



Digital camcorders

DV camcorders are better than ever — we test 11 of the best

CONTRIBUTORS James Morris, Peter Wells
PHOTOGRAPHY Hugh Threlfall

Since the introduction of FireWire, digital camcorders have become part of the PC's converging family of peripherals. Once you've shot your video, you can simply hook up your camcorder to your computer with one wire and download the video ready for editing — much easier than with older analog camcorders.

Despite its obvious advantages, FireWire still isn't universal in digital video cameras, particularly with input enabled. This is officially because there's around 9 per cent higher duty in Europe on the import of VCRs over camcorders. Currently, you can purchase simple devices for turning on FireWire input in a wide range of popular models without the feature enabled, but this may not be possible in the future. Reacting to European pressure, some manufacturers have made it impossible to enable FireWire input in camcorders not intended to have this feature. Panasonic and Sony have gone so far as to send letters to manufacturers of FireWire input enablers, arguing that these products infringe the company's copyright for its FireWire input deactivation software.

The upshot is that if you don't already have a digital camcorder, you're best off buying one with FireWire input enabled as standard. This month's selection all falls into this category, and all have been tested for compatibility with a PC fitted with a standard OHCI FireWire adaptor and running Adobe's mainstream editing software, Premiere.

We've got 11 models on test, ranging from sub-£500 entry-level camcorders to the £1,500 semi-professional versions you could realistically use to shoot video for corporate use or even TV. The majority also have reasonable still-image capture abilities, so they can moonlight as digital still cameras when needed. We've also got a couple of camcorders so small you could fit them in a jacket pocket almost unnoticed. So whether you're just starting out with video on your PC or looking to upgrade your old analog cam, we've got a recommendation for you.





How we test

QUALITY TESTING

Video image quality can be subjective, but there are certain key areas that often cause problems. Under low light conditions, most camcorders have trouble discerning detail,



Our local landmark, the BT Tower, is a tough test for camcorders, as its placement against a bright sky creates a high contrast between light and shade.

and this can be made worse if the subject is bathed in coloured light.

So, for our first test we set up a scene containing a considerable level of detail and light it with a single tungsten spotlight. We then wrap the light in red, then green, then blue gels (plastic sheets for creating coloured lighting) to see how this affects detail resolution. The results were very revealing of how a camcorder would perform indoors, particularly when shooting poorly lit subjects or under coloured lighting such as musical performances.

Outdoor usage is just as important. We take

each camcorder on a shoot in reasonably sunny conditions around the locale of Dennis Publishing, filming street scenes and our local landmark, the BT tower.

Using both manual focus and auto focus, we attempt various zooms and camera moves. These test the camcorders' electronics, contrast in bright sunlight, ability to refocus on fast

moving objects, and ability to resolve detail in contrasting light environments. We pay particular attention to features consisting of parallel lines, such as grilles, as these can be difficult for digital camcorders to resolve correctly because of the compression scheme used when capturing the video to tape.

We rate each of the camcorders out of ten relative to each other for both the internal and external tests. We also

test each camcorder with a standard OHCI IEEE-1394 adaptor to ensure it can be used for editing on a PC.

RATINGS EXPLAINED

The ratings you'll see at the bottom of each camcorder review are intended to give an at-a-glance appraisal of each unit. To achieve as objective a comparison between camcorders as possible, the overall scores are calculated using a weighted combination of the feature point score, the price and quality test results.

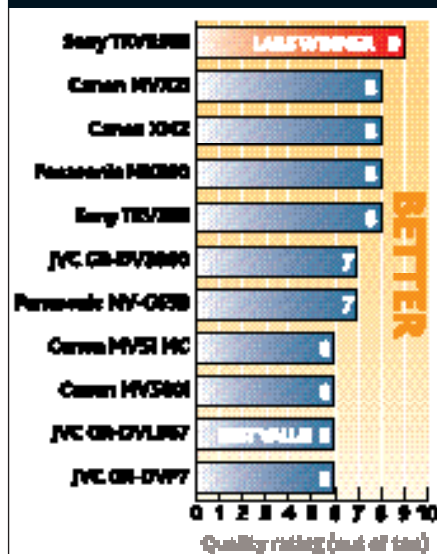
We awarded feature points for the length and type of warranty, quality of the camcorder optics, digital stills capability, level of controls and functions available, physical ergonomics of the camcorder, build quality, PC connectivity and accessories supplied. The quality rating was derived from the testing detailed above.

It's important to remember that these ratings are relative only to the products on test in this particular Labs, with the average score in each category being 100. A score below 100 therefore doesn't necessarily mean that the product is poor, just that it is below average when compared with the other camcorders in the test.

