

Digital cameras

Agfa Ephoto 307

Agfa Ephoto 1280

Casio QV-11

Casio QV-70

Casio QV-700

Epson PhotoPC600

Fuji DX-5

Fuji DX-7

Kodak DC120

Kodak DC200

Kodak DC210

Nikon CoolPix 100

Nikon CoolPix 300

Opti Picture Magic (MDX-8000)

Opti Focus (Photorun)

Panasonic NV-DCF1B (Cardshot)

Panasonic KXL-600A (Coolshot)

Ricoh RDC-300Z

Sony Mavica FD7



In the Picture

Digital cameras provide a quick and easy way to get images onto your PC. We put 19 models through their paces to judge which are the shooting stars

Traditionally, the most desirable gadgets on the market get more complicated and less expensive with each year that passes.

Digital cameras are no exception. Today's models are far more sophisticated than they were even a year ago, and prices have fallen so much that you can find them on every high street.

Having said this, taking the digital approach is still more expensive than employing traditional methods. You can buy a decent 35mm compact camera for under £100, and spending a bit more gets you a zoom lens, sophisticated autofocus and probably several flash modes.

Spending twice that on a digital camera only gets you a basic model, but

because it stores its images electronically, you can transfer your photos onto your PC quickly and easily. Once there, you can edit them, distort them, save them and print them out as big as your printer will allow.

So digital cameras provide a quick and easy way to get images into your PC, whether it's for work, rest or play. But just what do you need to consider if you're going to spend your hard-earned pennies on one?

Image quality

Aside from how much you have to spend, your first thought when buying a digital camera should be image quality. It's all very well having the sleekest

device known to man, but if it makes shots of the Eiffel Tower look like a 1960s tower block it's not much use.

Digital cameras store pictures as a series of dots – pixels – which merge into one another when you look at them from a distance. This creates an illusion that the image is made up of continuous tones, just like a photograph. The smaller the dots, the better the illusion. The more pixels you have, the smaller you can display each one and the higher the resolution of your final picture. So, the more pixels the better.

If you want to print your photos, you'll probably be using an inkjet printer with a resolution somewhere between 300 and 1440 dots per inch (dpi).

Because this is a higher resolution than a typical monitor, a picture that looks fine on screen may appear blocky when printed. This effect is worse with low-resolution photos, as enlarging them makes each pixel bigger. According to Kodak, if you want to create 5in x 7in printouts that compare well with photos, you need an original image made up of at least a million pixels.

While Kodak has a vested interest in promoting this point of view – it makes some of the cheapest 'megapixel' cameras on the market – our tests show a marked difference in the quality of prints between the lowest and highest resolutions. The Kodak and Agfa megapixel cameras take superb pictures, but you shouldn't simply be seduced by high resolutions.

Colours must be faithful too, and here the Opti MDX8000 is disappointing. Its pictures belie its 1000x800 pixel resolution – they're not sharp and the colours are dreadful. In general though, quality of colour tends to go with high resolution.

However, depending on what you want to do with your pictures, you may not need a megapixel camera. A resolution of just 640x480 pixels is fine if you primarily want to see images on-screen, perhaps as part of a Web page.

Features

It sounds ridiculous, but two of the most basic features on conventional cameras are often missing from the digital variety.

The CCDs (see How does a digital camera work) are sensitive even to low light levels, so some manufacturers don't include a flash. Unfortunately, this can make indoor pictures look very grey, and extra light is always useful to help pick out the detail in shadows.

You should also always look for a viewfinder. Because they store images electronically, it's easy for digital cameras to show them on a built-in LCD screen as well. It's convenient to use this for framing your pictures, but if you have to do this for every shot you'll find that you get through batteries like nobody's business. LCDs demand power, and it's not uncommon for a set of four alkaline AA batteries to last less than two hours. A proper viewfinder saves a lot of battery life, but it's not an option with cameras that – like the Agfa EPhoto 1280 and the Casio QV700 – have a swivelling lens.

The more expensive cameras tend to have a zoom too. With the Sony, Agfa and Kodak zoom models, this is a proper zoom lens – it's blissfully silent on the Sony Mavica. The Epson PhotoPC 600, on the other hand, has a digital zoom. This is a bit of a cheat as it enlarges a part of the image rather than actually getting in closer, and you'll notice the difference if you enlarge the picture further.

Other effects include time and date stamps on your pictures, electronic titling, and the ability to mix black and white and colour images. The Sony even lets you take sepia-tinted pictures.

