768 panoramic settings.

There's fine control over the 3x optical zoom lens, equivalent to 34-102mm on a 35mm film camera. Composition is with the optical viewfinder or 1.8in screen, which can zoom in two times during playback.

Flash options are good, with an external hotshoe and rear-curtain mode which fires the flash at the end of a long exposure. Aperture priority offers six steps from f2.0 to f8.0, while 42 shutter speeds between eight seconds and

1/750 are available in fully manual. There's also a neat time-lapse function automatically snapping at intervals between 10 seconds or 24 hours. Exposure compensation is available from +/-2EV in 1/3 or fine 1/5 EV steps.

The movie mode can capture up to 25 seconds of 320 x 240 video with mono audio, and play back full-screen on your TV. You can also record descriptive audio clips with each picture and there's a built-in speaker. The USB connection also lets you remotely control and configure the camera using your PC.

There's slightly high compression, but images still look good. Processing tiffs is relatively slow though. A good camera.

DETAILS

PRICE £799 (€680 ex VAT)
CONTACT Epson 0800 220 546
www.epson.co.uk

PROS Good quality; PC remote control of camera; time-lapse function
CONS HyPict appears to be a white elephant; slight over-compression
OVERALL Another good 3.3megapixel camera, but beaten by others

FEATURES	★★★★
PERFORMANCE	★★★★
VALUE FOR MONEY	★★★★
OVERALL RATING	★★★★



Fujifilm FinePix 4900Zoom

FULLY FEATURED



camera, the 4900's lens is long; the actual specification is 7.8-46.8mm, f2.8-3.1, but the closest macro distance is a slightly average 10cm. A motor-assisted manual focus ring is offered. There's a relatively large 2in display for composition or a camcorder-style electronic viewfinder.

The 4900 employs one of Fujifilm's 2.4megapixel Super CCDs, which, with scaling, outputs 4.3megapixel, 2,400 x 1,800

SOME PEOPLE WILL instantly love the new FinePix 4900Zoom. Packed with features, buttons and gadgets, there's certainly plenty to play with. At 110 x 79 x 94mm, it's not pocketable, nor is it the lightest at 410g excluding its rechargeable lithium battery (approximately 110 minutes use), but the grip is comfortable to hold and the lens barrel boasts a massive 6x optical zoom, which zips out when powered up.

Equivalent to 35-210mm on a 35mm

jpeg settings and an uncompressed tiff mode, although at the highest '4.3megapixel' resolution, this produces 12MB files. Best-quality jpegs measure around 1,600KB, and Fujifilm supplies a 16MB SmartMedia card.

Fujifilm rates the standard sensitivity of Super CCD at 200 ISO, compared to 100 ISO of the competition. Cunningly, the 4900 has a new 125 ISO mode, which visibly reduced the noise on our Super CCD images.

Shutter priority offers 36 speeds from three to 1/2000 seconds, while aperture priority provides 14 different settings; compensation is offered between +/-2EV in 1/3 steps and there's also exposure bracketing. The manually popped-up flash can be forced on, off, set to red-eye reduction or slow-synchro; there's also a hotshoe for an external unit. Movie mode captures up to 160 seconds (memory permitting) of 320 x 240 video at 10fps without sound.

With its low-noise mode, the 4900 boasts the best images we've yet seen from Super CCD, but no better than most 3.3megapixel cameras. The 4900 is a good enthusiast's camera.

DETAILS

PRICE £799 (£680 ex VAT)

CONTACT Fujifilm: 020 7465 5745

www.fujifilm.co.uk/di

PROS Huge optical zoom; low-noise 125 ISO mode improves Super CCD output

CONS No sound; relatively modest macro and short long-exposure

OVERALL Great enthusiast's camera at a decent price, but check out the Canon G1

FEATURES

PERFORMANCE

VALUE FOR MONEY

OVERALL RATING

★★★★

★★★★

★★★★

★★★★

Kodak DC4800

FULLY FEATURED



ratio. Best-quality jpegs averaged around 600KB, indicating relatively high compression. Kodak supplies a 16MB Compact Flash card, although the CF slot is not compatible with the IBM Microdrive.

The DC4800 features a 3x optical zoom lens, equivalent to 28-84mm on a 35mm film camera. But the widest zoom setting is 28mm, which is wider than the 32 to 40mm of most digital cameras.

Composition is with the optical viewfinder or 1.8in screen, although the 3:2 image aspect ratio results in a thin black bar running across the top; in playback mode you can zoom in two or four times. The flash can be forced on or off, left to auto or set to red-eye reduction; there's also a sync to an external flash gun.

The DC4800 is relatively compact, and weighs 320g without its lithium-ion battery, which charges in four hours. Connection is via USB, after which the

WHILE MOST 3.3megapixel cameras use Sony's CCD, Kodak has opted for one of its own chips for the DC4800. This chip delivers wide 3:2 aspect ratio 2,160 x 1,440 images, matching the shape of 35mm film.