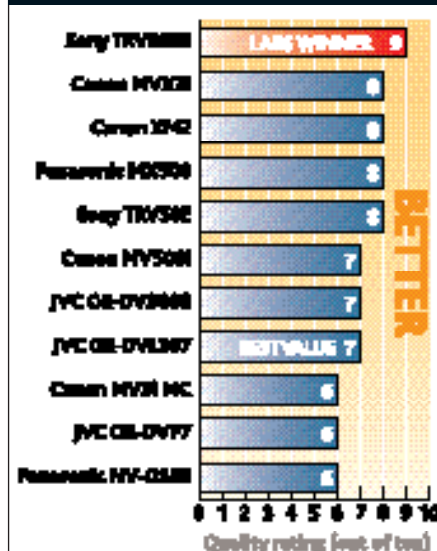


Our thanks to first4media.com for supplying us with the DV tape media used in this test.

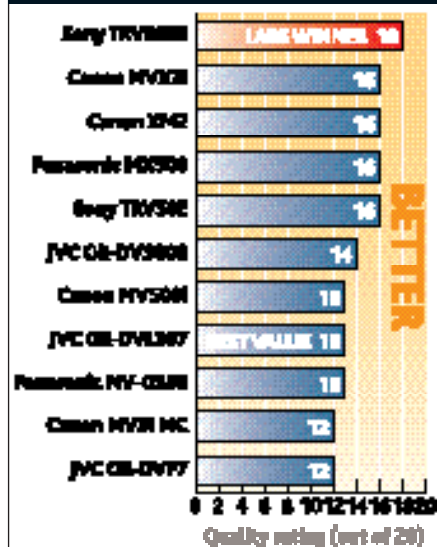
INDOOR



OUTDOOR



OVERALL



113 Feature table

117 Digital stills

REVIEWS

115 Canon MV5i MC

115 Canon MV500i

115 Canon MVX2i

117 Canon XM2

117 JVC GR-DV3000

119 JVC GR-DVL367

119 JVC GR-DVP7

119 Panasonic MX500

120 Panasonic NV-GS5B

120 Sony TRV50E

120 Sony TRV950E



● FEATURE TABLE

PC PRO
BEST VALUE

PC PRO
LABS
WINNER



	Canon MV5i MC	Canon MV500i	Canon MAX2i	Canon XM2	JVC GR-DV3000	JVC GR-DVL367	JVC GR-DVP7	Panasonic MX500	Panasonic NV-GS5B	Sony TRV50E	Sony TRV950E
Overall score	94	93	97	107	97	97	89	110	97	105	115
Price (inc VAT)*	£749 (£880)	£425 (£499)	£1,021 (£1,200)	£1,403 (£1,649)	£740 (£869)	£382 (£449)	£629 (£739)	£1,106 (£1,299)	£467 (£549)	£1,276 (£1,499)	£1,276 (£1,499)
Supplier	Jessops	ASK Electronics	Jessops	ASK Electronics	ASK Electronics	ASK Electronics	ASK Electronics	P Dagra & Sons	ASK Electronics	ASK Electronics	ASK Electronics
Supplier's website	www.jessops.com	www.jessops.com	www.jessops.com	www.jessops.com	www.jessops.com	www.jessops.com	www.jessops.com	www.pdgrands.com	www.askdirect.co.uk	www.askdirect.co.uk	www.askdirect.co.uk
Manufacturer	Canon	Canon	Canon	Canon	Canon	Canon	Canon	Panasonic	Panasonic	Panasonic	Panasonic
Basic warranty	3 years	3 years	3 years	3 years	3 years	3 years	3 years	3 years	3 years	3 years	3 years
Format	MiniDV	MiniDV	MiniDV	MiniDV	MiniDV	MiniDV	MiniDV	MiniDV	MiniDV	MiniDV	MiniDV
Optics											
Lens manufacturer	Canon	Canon	Canon	Canon	JVC	JVC	JVC	Leica Dicomar	Panasonic	Carl Zeiss	Carl Zeiss
Aperture (mm)	1.8-2.3	1.6-2.9	1.8-2.1	1.6-2.9	1.5	1.8	1.8	1.8	1.8	1.8	1.8
Shutter speeds (seconds)	1/2-1/2000	1/12-1/18000	1/2-1/18000	1/6-1/16000	Not supplied	Not supplied	Not supplied	Not supplied	Not supplied	1/4-1/4000	1/4-1/10000
Optical zoom (range)	16x	18x	10x	10x	10x	10x	10x	10x	10x	10x	12x
Digital zoom (range)	200x	360x	200x	200x	200x	200x	200x	200x	200x	200x	150x
Image resolution (mm)	25-25	28-50.4	41-41	43-84	45-45	36-36	37-37	2.85-28.5	3.15-31.5	42-42	36-43.2
Image stabilization	Electronic	Electronic	Optical	Optical	Electronic	Electronic	Electronic	Optical	Electronic	Electronic	Optical
CCD, megapixels (effective)	1.6m, 0.8 (0.4)	1.6m, 0.54 (0.34)	1.4m, 1.33 (1.23)	3 x 1/4m, 0.47 (0.44)	1/3.6m, 1.33	1/4m, 0.8	1/3.8m, 1.02	3 x 1/6m, 0.8 (0.64)	1/4m, 0.8	1/4m, 1.5 (0.97)	3 x 1/4m, 1.07 (0.69)
Filter	28	30.5	34	38	32	37	27	43	30.5	37	37
STILLS CAPTURE											
Memory supplied (MB)	8	8	8	8	8	8	8	8	8	8	8
Max still resolution	1,024 x 768	720 x 576	1,280 x 960	1,488 x 1,128	1,600 x 1,200	1,024 x 768	1,280 x 960	2,048 x 1,496	640 x 480	1,360 x 1,020	1,152 x 864
CONTROLS AND FUNCTIONS											
Auto/manual	Auto/manual	Auto/manual	Auto/manual	Auto/manual	Auto/manual	Auto/manual	Auto/manual	Auto/manual	Auto/manual	Auto/manual	Auto/manual
Shutter priority control	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Aperture priority control	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Manual white balance control	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Program AE modes	8	9	7	6	6	6	6	5	5	7	7
Digital effects modes	9	8	14	6	6	6	6	13	13	6	6
Night filter	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Audio control	Auto	Auto	Auto	Auto/manual	Auto	Auto	Auto	Auto/manual	Auto	Auto	Auto/manual