Ease of use

In practice, despite their range of features, most digital cameras are no harder to use than a normal compact. One exception is the RDC-300Z, Ricoh's newest release. When you switch it on the flash defaults to Off – the Auto setting would be more appropriate – and it's slightly awkward in the hand as well.

With the others, to take a picture you just point and shoot, framing your picture either in the viewfinder or on screen. Applying effects, changing flash modes and the like can be a different story, though.

Here, a good LCD screen is valuable to display text, rather than just icons. The Kodak DC200 and 210 are particularly clear, while the Nikon Coolpix 300 goes one better with its touch screen which makes navigating through its menus a very simple matter. We weren't so keen on the Agfa EPhoto 1280 – you'll have to master the intricacies of its Info button, a thumbwheel, two more buttons and a dial, together with learning several icons.

As well as setting options, the other main use of the screen will be to review your pictures. It's one of the great advantages of digital cameras that you can take half a dozen snaps of the same subject, then pick the best and delete the others to free up space. A screen is vital if you're to make these judgements.

Connectivity

Even if you delete some pictures as you go, you'll need to store others on the camera before you can transfer them to your PC. There's a tremendous difference in how many photos you can take – the Nikon Coolpix 300 can store 132 low-resolution pictures, while, if you choose not to compress the Kodak DC120's

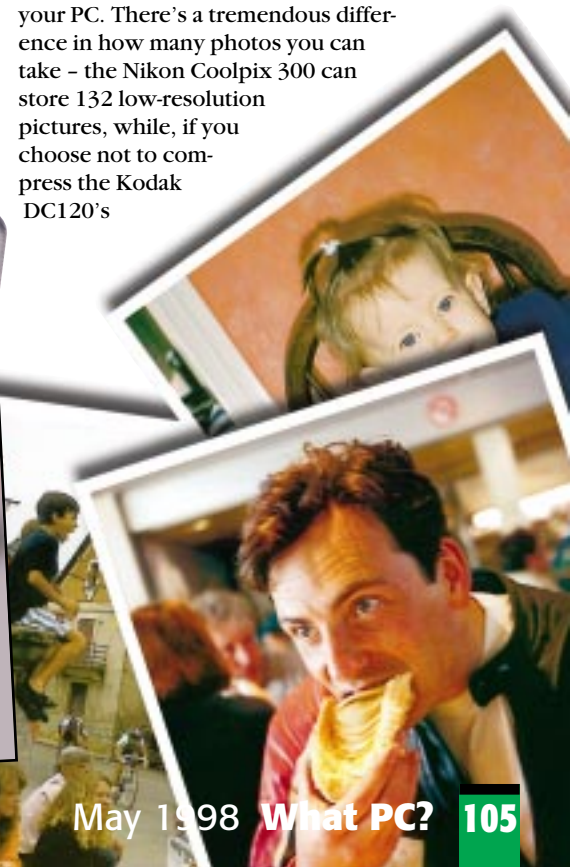
How does a digital camera work?

In principle, a digital camera works like a cross between an ordinary camera and a scanner. When you look at your subject – or point your camera towards it – light is reflected from it back towards you. This passes through the lens and is focussed on the image plane.

The image plane is where you find the film in a normal camera, and your picture is instantly recorded by light-sensitive emulsion. Of course, there's no film in a digital camera – instead, the light hits a light-sensitive electronic panel called a charge coupled device, or CCD.

The CCD is made up of a number of pixels – generally these amount to between 300,000 and over a million –

which each register the colour and intensity of the light hitting them, just as they would in a scanner. The camera then takes this information and saves it, either to memory or onto a memory card, a process that can take a couple of seconds.



highest-resolution shots, it will hold just two. How exactly they're stored isn't terribly important, with some cameras having an internal memory and others using removable memory cards, either exclusively or to supplement

their own memory. However, this can affect how easy it is to transfer pictures to your computer.

With most cameras, you need to install software on your PC, before you connect the camera using a serial cable.

In most cases it's then simple to download pictures into the transfer application, then save and edit them in a graphics package. Having said this, we found the downloading process in Casio's QVLink more complex than most.

Kodak DC200



Despite the light from behind the subject, there's enough flash here to ensure the whole picture is properly exposed. The DC200 also renders colours well, particularly skin tones.