The maximum 3.1megapixel resolution of the DC4800 is available at two levels of jpeg compression and in an uncompressed tiff mode; there are also lower 1,800 x 1,200, 1,536 x 1,024 and 1,080 x 720 modes, all in the 3:2 aspect

camera's memory is mounted as a removable drive in My Computer. There's also a video output to your TV, but no movie or audio capture modes.

Control is very simple, with a dial selecting auto, playback, setup and three aperture priority settings. Another dial directly adjusts exposure compensation from +/-2EV, albeit in relatively coarse 0.5 steps. You can manually choose 19 shutter speeds from 0.5 to 1/1000 second or from 0.7 to 16 seconds in long exposure mode.

Images suffer slightly from over-compression, but are fine for most occasions. A good camera, but other models beat it overall.

DETAILS

PRICE £699.99 (£594.89 ex VAT)

CONTACT Kodak: 0870 243 0270

www.kodak.com/go/dc4800

PROS Aspect ratio that matches 35mm and a wide 28mm lens setting

CONS Compression a little high; no movie mode; doesn't take IBM Microdrive

OVERALL Good overall camera, but the Nikon 880 is better for the money

FEATURES

PERFORMANCE

VALUE FOR MONEY

OVERALL RATING

★★★★

★★★★

★★★★

★★★★

Nikon CoolPix 880

FULLY FEATURED



the highest 2,048 x 1,536 resolution is also available as an uncompressed 9MB tiff. Nikon supplies a 16MB Compact Flash card, but the slot is not IBM Microdrive compatible. Best-quality jpegs measure around 1MB.

Unlike the 3x of its competition, the 880 is fitted with a 2.5x optical zoom, equivalent to 38-95mm on a 35mm camera; and the macro focuses as close as 4cm. There are also five optional converter lenses and a slide-copying adaptor. You have the choice of an optical viewfinder, or the 1.8in screen for composition; the latter can zoom up to four times on images during playback, and even display a tonal histogram.

The CoolPix 880 features essentially the same electronics as the 990 model, so you get burst capture modes, four types of metering, Nikon's Best Shot Selector (a boon in shaky situations), and excellent focusing options.

NIKON'S LATEST IS a light and compact 3.3megapixel model. When powered down, the lens retracts to the same depth as the comfortable grip, which makes it more pocketable than Sony's S70 or Olympus' 3030.

The 880 uses a rechargeable lithium battery, good for around 90 minutes, although it'll also take disposable 2CR5 batteries, lasting 110 minutes.

Three resolutions are offered, each at three levels of jpeg compression, while

There are 14 shutter speeds in manual from eight secs to 1/1000 and, like the 900, a Bulb mode up to 60 seconds with an optional USB cable release. The aperture priority has only two settings, but they do deliver small or large depth of fields respectively. Compensation is from +/-2EV in 1/3 EV steps.

The flash can be forced on, off, set to red-eye reduction or slow synchro, but there's no sync to an external unit. Movie mode captures 320 x 240 at 15fps, but without sound.

Finally there are 11 'scene' modes and a neat quick-review facility. Optical quality is excellent, which makes the CoolPix 880 a superb all-rounder.

DETAILS

PRICE £699 (£594.89 ex VAT)
CONTACT Nikon 0800 230 220
www.nikon.co.uk



PROS Low price; light; compact; great manual and automatic controls

CONS Only two aperture settings; no audio; not Microdrive compatible

OVERALL One of the best all-round 3.3megapixel cameras

FEATURES	★★★★
PERFORMANCE	★★★★
VALUE FOR MONEY	★★★★
OVERALL RATING	★★★★

Nikon CoolPix 990

FULLY FEATURED



takes about 12 hours to top them up.

Along with the top 2,048 x 1,536 resolution, there are lower 1,024 x 768 and 640 x 480 settings, and the choice of three levels of compression – there's also an uncompressed 9MB tiff mode. Best-quality 2,048 x 1,536 jpegs measure around 1MB, and Nikon supplies a 16MB Compact Flash card; but the CF slot is incompatible with the IBM Microdrive.

The 990's optics are superb. There's fine adjustment of the 3x optical zoom, equivalent to 38-115mm on a 35mm camera. Macro mode is unrivalled at an amazing 2cm. Composition is via an optical viewfinder or with the 1.8in screen which can zoom in up to four times and even display a tonal histogram.

Exposure control is comprehensive, with 10 aperture settings, 14 shutter speeds from eight seconds to 1/1000, compensation from +/- 2EV in 1/3 stops, and even a bulb setting up to

NIKON'S 3.3MEGAPIXEL CoolPix 990 exudes quality and it's the most comfortable camera to use. The 990 is built in two halves, with the optical section smoothly rotating through 270 degrees – great for self-portraits.