Progressive scan (frame rate)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Progressive shutter (frame rate)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Other	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
PHYSICAL FEATURES											
Viewfinder	Colour, 0.5in, 113,000 pixels	Colour, 0.44in, 113,000 pixels	Colour, 0.5in, 113,000 pixels	Colour, 0.44in, 180,000 pixels	Colour, not stated, 110,000 pixels	B&W, not stated, not stated	Colour, 0.44in, not stated	Colour, 0.44in, not stated	Colour, not stated, not stated	Colour, 0.44in, 180,000 pixels	Colour, 0.44in, 180,000 pixels
LCD panel	Colour, 2in, 130,000 pixels	Colour, 2.5in, 112,000 pixels	Colour, 2.5in, 200,000 pixels	Colour, 2.5in, 200,000 pixels	Colour, 2.5in, 200,000 pixels	Colour, 2.5in, not stated	Colour, 2in, 200,000 pixels	Colour, 2.5in, 200,000 pixels	Colour, 2.5in, not stated	Colour, 3.5in, 246,000 pixels	Colour, 3.5in, 246,000 pixels
Standard tripod thread	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Removeable lens	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Shoe attachment	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Tape carriage	Back	Bottom	Bottom	Top	Bottom	Top	Back	Top	Top	Bottom	Top
Weight without batteries (g)	380	530	535	1120	660	560	350	470	700	785	785
Dimensions (mm) (W x H x D)	49 x 106 x 86	58 x 99 x 144	60 x 119 x 118	118 x 136 x 306	76 x 90 x 194	73 x 88 x 167	43 x 115 x 80	75 x 91 x 179	68 x 89 x 114	72 x 91 x 168	72 x 91 x 168
BATTERY/POWER SUPPLY											
Battery type included	Lithium ion	Lithium ion	Lithium ion	Lithium ion	Lithium ion	Lithium ion	Lithium ion	Lithium ion	Lithium ion	Lithium ion	Lithium ion
Separate charger included	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
AC adaptor included	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
PC CONNECTIVITY											
IEEE-1394	In/out	In/out	In/out	In/out	In/out	In/out	In/out	In/out	In/out	In/out	In/out
Stills transfer	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Analog AV	In/out	In/out	In/out	In/out	In/out	In/out	In/out	In/out	In/out	In/out	In/out
Analog-to-DV conversion	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
DV-to-analog conversion	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Mic socket	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Headphone socket	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Other	LANC	LANC	LANC	LANC	J-Lip	J-Lip	J-Lip	Digital Still Picture	Digital Still Picture	LANC, Bluetooth	LANC, Bluetooth
ACCESSORIES											
Lens cover	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Remote	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Cables	S-Video, composite AV, USB	S-Video, composite AV, USB	S-Video, composite AV, USB	S-Video, composite AV, USB	S-Video, composite AV, USB	S-Video, composite AV, USB, J-Lip	S-Video, composite AV, USB	S-Video, composite AV, USB	S-Video, composite AV, USB	S-Video, composite AV, USB	S-Video, composite AV, USB
Other	SCART adaptor, shoulder strap	SCART adaptor, shoulder strap	SCART adaptor, shoulder strap	SCART adaptor, strap	SCART adaptor, strap	SCART adaptor, strap	SCART adaptor, strap	SCART adaptor, strap	SCART adaptor	SCART adaptor, strap	SCART adaptor, strap

*Prices were correct at time of going to press.