Kodak DC120



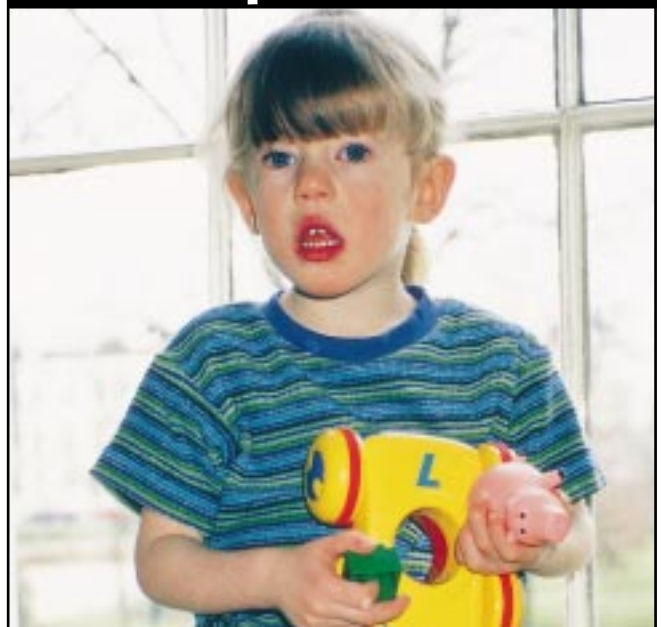
The final images from Kodak's DC120 are slightly higher resolution than those from the company's other cameras, so pictures are a touch more detailed. The image isn't as bright, but the flash still fills in shadows well.

Agfa EPhoto 307



Although it's cheaper than either of the Kodak offerings, the Agfa EPhoto 307 copes well with the backlighting. Its lower resolution is, however, plain to see. There's some loss of fine detail and the whole picture is less sharp.

35mm disposable camera



Even a disposable camera, however, produces more detailed snaps than the digital cameras on test. The continuous tones of film offer more faithful colours, and while the picture is dark it isn't bad for a tenner.

Digital cameras compared

Product	Manufacturer	Agfa	Agfa	Casio	Casio	Casio	Epson	Fuji
	Model name	Ephoto 307	Ephoto 1280	QV-11	QV-70	QV-700	PhotoPC600	DX-5
	Price (inc VAT)	£351.33	£762.58	£199.99		£499.99	£781.38	£249.99
	Contact number	0181 560 2131	0181 560 2131	0181 450 9131	0181 450 9131	0181 450 9131	0800 289622	0181 573 4444
Features	Max resolution (dpi)	640x480	1280x960	320x240	320x240	640x480	1024x768	640x480
	Max pictures	72	60	96	96	47	48	30
	Pictures at max res	36	6	96	96	14	6	22
	Internal memory	1Mb	○	2Mb	2Mb	○	4Mb	○
	Card slot	○	●	○	○	●	●	●
	Viewfinder	●	○	○	○	○	●	●
	LCD screen	○	●	●	●	●	●	○
	Flash	●	●	○	○	●	●	●
	Zoom lens	○	●	○	○	○	○	○
	Macro	○	●	●	●	●	●	○
	Software	PhotoWise	PhotoWise	QV-Link	QV-Link	QV-Link		PhotoEnhancer
	Other features		Battery charger supplied	Spin panorama	Spin panorama	Spin panorama	B&W, Panorama, Digital Zoom, direct printing to Stylus Photo	
	Dimensions (hwxwd)	48x140x79	51x156x95	66x130x40	66x103x34	69x147x50	70x143x49	66x112x40
Ratings	Weight (without batteries)	370g	380g	170g	150g	290g	370g	160g
	Features	★★★	★★★★	★★★	★★	★★★★	★★★★	★★★
	Ease of use	★★★★★	★★★	★★★	★★★	★★★★	★★★★★	★★★★
	Image quality	★★★★★	★★★	★★	★★	★★★	★★★★	★★★
	Value for money	★★★★	★★★	★★★	★★★	★★★	★★	★★★★
	Overall	★★★★	★★★	★★★	★★★	★★★★	★★★	★★★