Such build quality comes at a physical price however, with the 990 measuring 149 x 79 x 38mm and weighing 370g without batteries. Nikon supplies four AA NiMHs good for 90 minutes' solid use. The supplied charger

60 seconds using an optional USB cable release. You've got the choice of auto, manual, aperture or shutter priority modes, three types of metering and Nikon's effective Best Shot Selector.

The built-in flash can be forced on, off, reduce red-eye, slow-synch or fill-in, and there's a terminal for selected external Nikon Speedlights. The movie mode captures up to 40 seconds of 320 x 240 video at 15fps. There's no sound but you can zoom.

Who cares if the 990 is expensive? It's one of the best digital cameras under £1,000, but Canon's new G1 may now have the edge.

DETAILS

PRICE £849 (£722.55 ex VAT)
CONTACT Nikon 0800 230 220
www.nikon.co.uk

PROS Excellent control; superb physical and optical quality; best macro

CONS Relatively large and expensive; no sound; Microdrive incompatibility

OVERALL Semi-pros and Nikon-philes will love the 990, but consider the Canon G1

FEATURES	★★★★
PERFORMANCE	★★★★
VALUE FOR MONEY	★★★★
OVERALL RATING	★★★★



Olympus Camedia C-3030 ZOOM

FULLY FEATURED



camera; and the macro mode focuses to an unremarkable 20cm. You can use the optical viewfinder for composition, or the 1.8in TFT display, which lets you zoom in up to three times on images during playback. The screen also displays a wealth of information during use, indicating exposure, compensation, and even a representation of manual focusing distance.

Aperture priority offers 13 settings from f2.8 to f11, while shutter priority mode ranges from one second to 1/800; in fully manual, you can extend exposures to 16 seconds.

Two levels of compression are available at the maximum resolution, and there is also an uncompressed tiff mode. Best-quality 2,048 x 1,536 jpegs measure around 1,600KB each, and Olympus supplies a 16MB SmartMedia card as standard.

Flash options are comprehensive, with the usual force on/off and red-eye

OLYMPUS' 3030 is essentially a version of the earlier 2020 model, but with the crucial additions of USB, a 3.3megapixel CCD, and a fetching black finish. It measures 109 x 76 x 66mm, and weighs 300g without batteries.

The 3030 is powered by four AAs or a pair of CR-V3 lithium batteries – Olympus supplies the latter, but you'll have to buy your own recharger.

The 3x optical zoom lens is equivalent to 32-96mm on a 35mm

reduction complemented by a slow-syncro mode that can be set for a front or rear curtain; there's also a sync plug for an external flashgun, and a tiny infra-red remote control thrown in.

The movie mode captures video clips with sound, limited by memory. The standard 16MB can capture 55 seconds worth at 320 x 240 in 15fps. Video and audio can be replayed through a TV set and audio clips can also be added to describe still pictures; the 3030 doesn't have a built-in loudspeaker though. Uniquely, the 3030 can crop and edit movie clips within the camera itself.

This is a good camera, but the competition is better on some features.

DETAILS

PRICE £799 (£680 ex VAT)

CONTACT Olympus 0800 072 0070

www.olympus.co.uk

PROS Longest 16-second exposures; finest aperture control; in-camera movie editing

CONS No mains supply or rechargeable batteries as standard

OVERALL Another good 3.3megapixel camera, but beaten by others

FEATURES

PERFORMANCE

VALUE FOR MONEY

OVERALL RATING

★★★★

★★★★

★★★

★★★★

Sony Cyber-shot DSC-S70

FULLY FEATURED



90 minutes with the supplied charger.

Disappointingly, Sony supplies the S70 with a meagre 8MB Memory Stick. Best-quality 2,048 x 1,536 pixel jpegs measure around 1,300KB, and there are lower 1,600 x 1,200, 1,280 x 1,024 and 640 x 480 modes, plus uncompressed 9MB tiffs and a mono-gif mode.

The S70 is equipped with a 3x Carl Zeiss optical zoom, equivalent to a 34-102mm lens on a 35mm camera. Macro mode works as close as

4cm. The relatively large 2in display allows you to smoothly zoom in up to five times and scroll around images during playback, but when capturing pictures, it doesn't quite show 100 per cent coverage. Annoyingly, both displays show number of pictures taken, not number remaining.

Shutter speeds range from eight to 1/1000 seconds, and there are nine aperture settings from f2.0 to f8.0; you have the choice of auto, manual,

SONY'S S70 IS PRETTY compact for a fully-featured 3.3megapixel digital camera, measuring 125 x 62 x 39mm – the lens does stick out a little though.

Rather than the 60-90 minutes solid use of most digital cameras, the S70's battery is good for up to 150 minutes. It's one of Sony's InfoLithium models too, which feeds back precisely how many minutes of charge are remaining on the screen. The battery charges within the camera in around

aperture or shutter priority modes.