Canon MV5i MC

PRICE £749 (£880 inc VAT)

SUPPLIER Jessops 0116 232 6000

VERDICT A small and attractive camcorder delivering reasonable outdoor results and excellent connectivity for DV editing. Works well as a 'point-and-shoot' machine.

As far as the consumer DV market goes, Canon believes that size does matter. The MV5i MC is the company's smallest camcorder. It looks stunning and slips effortlessly into a coat pocket. Sadly, though, the minute size of Canon's consumer range has meant ditching its lovely optical image stabiliser in favour of a far inferior electronic one. The optical image stabiliser was once a standard part of the whole Canon range and was reason enough to buy a Canon cam.

On the plus side, even this tiny model eschews a bottom-loading tape carriage. The cassette loads at the back, which is an easy procedure, even with the cam on a tripod. The fixed viewfinder, however, can't be tilted, making it awkward to use at times. Also, while the LCD viewscreen is clear, it's small at 2in and hard to use in bright sun.

The indoor results were passable, delivering decent detail, but there was substantial noise and focus-hunting

in low light. Also, under red light, colour seemed washed out, but detail was still rich. Colour reproduction and detail under blue and green were good, while image stabilisation could result in a slight trailing effect, but this was seldom noticeable.

Performance in daylight was better, showing no picture noise, excellent colour reproduction and good detail in shadows and highlights. Auto focus and automatic exposure were very responsive too, and the overall video was let down only by weak image stabilisation.

Device control and video capture via DV work like a charm, and the MV5i MC can also record analog video to DV tape or channel it out of its FireWire port. SD Card support is present as well, providing image capture up to 1,024 x 768. High-resolution stills are a little noisy, but fine for many web or multimedia-based projects.

PC PRO RATINGS		
OVERALL		
94		
QUALITY	FEATURES	VALUE
83	104	94
100 IS THE AVERAGE		

Canon MV500i

PRICE £425 (£499 inc VAT)

SUPPLIER ASK Electronics 020 7323 2747

VERDICT A good budget model. Very clean picture quality is let down by poor stabilisation and the bottom-loading tape carriage is a big annoyance.

Canon's MV500i falls below the magic £500 mark and offers a lot for the money. Its chassis is based on that of previous models, such as the MV300, but appears to have been enlarged slightly. As with its predecessors, the MV500i loads tapes from underneath, which is a huge annoyance when using a tripod. Manual controls can be fiddly too, but the machine is designed primarily as an entry-level point-and-shoot machine and performs very well under these conditions. The viewfinder is also good, and the 2.5in LCD monitor delivers a high-quality image, but can be difficult to use in strong sunlight. This particular model has no memory card support either.

Our indoor tests showed the MV500i to be a reasonable performer, providing good detail and noise-free picture even in dim lighting, but delivering slightly washed-out reds and limited shadow detail under green light. Outdoors, results were decent, with good vibrant colour reproduction and high levels of detail in shadows and highlights.

Electronic image stabilisation was slightly shaky – particularly during pans, tilts and zooms – although still fared better than results we saw from the JVC models in the same tests. Automatic focus was quick and confident. The effect of automatic exposure was evident when moving from dim to bright areas, as it takes a few seconds to adjust, but it still managed to settle at an appropriate level for the scene, regardless of composition.

The MV500i has a working DV input, allowing it to be used as part of a PC-based video-editing system. It also has analog AV inputs. All round, it's a good beginner's model at a reasonable price.

While not being the most user-friendly camcorder on offer, it performs well and is capable of great results, but is just pipped at the post by JVC's DVL367 for value.

PC PRO RATINGS		
OVERALL		
93		
QUALITY	FEATURES	VALUE
90	70	112
100 IS THE AVERAGE		



Canon MVX2i

PRICE £1,021 (£1,200 inc VAT)

SUPPLIER Jessops 0116 232 6000

VERDICT An excellent contender to Sony's MegaPixel range, delivering great video and stills, as well as the benefit of Canon's optical image stabiliser, but it's expensive.

Canon's second single megapixel model is designed to go head-to-head with Sony's upright models, such as the PC120. Oddly, it costs more than the typically expensive Sony models, but carries the benefit of an optical image stabiliser. Still, the MVX2i's chassis makes it look like an integral part of Sony's HandyCam range.