Digital cameras compared

Product	Manufacturer	Opti	Opti	Panasonic	Panasonic	Ricoh	Sony
	Model name	Picture Magic (MDX-8000)	Focus (Photorun)	NV-DCF1B (CardShot)	KXL-600A (Coolshot)	RDC-300Z	Mavica FD7
	Price (inc VAT)	£399.00	£179.00	£499.95	£299.61	£449.00	£600.43
	Contact number	0181 507 1818	0181 507 1818	0990 357357	0990 357357	01782 717100	0990 424424
Features	Max resolution (dpi)	1000x800	504x378	640x480	640x480	640x480	640x480
	Max pictures	133	15	47	96	49	N/A
	Pictures at max res	89	15	11	24	12	N/A
	Internal memory	2.5Mb	○	○	○	○	○
	Card slot	●	●	●	●	●	○
	Viewfinder	●	●	●	●	●	○
	LCD screen	○	○	●	Optional	●	●
	Flash	●	○	●	○	●	●
	Zoom lens	○	○	○	○	●	●
	Macro	○	○	●	●	●	●
	Software	Adobe PhotoDeluxe		Photo Enhancer	Panasonic	Photostudio Lite	
	Other features	Audio recording				Self-timer	Charger included; Saves to floppy disk
	Dimensions (hwxwd)	63.5x127x44.5	63x112x20	94x93x51	134x25x69	36x126x73	114x127x76
Ratings	Weight (without batteries)	308g	100g	290g	140g	260g	590g
	Features	★★★	★	★★★	★★	★★★★	★★★★
	Ease of use	★★★	★★★★	★★★★	★★★★	★★★	★★
	Image quality	★	★	★★★	★★★	★★★	★★★★
	Value for money	★★	★★	★★	★★★	★★★	★★★
	Overall	★★	★	★★★	★★★	★★★	★★★

Fuji	Kodak	Kodak	Kodak	Nikon	Nikon
DX-7	DC120	DC200	DC210	CoolPix 100	CoolPix 300
£299.99	£599.00	£449.00	£599.00	£385.40	£513.48
0181 573 4444	0800 281487	0800 281487	0800 281487	0800 230220	0800 230220
640x480	1280x960	1152x864	1152x864	512x480	640x480
30	20	60	59	42	132
22	2	13	13	21	66
○	2Mb	○	○	1Mb	4Mb
●	●	●	●	○	○
●	●	●	●	●	●
●	●	●	●	○	●
●	●	●	●	●	●
○	●	○	●	○	○
●	●	●	●	○	○
PhotoEnhancer	PC Mounter	PC Mounter	PhotoDeluxe		
	External flash sync			PC Card interface	Touch screen, audio recording
70x128x46	55x108x146	131x47x81	131x47x81	155x60x35	151x78x35
250g	520g	340g	340g	160g	240g
★★★★	★★★★★	★★★★	★★★★	★★★	★★★★
★★★★★	★★★★	★★★★★	★★★★★	★★★★	★★★
★★★	★★★★★	★★★★★	★★★★★	★★★	★★★
★★★★	★★★★★	★★★★★	★★★★★	★★★	★★
★★★★	★★★★★	★★★★★	★★★★★	★★★★	★★★

The simplest method is if you can use the camera as an extra disk drive, allowing you to drag and drop pictures to your hard disk. All three Kodaks are supplied with a PC Mounter utility allowing you to do just this on any PC. If you've got a notebook – or your desktop has PC Card slots – you can be even more flexible. The Nikon Coolpix 100 fits straight into a PC Card slot so you can take pictures off instantly, and it's possible to get PC Card adaptors (supplied by Panasonic and Opti) for Compact Flash memory cards. Floppy disk adaptors are also on sale.

As soon as your pictures are on your computer, you can edit them – as long as you've got the software. Basic tools are provided by the packages supplied with every camera reviewed here, but these can be limiting. Software such as Adobe PhotoDeluxe is more sophisticated and is bundled with some of the more expensive cameras. You can also buy it separately. The final results, obviously, will depend on your level of skill.



This is the first time we've seen high-resolution megapixel cameras falling below the £500 mark. If image quality is important to you, our first choice would be the Kodak DC200.

It produces super pictures and is ridiculously easy to use, while its £449 price tag makes it even more desirable.



Kodak's other two offerings are nearly as attractive as the DC200, with the same excellent image quality. The DC120 is aimed at the professional market, with its ability to store high-quality uncompressed images and its 3x zoom, but at the same price the DC210 is slightly easier to use. Both are good cameras, and which is best for you will depend on your needs, but the feature-packed DC120 gets our award.

We'd also recommend the Agfa Ephoto 307. Much cheaper than its big brother, the EPhoto 1280, it takes some of the best 640x480 photos we've seen. It's also dead simple to use, and would make a great introduction to digital photography if you want to try it on a smaller budget.

The EPhoto 1280 is right up there in terms of image quality, but it can be tricky to use and its £762 price tag means it's only for those with money to burn.

John Sabine