Exposure compensation is available from +/- 2EV in 1/3 stops, and there's a spot metering option. The flash can fire brighter or dimmer, along with forced on, off, and red-eye modes. The S70 automatically fires its flash at the end of long exposures and there's also a sync option to an external flash unit.

Movie mode captures up to 15 secs of video at 320 x 240 or 60 secs at 160 x 120, both at 15fps with mono audio; and there's a built-in speaker. Files are stored in MPEG-1 format.

Image quality is superb, but it's the long battery life and feedback that really score – shame about the 8MB memory.

DETAILS

PRICE £699 (£594.89 ex VAT)

CONTACT Sony 0990 111 999

www.sony.co.uk

PROS Great quality; good control; unparalleled battery life with feedback

CONS 8MB of memory is half the standard; there's also little to grip

OVERALL One of the best all-round 3.3megapixel cameras

FEATURES

PERFORMANCE

VALUE FOR MONEY

OVERALL RATING



★★★★★

★★★★★

★★★★★

★★★★★

How we did the tests

Digital cameras may not use film, but they share many performance issues with their analogue counterparts. Lenses still have to focus an image sharply with the minimum of distortion. Electronics and mechanics must respond as quickly as possible to user requests, such as pressing the shutter at a critical moment. Flashes should illuminate naturally while minimising red-eye effects. Exposure and metering systems should provide the required level of control, while still delivering a decent image.

We developed a number of tests to see how the cameras performed in terms of resolving power, compression artefacts, electronic noise, optical distortion, macro capability and effectiveness of red-eye flash reduction. For all tests we set each camera to its highest optical resolution and best-quality jpeg. The exposure and white balance were set to automatic. We believe these to be the most common conditions under which digital cameras are used.

Our first main test pushed the camera's optics. We mounted a set of Paterson optical targets

(available from Jessops) on a wall, and positioned each camera in turn on a tripod 180cm away. We then adjusted the lenses until the arrangement filled the width of the frame as viewed on the LCD monitor (apart from the budget Agfa model where the optical viewfinder was used); each zoom lens was approximately mid-way through its range.

We used the camera displays to compose the pictures at close range because the optical viewfinders suffered from parallax effect and didn't give an accurate representation of coverage. This also allowed us to measure the displays' coverage compared to what was captured.

The test patterns revealed any geometric distortions, while the repeating shapes allowed sharpness to be compared between the centre and corners.

Our second main test was to take a picture of Tower Bridge on a sunny winter's afternoon. Again, all cameras were mounted on a tripod in the same location, and to minimise lighting differences, all models were tested immediately after each other within a 15-minute period.



To test macro modes we photographed a £2 coin as closely as possible. The example above was taken with the Sony S70 from 4cm away. Compare with this month's pcwexpert Results pages to see the Nikon CoolPix 990's extremely close macro mode at 2cm, and the Epson 3000Z's at a modest 20cm

We tried hard to ensure that the composition was identical in each case, adjusting the zoom's focal length until each camera recorded the same picture.

Overleaf are enlarged sections of both pics that show the combined effectiveness of optics, metering, exposure and compression for each camera.

Our third test measured how near each camera could

focus in macro mode, by simply getting as close as we could to a £2 coin and still obtain a sharp image.

Taking pictures in party environments is always a tough test of red-eye reduction modes, focusing under low light and flash-based exposures, so we also tested each camera under similar conditions. We plunged a room into near darkness, set the cameras to red-eye reduction mode and took a photo of the same person from a couple of metres away and looked out for poor exposures and devilish pupils.

We also used each camera for as long as possible, taking many photos under a variety of conditions. As with a film camera, we looked for handling issues, optical distortions and poor exposures or metering. We closely examined images for electronic noise and compression artefacts that often plague digital cameras.



Standard Paterson targets were used to test the camera's optics and the CCD resolving power. The target's straight edges reveal any geometric distortions at the sides, while the various shapes and patterns push the camera's overall resolving power to the limits



To test automatic exposure and resolving power, we photographed London's Tower Bridge on a sunny day. Over the page we have reproduced a section including the right-hand spire to reveal resolved detail and any jpeg compression artefacts



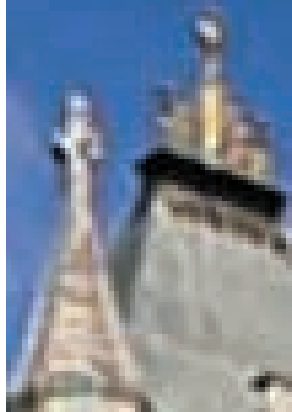
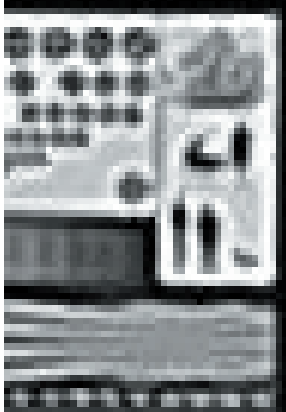
How they compared

The pictures below are zoomed sections of the test photos shown to the right. The Tower Bridge image was enlarged to the size of these two Results pages, then a small area was cropped to test the resolving powers of each camera's CCD. Our test pattern was also enlarged and cropped, as well as being examined for uniform sharpness across its surface.