It's a well-connected machine, sporting DV and analog inputs and outputs, as well as SD Card support for capture of stills at resolutions of 1,280 x 960. It's not as small as the rest of Canon's consumer range, but the extra size provides a good weight, which can help keep handheld shooting steady. The viewfinder and LCD monitor are sharp and the camcorder's automatic settings are responsive. However, manual control can be fiddly, but Canon provides a tactile focus ring, which responds quickly.

Under white tungsten, picture quality was solid and sharp with first-rate colour reproduction and excellent detail. Also, picture noise was minimal, even in dim lighting. The camcorder struggled under a red-light wash, though, with highly saturated colour and little detail in shadows or highlights. Green and blue lighting appeared slightly washed out too, but detail was fine.

Outdoors, the MVX2i really shone, delivering gorgeous colour, rich tone and excellent detail. Strong diagonal lines were handled well, and the optical image stabiliser did a great job of compensating for camera shake.

Those wanting a good single-chip camcorder with decent stills capabilities will be tempted by this Canon. Its sensible tape carriage and optical image stabiliser give it a distinct advantage over competing Sony models, but Sony's TRV50E offers similar image quality for considerably less.



PC PRO RATINGS		
OVERALL		
97		
QUALITY	FEATURES	VALUE
110	88	87
100 IS THE AVERAGE		



Canon XM2

PRICE £1,403 (£1,649 inc VAT)

SUPPLIER ASK Electronics 020 7323 2747

VERDICT A fully featured 3CCD camcorder, delivering vibrant colour reproduction and clean video. Looks more professional than Sony or Panasonic machines, but doesn't outperform them.

The Canon XM2 carries an almost identical chassis to its predecessor, the XM1. But this model addresses two of the most common complaints regarding the XM1 by introducing manual audio controls and analog video inputs.

The machine sports three CCDs, designed to provide brilliant colour reproduction and high levels of detail. It also has well-placed, accessible manual

controls, and a comfortable zoom ring.

MMC/SD

Cards are supported, and the XM2 is also capable of capturing stills at

an interpolated resolution of

1,488 x 1,128 pixels. It sports Canon's fabulous optical image stabiliser too.

Under white tungsten, the XM2 provided a clean, noise-free image with fine detail and good colour reproduction. Detail was excellent under primary blue and green lighting, but was poor under a red light wash. Outdoor performance was similarly superb, providing high levels of detail in shadows and highlights. Strong diagonal lines were handled well, but grills and stripes often suffered from a slight moiré effect. Other than that, colour reproduction was rich and vibrant throughout, and the image was generally solid and stable.

Manual controls fall easily to hand, and automatic settings are confident. The 20x optical zoom is a lovely bonus too. The viewfinder is sharp and accurate, but the 2.5in LCD panel seems a little small for a machine at this market point, especially when compared to the 3.5in LCDs sported by Sony's TRV950E or Panasonic's MX500.

This is a good camcorder that will serve any prosumer well. It has a balanced weight to it and feels more professional than Sony or Panasonic's offerings, but Panasonic's MX500 offers similar quality and features for £300 less.



JVC GR-DV3000

PRICE £740 (£869 inc VAT)

SUPPLIER ASK Electronics 020 7323 2747

VERDICT It's reasonably featured and well priced, but delivers average results.

Automatic controls are sluggish, electronic image stabilisation is poor, and its bottom-loading tape carriage is a big annoyance.

Unlike Sony, Canon and Panasonic, JVC seems unwilling to put a 3CCD camcorder at the top of its consumer product line. Its flagship DV model sports a single megapixel CCD and a feature set that competitors would assign to a mid-range product.

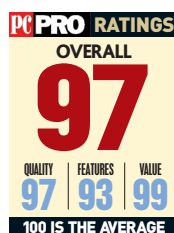
The DV3000 has an almost identical chassis to last year's DV2000, complete with the bottom-loading tape carriage – hugely annoying when working with a tripod. It carries a good 3.5in LCD panel, however, and its 1.3-megapixel CCD enables capture of stills up to a resolution of 1,600 x 1,200 pixels.

Connectivity is good, with a working DV input as well as AV inputs, enabling the recording of old analog footage to DV tape. It also allows an incoming analog signal to be channelled directly out via FireWire. An unusual annoyance is the small block that must be fitted to the battery compartment in order to connect the mains adaptor or take an S-Video feed. This is easily lost and it could be tricky to replace.

Colour reproduction was commendable. Under white tungsten, the DV3000 delivered reasonable colour reproduction and good detail with little picture noise. Under blue light, colour was slightly washed out but good detail was retained in shadows and highlights. With all-green lighting, the camcorder delivered vibrant colour and strong detail, while a red wash resulted in very bright colour and reasonable detail all-round. Daylight shooting saw good overall detail.

The machine handles diagonals well, but the electronic image stabiliser yielded poor results, and automatic focus and exposure were extremely slow and unresponsive. Manual focus is aided with a physical control ring, but other manual controls can be fiddly to operate.

While the JVC GR-DV3000 is cheaper than the Sony TRV50E, the Sony's superior image stabilisation, together with its responsive focus and exposure, more than justify the extra expense.



Digital stills

Even some of the most inexpensive budget camcorders now have the ability to capture stills to memory card. It's a feature that has been evolving for some years, and really took off with the introduction of megapixel CCDs, allowing a resolution of stills capture higher than that of DV video. But how much value is there in a combined digital video and stills camera?

To date, the largest CCD on a DV camera is 1.5 megapixels, while even entry-level digital stills cameras often sport chips of 2 megapixels or more. While Sony is all set to launch a 2-megapixel camcorder, this will be a MicroMV model, rather than DV, and of little use to desktop video editors.

A 1.5-megapixel CCD, as offered by the Sony TRV50, will allow stills to be captured at resolutions of 1,360 x 1,020 pixels, as opposed to resolutions of 2,048 x 1,496 offered by a 3-megapixel CCD camera. Some camcorders – such as Panasonic's MX500 – will provide interpolated still pictures at this higher resolution, but there's currently no camcorder that can compete with a good stills camera for image resolution.

With that said, DV camcorders have the benefit of powerful optical zooms – typically 10x or more – as opposed to digital stills cameras, whose zooms are often no greater than 3x. This means that users of stills cameras may find themselves cropping their close-ups to attain the same results that a camcorder user can get by using the extremes of the machine's optical zoom.

The value of a camcorder's digital stills features will ultimately depend on the intended use. For printing, a large CCD is a must and, while a good megapixel CCD camcorder will do an adequate job, a good stills cam delivers a different world of detail on the printed page. However, for use in video, emails or web pages, even the most basic memory card-equipped camcorder should provide adequate results. Higher resolutions will allow a greater degree of freedom in cropping and zooming, but a basic resolution of 720 x 576 or above will be fine for slide shows, title screens or DVD menus.

PETER WELLS



JVC GR-DVL367

PRICE £382 (£449 inc VAT)

SUPPLIER ASK Electronics 020 7323 2747

VERDICT A keenly priced camcorder.

Automatic controls are sluggish and image stabilisation is poor, but the picture quality is surprisingly good for the money.

At £449 including VAT, JVC's DVL367 indicates that the price gap between analog and digital camcorders is close to vanishing completely.

On the whole, JVC has delivered a reasonable machine with the DVL367. There is clear evidence of cost-cutting, however, in the form of a black and white viewfinder, and the 2.5in LCD panel is small and difficult to use in strong sunlight. But

JVC has seen sense and given it a top-loading tape carriage. Also, DV-in is now properly implemented – the company's first generation of DV-in-enabled budget cameras were unable to provide an analog output when receiving DV input.

Under white tungsten, the DVL367 provided good detail and colour reproduction with little visual noise. Under a primary green wash, colour was vibrant but detail lost in shadows. Switching to a red light wash, the colour intensity was retained, but overall detail diminished even further. Colour was also strong under blue light, and shadow detail was much better.

Outdoors, the DVL367 delivered good colour and a reasonably solid image. There was a slight stepping effect on strong diagonals, but the picture quality was impressive. Contrast was also handled well, delivering a much richer image than the DVP7. JVC's electronic image stabiliser did a poor job though, and automatic focus and exposure were slow to respond. Manual controls can be fiddly too. Value is added in the form of MMC support, allowing the stills at a maximum 1,024 x 768 resolution.

If stills capability isn't a priority, it's tough choosing between the DVL367 and Canon's MV500i. Otherwise, the DVL367's superior features and lower price put it past the Canon to win a Best Value award.

PC PRO RATINGS		
OVERALL		
97		
QUALITY	FEATURES	VALUE
90	78	121
100 IS THE AVERAGE		

JVC GR-DVP7

PRICE £629 (£739 inc VAT)

SUPPLIER ASK Electronics 020 7323 2747

VERDICT An attractive and stylish pocket camcorder with awkward manual controls.

Performance isn't great, but it makes a very convenient camcorder for family use.

JVC's DVP7 is one of the smallest DV camcorders currently available. It has a robust metallic casing and a black finish, making it look more like a dictaphone than a camcorder. The lens cover is built-in and, despite its small size, it allows cassettes to be fed from the back, rather than loading from beneath. To accommodate for the lack of space, JVC has doubled up many buttons, so that playback controls are spread around recording buttons and zoom controls.