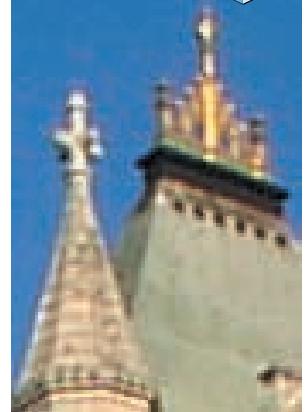
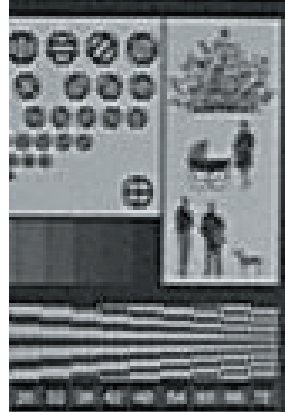
Agfa ePhoto CL18

BUDGET



Epson PhotoPC 650

BUDGET



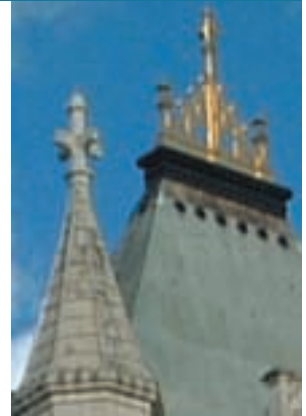
Canon Digital Ixus

COMPACT



Fujifilm FinePix 40i

COMPACT



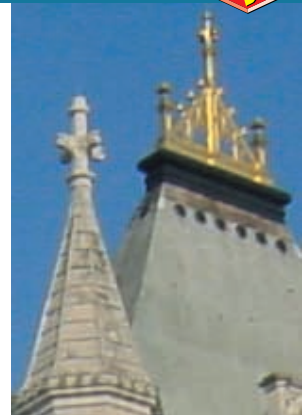
Kodak DC3800

COMPACT



Sony Cyber-shot DSC-P1

COMPACT



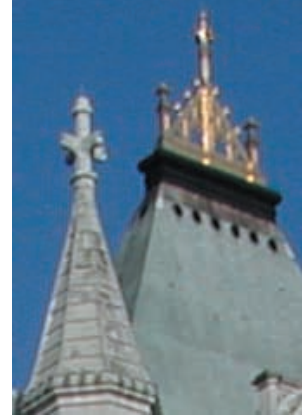
Canon PowerShot G1

FULLY FEATURED



Epson PhotoPC 3000Z

FULLY FEATURED



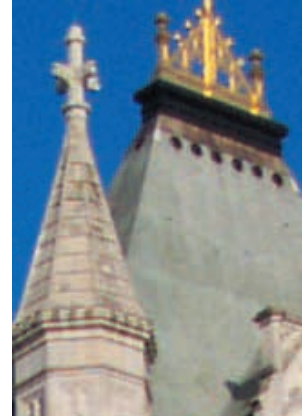
Fujifilm FinePix 4900Zoom

FULLY FEATURED



Kodak DC4800

FULLY FEATURED



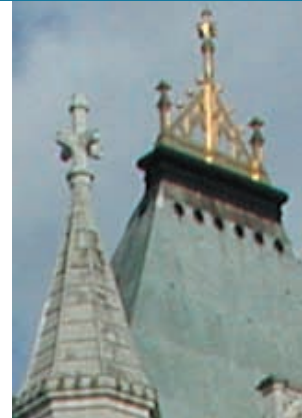
Nikon CoolPix 880

FULLY FEATURED



Nikon CoolPix 990

FULLY FEATURED



Olympus Camedia C-3030 ZOOM






FULLY FEATURED



Sony Cyber-shot DSC-S70

FULLY FEATURED



Table of features	Budget		Compact		
					
MANUFACTURER	AGFA	EPSON	CANON	FUJIFILM	KODAK
NAME	EPhoto CL-18	PhotoPC 650	Digital IXUS	FinePix 40i	DC3800
Price inc VAT (ex VAT)	£118 (£100.43)	£225 (£191.49)	£529 (£450.21)	£549 (£467.23)	£349 (£297.86)
Telephone	020 8231 4903	0800 220 546	0121 666 6262	020 7465 5745	0870 243 0270
URL	www.agfa.co.uk	www.epson.co.uk	www.canon.co.uk	www.fujifilm.co.uk/di	www.kodak.com
QUALITY & STORAGE					
Image sensor	0.3megapixel CMOS	1.09megapixel CCD	2.1megapixel CCD	2.4megapixel Super CCD	2.1megapixel CCD
Removable storage	✗	Compact Flash	Compact Flash	SmartMedia	Compact Flash
Storage capacity	2MB built-in	8MB card supplied	8MB card supplied	8MB card supplied	8MB card supplied
Microdrive compatibility	✗	✗	✗	✗	✗
Best quality jpegs	125KB	250KB	1,600KB	1,700KB	500KB
Compression	jpeg	jpeg, uncompressed tiff	jpeg	jpeg	jpeg
Resolutions	640 x 480	1,152 x 864 640 x 480	1,600 x 1,200 640 x 480	2,400 x 1,800 scaled 1,280 x 960 640 x 480	1,792 x 1,184 896 x 592
OPTICS					
Optical zoom	✗	✗	2x	✗	✗
Digital zoom	✗	✗	4x	✗	2x
Focal length (35mm equiv)	45mm	33mm	35-70mm	36mm	33mm
Actual focal length	7.2mm	6mm	5.4-10.8mm	8.3mm	6.9mm
Aperture (min-max zoom)	f2.0	f2.0	f2.8-4.0	f2.8	f2.8
Focus range	Unknown	30cm to infinity	57cm to infinity	50cm to infinity	50cm to infinity
Macro focus distance	N/A	15cm	10cm	6cm	20cm
Auto focus	✓	✓	✓	✓	✓
Manual focus	✗	✗	✗	✗	✗
EXPOSURE					
Shutter priority/steps	✗	✗	✗	✗	✗
Aperture priority steps	✗	✗	✗	✗ / 2	✗/2
Exposure compensation	✗	✗	plus/minus 2.0EV 1/3 steps	plus/minus 1. 5EV 1/3 steps	✗
Shutter speeds	Unknown	1/4-1/750	1sec-1/500	1/4-1/1000	1/2-1/1000
Flash modes	Auto, off	Auto, forced, red-eye, off	Auto, forced, slow sync, red-eye, off	Auto, forced, slow sync, red-eye, off	Auto, forced, red-eye, off
External flash hotshoe	✗	✗	✗	✗	✗
FEATURES					
LCD screen	✗	1.8in	1.5in	1.8in	1.5in
Optical viewfinder	✓	✓	✓	✓	✓
ISO rating	200	140	100	200	100
Interfaces	USB	Serial	USB	USB	USB card reader supplied
Audio recording	✗	✗	✗	✓ and MP3	✗
Video recording	✗	✗	✗	320 x 240 10fps	✗
Loudspeaker	✗	✗	✗	✗	✗
Batteries	2 x AA	4 x AA	Lithium-ion	2 x AA	2 x AA
Recharger supplied	✗	✗	✓	✓	✗
AC adaptor supplied	✗	✗	✓	✗	✗
TV output	✓	✓	✓	✓	NTSC only
Dimensions (h x w x d)	66 x 105 x 37mm	72 x 135 x 57mm	57 x 87 x 27mm	71 x 86 x 29mm	33 x 94 x 61mm
Weight (not inc battery)	117g	315g	190g	155g	165g










Fully featured				
				
SONY	CANON	EPSON	FUJIFILM	KODAK
CYBER-SHOT DSC-P1	POWERSHOT G1	PHOTOPC 3000Z	FINEPIX 4900 ZOOM	DC4800
£699 (E594.89)	£799 (E680)	£799 (E680)	£799 (E680)	£699 (E594.89)
0990 111 999	0121 666 6262	0800 220546	020 7465 5745	0870 243 0270
www.sony.co.uk	www.canon.co.uk	www.epson.co.uk	www.fujifilm.co.uk/di	www.kodak.com
3.3megapixel CCD	3.3megapixel CCD	3.3megapixel CCD	2.4megapixel Super CCD	3.1megapixel CCD
Memory Stick	Compact Flash	Compact Flash	SmartMedia	Compact Flash
8MB card supplied	16MB card supplied	16MB card supplied	16MB card supplied	16MB card supplied
x	✓	Not certified	x	x
1,300KB	1,500KB	780KB	1,600KB	600KB
jpeg, gif, uncompressed tiff	jpeg, proprietary raw	jpeg, uncompressed tiff	jpeg, uncompressed tiff	jpeg, uncompressed tiff
2,048 x 1,536 1,600 x 1,200 1,280 x 1,024 640 x 480	2,048 x 1,536 1,024 x 768 640 x 480	2,544 x 1,904 HyPict 2,048 x 1,536 640 x 480	2,400 x 1,800 scaled 1,600 x 1,200 1,280 x 960 640 x 480	2,160 x 1,440 1,800 x 1,200 1,536 x 1,024 1,080 x 720
3x	3x	3x	6x	3x
2x	4x	2x	3.75x	2x
39-117mm	34-102mm	34-102mm	35-210mm	28-84mm
8-24mm	7-21mm	7-21mm	7.8-46.8mm	6-18mm
f2.8-5.3	f2.0-2.5	f2.0-2.5	f2.8-3.1	f2.8-4.5
50cm to infinity	70cm to infinity	50cm to infinity	50cm to infinity	50cm to infinity
10cm	6cm	20cm	10cm	20cm
✓	✓	✓	✓	✓
x	✓	✓	✓	x
x	✓/40	✓/42	✓/36	✓/19
x/2	✓/13	✓/6	✓/13	✓/3
plus/minus 2.0EV 1/3 steps	plus/minus 2.0EV 1/3 steps	plus/minus 2.0EV 1/5 steps	plus/minus 2.0EV 1/3 steps	plus/minus 2.0EV 1/2 steps
2 secs-1/1000	8 secs-1/1000	8 secs-1/750	3 secs-1/1000	16 secs-1/1000
Auto, forced, red-eye, off, level	Auto, forced, red-eye, off	Auto, forced, red-eye, off, slow sync, rear curtain	Auto, forced, slow sync, red-eye, off	Auto, forced, red-eye, off
x	✓	✓	✓	External sync
1.5in	1.8in	1.8in	2in	1.8in
✓	✓	✓	Electrical	✓
100	100	100	200	100
USB	USB	USB/serial	USB	USB
✓	✓	✓	x	x
320 x 240 15fps	320 x 240 15fps	320 x 240 15fps	320x240 10fps	x
✓	✓	✓	x	x
Lithium-ion	Lithium-ion	4 x AA	Lithium-ion	Lithium-ion
✓	✓	✓	In-camera	✓
✓	✓	x	✓	✓
✓	✓	✓	✓	✓
54 x 113 x 44mm	77 x 120 x 64mm	89 x 108 x 65mm	79 x 110 x 94mm	69 x 120 x 65mm
210g	420g	368g	410g	320g