The DVP7 has a reasonable colour viewfinder, but the 2in LCD monitor panel is tiny. While the machine is intended to be used almost exclusively in automatic point-and-shoot mode, some manual control is provided, although these controls are rather awkward. The machine sports a generous 1.02-megapixel CCD, however, making it capable of capturing stills to a SD Card at a resolution of 1,280 x 960. A working DV input also allows it to be used as part of a PC-based DV editing system.

Under white tungsten, the DVP7 delivered good detail with little noise, but slightly washed-out colour. A blue wash resulted in a dark image, although detail was still fairly good. Footage shot under green lighting suffered from washed-out colour, but detail was excellent. And a red wash yielded vibrant colour, but with a significant loss of detail in shadows.

Daylight shooting yielded high contrast, but there was crisp detail in mid-tones and colour reproduction was generally good. However, strong diagonals often suffered from a stair-stepping effect – or a moiré pattern in the case of stripes or bars. Image stabilisation was appalling too and no match for Sony's Super SteadyShot or Canon's optical image stabiliser.

The JVC DVP7 makes a reasonable pocket camcorder and a good companion for documentary video enthusiasts who want to be quick on the draw for video and stills. It's not the only pocket camcorder, though, and Canon's MV5i MC offers similar quality and better features for £100 more, ruining the JVC's chances in this Labs.



PC PRO RATINGS		
OVERALL		
89		
QUALITY	FEATURES	VALUE
83	83	94
100 IS THE AVERAGE		

Panasonic MX500

PRICE £1,106 (£1,299 inc VAT)

SUPPLIER P Dogra & Sons 01753 535689

VERDICT Amazingly small and discreet for a 3CCD camcorder. It delivers good results for the price and handles well, but doesn't quite match the Sony TRV950E's standards.

Panasonic's 3CCD camcorders have been getting better and better. The first incarnation – the DX110 – offered beautiful picture quality but a horrible electronic image stabiliser. Next came the MX300, with optical image stabilisation but an annoying bottom-loading tape carriage. With the MX500, Panasonic may have got things right.

The machine is tiny for a 3CCD model, being substantially smaller and sleeker than Sony's TRV950E. There's a generous 3.5in LCD monitor and some reasonably accessible manual controls. SD Card support also allows capture of stills at a maximum interpolated resolution of 2,048 x 1,496.

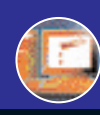
Under white tungsten light, the MX500 delivered reasonable colour reproduction and good detail, with virtually no picture noise, even in dim light. Under a primary blue wash, colour appeared pale, but detail remained rich in shadows, highlights and mid-tones. Under a green light, colour was bright and vibrant, while detail remained strong. A primary red wash yielded a very saturated image, but detail remained good.

In daylight, the MX500 delivered good detail and colour reproduction. Shadow detail sometimes appeared washed out, but diagonals were handled well and there was little moiré. Panasonic's optical image stabilisation isn't as effective as Canon's, although it's far better than the electronic one used in cheaper models. However, auto focus was poor and auto exposure shifts were noticeable. Connectivity is good though – its DV input allows it to be used as part of a PC-based editing system.

The MX500 offers top-notch image quality and a good set of features for a keen price, but Sony's TRV950E edges past in both departments.



PC PRO RATINGS		
OVERALL		
110		
QUALITY	FEATURES	VALUE
111	130	97
100 IS THE AVERAGE		



Panasonic NV-GS5B

PRICE £467 (£549 inc VAT)

SUPPLIER ASK Electronics 020 7323 2747

VERDICT A tiny palmcorder with some nice features and an attractive price, but it's more for home use than enthusiasts.

Panasonic's GS5B is a tiny palmcorder, looking quite square and blockish, but hiding effectively in the palm of the hand. As with most affordable consumer cams, it's designed mainly for automated point-and-shoot work, with manual functions securely tucked away, making them rather awkward to operate. The 2.5in LCD monitor is small, but appropriate for the size of the machine itself. The viewfinder is also effective, providing good, crisp detail. As with all other camcorders in this round-up, the GS5B has a working DV input, allowing it to be used with a DV editing system. It also sports analog inputs and direct AV-to-DV conversion capabilities.

Thankfully, Panasonic has blessed this model with a top-loading tape carriage, rather than the bottom-feeding carriage that plagues so many consumer cams. Of all its gadgets, the most useful is a zoom mic, allowing the microphone to be made more directional as you zoom the lens in and out. It isn't anywhere near as effective as using a directional external mic, though.

Under white tungsten, some visual noise was noticeable – particularly when lighting was dim – but this wasn't too bad. With a primary red wash, the colour on playback was rich, but a slightly softer tone than had originally been cast. Under green and blue light, recorded colour was very strong – more vibrant even than with Canon's 3CCD XM2.

Outdoors, colour reproduction was superb, but the level of recorded detail seemed average. Contrast is a little high too, limiting shadow and highlight detail where shots contained a broad tonal range. The GS5B's automatic settings did a reasonable job, staying confident throughout the tests, but its electronic image stabiliser was disappointing.

Overall, the GS5B is a good-value beginner's camcorder.



PC PRO RATINGS			
OVERALL			
97			
QUALITY	FEATURES	VALUE	
90	86	115	
100 IS THE AVERAGE			

Sony TRV50E

PRICE £876 (£1,029 inc VAT)

SUPPLIER ASK Electronics 020 7323 2747

VERDICT A typically impressive megapixel camcorder from Sony, with first-rate image quality for video and stills.

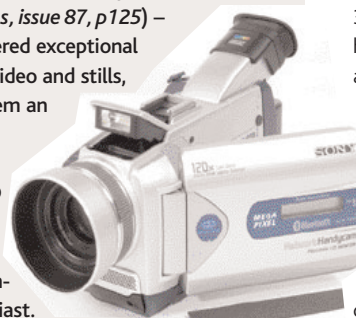
The TRV50E is a palmcorder-type machine, sporting a 1.5-megapixel CCD, allowing it to capture stills to Memory Stick at a resolution of 1,360 x 1,020. Previous models – such as the TRV30E featured in last year's round-up (see *Labs*, issue 87, p125) – have delivered exceptional results in video and stills, making them an excellent choice of single-CCD consumer camcorder for the non-pro enthusiast.

The TRV50E is similar to the TRV30E, but now has the ability to access the Internet and send stills from Memory Stick via Bluetooth links with laptops or mobile phones. It has a generous 3.5in LCD monitor and a clear viewfinder, but a generally good design is marred by a bottom-feeding tape carriage, making life difficult when using a tripod.

Video shot under white tungsten light was extremely clean and noise free, with good detail and accurate colour reproduction. Red and blue lighting gave rise to a rather dark image, but even this was noise-free with reasonable detail.

Used outdoors in daylight, the TRV50E delivered tremendous results, with colour reproduction often rivalling a 3CCD camcorder. Wide shots were slightly crisper than even the TRV950E and, while close-ups weren't as attractive, they still looked great. Shadow and highlight detail was good, diagonals reproduced well, and the camcorder's electronic image stabilisation did a wonderful job. Auto focus and exposure were very responsive, while manual focusing is aided by a physical focus ring, but exposure setting can be fussy.

DV and analog inputs make the TRV50E useful in the cutting room, as does its ability to convert analog AV signals into a DV feed via FireWire. In all, this model is an excellent camcorder for the demanding consumer.



PC PRO RATINGS			
OVERALL			
105			
QUALITY	FEATURES	VALUE	
111	106	103	
100 IS THE AVERAGE			

Sony TRV950E

PRICE £1,276 (£1,499 inc VAT)

SUPPLIER ASK Electronics 020 7323 2747

VERDICT The TRV950E delivers gorgeous images in a discreet street-friendly package. And it's a 3-megapixel digital camera too.

Following the retirement of Sony's successful TRV900 camcorder, we're delighted to see its replacement in the TRV950E – a smaller, neater model with a great range of features.

Most fundamental in its list of improvements is the introduction of a 3-megapixel CCD, delivering high-quality, high-resolution stills as well as great video. To accompany the stills capability, Sony provides Memory Stick support and a pop-up flash.

The battery compartment is set deeper into the body too, meaning that operators are no longer jabbed in the eye with long-life batteries when using the viewfinder. It's also good to see a generous 3.5in LCD screen in place, although like all displays it can be difficult to use in bright sunlight.

Colour reproduction and detail under white tungsten was first-rate, delivering a beautifully rich and well-balanced image. Replayed video shot under primary coloured lights appeared dark, but the colour was still rich and detail surprisingly sharp, even in shadows. Also, there was no noticeable noise in the image, even in footage shot in dim lighting.

Used outdoors, the TRV950E delivered great images with superb detail and excellent colour. Sharpness on wide-angle long shots wasn't as impressive as the TRV50E, but the TRV950E really shone in close-ups, with a beautiful tonal range

and well-defined detail in shadows and highlights. Diagonals were handled well too, with minimal stepping and little moiré. The camcorder's optical image stabiliser also does an excellent job.

A working DV input, along with analog inputs and the ability to convert between AV and DV signals without the need to record to tape, make the TRV950E a useful alternative to a digital VCR when editing too. For event videographers, who need a discreet-looking camcorder to take out in public, the TRV950E makes an excellent choice – a worthy Labs Winner.



PC PRO RATINGS			
OVERALL			
115			
QUALITY	FEATURES	VALUE	
125	132	103	
100 IS THE AVERAGE			

PC PRO LABS WINNER

PC PRO A LIST