Table of features	Fully featured			
				
MANUFACTURER	NIKON	NIKON	OLYMPUS	SONY
NAME	COOLPIX 880	COOLPIX 990	CAMERA C-3030 ZOOM	CYBER-SHOT DSC-S70
Price inc VAT (ex VAT)	£699 (€594.89)	£849 (€722.55)	£799 (€680)	£699 (€594.89)
Telephone	0800 230 220	0800 230 220	0800 072 0070	0990 111 999
URL	www.nikon.co.uk	www.nikon.co.uk	www.olympus.co.uk	www.sony.co.uk
QUALITY & STORAGE				
Image sensor	3.3megapixel CCD	3.3megapixel CCD	3.3megapixel CCD	3.3megapixel CCD
Removable storage	Compact Flash	Compact Flash	SmartMedia	Memory Stick
Storage capacity	16MB card supplied	16MB card supplied	16MB card supplied	8MB card supplied
Microdrive compatibility	✗	✗	✗	✗
Best-quality jpegs	1,000KB	1,000KB	1,600KB	1,300KB
Compression	jpeg, uncompressed tiff	jpeg, uncompressed tiff	jpeg, uncompressed tiff	jpeg, gif, uncompressed tiff
Resolutions	2,048 x 1,536 1,024 x 768 640 x 480	2,048 x 1,536 1,024 x 768 640 x 480	2,048 x 1,536 1,600 x 1,200 1,280 x 960 XGA, VGA	2,048 x 1,536 1,600 x 1,200 1,280 x 1,024 640 x 480
OPTICS				
Optical zoom	2.5x	3x	3x	3x
Digital zoom	4x	4x	2.5x	2x
Focal length (35mm equiv)	38-95mm	38-115mm	32-96mm	34-102mm
Actual focal length	8-20mm	8-24mm	6.5-19.5mm	7-21mm
Aperture (min-max zoom)	f2.8-4.2	f2.5-4.0	f2.8	f2.0-2.5
Focus range	40cm to infinity	30cm to infinity	80cm to infinity	25cm to infinity
Macro focus distance	4cm	2cm	20cm	4cm
Auto focus	✓	✓	✓	✓
Manual focus	✓	✓	✓	✓
EXPOSURE				
Shutter priority/steps	✓/14	✓/14	✓/42	✓/19
Aperture priority/steps	✓/2	✓/10	✓/13	✓/9
Exposure compensation	plus/minus 2.0EV 1/3 steps	plus/minus 2.0EV 1/3 steps	plus/minus 2.0EV 1/3 steps	plus/minus 2.0EV 1/3 steps
Shutter speeds	8 secs - 1/1000, 60secs Bulb	8 secs - 1/1000, 60secs Bulb	16 secs - 1/800	8 secs - 1/1000
Flash modes	Auto, forced, slow sync, red-eye, off	Auto, forced, fill-in slow sync, red-eye, off	Auto, forced, slow sync, red-eye, off, rear curtain	Auto, forced, red-eye, off, level
External flash hotshoe	✗	External sync	External sync	External sync
FEATURES				
LCD screen	1.8in	1.8in	1.8in	2in
Optical viewfinder	✓	✓	✓	✓
ISO rating	100	100	100	100
Interfaces	USB/serial	USB	USB/serial	USB
Audio recording	✗	✗	✓	✓
Video recording	320 x 240 15fps	320 x 240 15fps	320 x 240 15fps	320 x 240 15fps
Loudspeaker	✗	✗	✗	✓
Batteries	Lithium-ion or 2CR5	4 x AA	2 x CR-V3 or 4 x AA	Lithium-ion
Recharger supplied	✓	✓	✗	✓
AC adaptor supplied	✓	Option	Option	✓
TV output	✓	✓	✓	✓
Dimensions (h x w x d)	75 x 100 x 54mm	149 x 79 x 38mm	76 x 109 x 66mm	125 x 62 x 39mm
Weight (not inc battery)	275g	370g	300g	280g

Editor's Choice

First things first: we were extremely impressed with all the cameras we looked at in this group test.

Putting the two budget models briefly aside, our four pocket-sized and particularly the eight fully featured models were truly excellent products, any of which you'd be proud to own and use.

Starting at the budget end of things, the cheapest Agfa CL18 is not really suitable for print-making, instead finding its niche with online applications. You're probably better off with a cheaper dedicated webcam, or perhaps one of Creative Labs' WebCam Gos with built-in memory and cordless capabilities.

Epson's PhotoPC 650 is a different kettle of fish, however, with sufficient resolution to make at least postcard-sized prints. Sure, it doesn't come near the quality of more expensive models, but it is definitely worth having and earns a **Highly Commended** award in the budget category – the model to go for if you've less than £250 to spend.

Moving on to our pocket-sized contenders, and we have four models, each with four very different selling points. Fujifilm's FinePix 40i is unique in that it doubles up as an MP3 player. As a

camera, the 40i is incredibly small, and one of the fastest to power up and down, but in our tests, its Super CCD suffered from above average electronic noise.

Next up comes Kodak's DC3800, a compact 2.1 megapixel bargain at £350. There's virtually no control, but the quality is good and the price is right. However, awards go to those with slightly higher prices. Canon's Digital Ixus is also a 2.1 megapixel camera, but remains the smallest and most desirable-looking of the compacts, even boasting a 2x zoom, and earning itself a **Highly Commended** award.

Winning this section, however, is Sony's Cyber-shot DSC-P1, which, while bigger than the Canon and more expensive than its competitors, boasts superb control, great features (including a unique animated gif function), an InfoLithium battery and most impressively of all, 3.3 megapixel resolution and a 3x optical zoom, which retracts fully into the body. Wonderful stuff, deservedly earning an **Editor's Choice** award, despite its high £699 price tag and only 8MB of memory.

The fully featured category was toughest of all to judge, with eight truly

excellent models boasting a level of photographic control and quality we've long desired from digital cameras. Three models, however, stood out.

First up is Nikon's CoolPix 880, which essentially packs in the electronics of the bigger 990 into a more compact, cheaper package. Sure, there's no audio with the video and the CF slot still refuses to accept IBM's neglected Microdrive hard disk, but apart from this, it's a truly superb camera. Delve beyond the automatic and cunning scene-selection modes and you'll find the 990's industry-leading focusing and metering options. At £699, it's a bargain and earns itself a **Highly Commended** award.

As mentioned earlier, battery life is the bane of all digital cameras, but one manufacturer is ahead of the pack. We salute Sony for its innovative InfoLithium batteries, first for saying precisely how many minutes are remaining and, second, for lasting longer than anyone else's. Sony's Cyber-shot DSC-S70 boasts around 150 minutes of solid battery life in a compact body with superb features, control and great quality. Despite only coming with 8MB, it deserves a **Highly Commended** award.

Which brings us to our overall winner in the fully featured section. **Editor's Choice** goes to the Canon PowerShot G1. Canon has been quiet at this end of the market since releasing its award-winning PowerShot Pro70 almost two years ago, but it's clearly been following developments very carefully. Directly targeting Nikon's superb high-end CoolPix 990, the G1 further improves the state of the art.

There's Microdrive compatibility and the first AV mode for a Canon camera, while the flip-out screen of the Pro70 has also made a welcome comeback. Better still, however, is the raw mode that losslessly compresses the untouched data from the CCD, delivering files that are around three times smaller than comparable tiffs. Best of all is a new 50 ISO mode, which reduces noise on images, producing what are probably the best pictures we've seen from a 3.3 megapixel digital camera so far.

Finally, ensure that you pick up the cameras for yourself and see how they feel. Cameras are very much a personal thing, and the best quality in the world won't make up for a model that feels wrong and is subsequently left at home.



Sony's Cyber-shot DSC-P1



Canon's PowerShot G1



Epson's PhotoPC 650



Canon's Digital Ixus



Nikon's CoolPix 880



Sony's DSC-S70