



# Digital video camcorders

Digital video cameras offer a massive leap in picture quality over their analog counterparts and pave the way for professional desktop video editing. We put seven of the latest models to the test

**J**ust as digital editing of still pictures has opened up new creative possibilities for photography, so digital video (DV) is changing the way we create moving pictures. It's only recently that PC hardware has been up to the task of manipulating the vast quantities of data that make up digital video images.

For years video enthusiasts have been capturing and digitising analog video, editing the digital footage and then recording an analog signal back to VHS tape. Now, however, DV camcorders have completed the picture, providing an all digital environment – from capture to viewing and this of course leads to almost limitless editing possibilities.

The first advantage of DV is quality. DV provides much better picture quality than any of the analog formats that preceded it including S-VHS and Hi-8. And it's quality that doesn't degrade with copying.

With the exception of the Sharp VL-SD20H and Samsung VP-D55 all of the camcorders reviewed here have a bi-directional FireWire port, which means that as well as capturing digital video to your hard disk for editing you can digitally record back to a DV tape in the camcorder

All of the models provide in-camera special effects, though it's usually much simpler to do this kind of work on the

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• Digital video camcorders tested and reviewed by Ken McMahon



PC. More usefully they all include a digital image stabiliser which dampens the inevitable shakes and wobbles that occur when you're shooting handheld footage.

You'll see two figures quoted for zoom magnifications, the first tells you the maximum optical zoom, the second is the digital zoom factor. Don't be taken in by high digital zoom figures of 200 or even 400x. These are virtually useless. The digital zoom simply takes the centre portion of the image and enlarges the pixels so the resolution and picture quality drops dramatically once you more than double the optical zoom factor. So if a camcorder has a maximum optical zoom of 10x, the digital zoom won't be much use beyond 20x.



## Canon MV300i



**ONE OF THE MOST** appealing things about the Canon MV300i is its size – it's Canon's smallest camcorder to date. Although, at £730, it's not the cheapest DV camcorder on the market, it is one of the more compact and stylishly designed. It fits snugly into the palm of your right hand and its dimensions mean you could probably carry the camera around in your coat pocket.

A two-position thumb switch turns on the power and sets the mode – up for camera, down for VCR, and a central button activates record and pause. You can either use the viewfinder in its docked position or rotate it vertically where the rear section extends out and a concealed slider provides optical adjustment for spectacle wearers – tucked away where it won't get accidentally moved. Moving towards the top-right corner of the camera, you can find the 'photo' button – easily activated with your index finger – and just in front of this is the zoom rocker that will magnify the image by up to 10 times using the lens and 200 times digitally, by filling the frame with the central portion of the image at reduced resolution.

On the right side a push-button latch releases the LCD panel. With the panel folded out three buttons are revealed, two of these control a selection of four digital effects that can be applied during playback, and the third activates the on-screen menu (OSM). In comparison with some of the other models on test the Canon's effects repertoire is scant, but if you're planning to edit your

movies on a PC this won't be of too much concern.

There's also a two-position program selector that gives you the option of 'easy recording' or one of the programmed auto-exposure modes. Easy recording takes care of focus and exposure and activates the image stabiliser.

It also locks most of the OSM functions, so you can't accidentally switch to one of the AE modes, or select manual exposure. In addition to auto there are five specialised AE modes, each of which optimises the settings for particular conditions – sports, portrait, spotlight, sand and snow, and low light. For the most part these work pretty well and only the very keen will want to go completely manual. Manual operation requires a certain dexterity as shutter speed, exposure and focus must all be set using the tiny control wheel in the bottom-right corner which is used to scroll and select in the OSM.

The MV300i is a bottom-loader – an increasingly popular system that's also used by Panasonic, Samsung and Sony. While it may make for a more compact design, the big problem is that if the camera is mounted on a tripod you have to remove it before you can change tapes. This will only be an issue for a small minority of users as the camera is very much a handheld device – those who are attracted by its compactness are unlikely to want to stick a couple of pounds of aluminium tubing to it.

Picture quality is very good and playback on the LCD panel is bright and

crisp when viewed indoors. The panel was bright enough – once adjusted using the OSM – for shooting outdoors, although in bright sunshine, as with any camcorder, you'll need to resort to the viewfinder. As well as turning 180 degrees to face front, you can push and lock the panel back into the camera body, which is quite neat. The sound level from the built-in speaker is adequate and the volume can be adjusted using the OSM wheel. The only complaint with the VCR controls was that, having reviewed what you've just filmed, it's almost impossible to accurately reposition the tape so that you can carry on shooting (although this can be done with the remote).

In low light the autofocus was often unable to get a fix, wandering in and out of focus, unable to find a resting place. It exhibited the same behaviour using the digital zoom, although as with all digital zooms, above 40-times magnification the image quality is so poor there are no contrasting edges to focus anyway. By contrast, the MV300i has one of the best image stabilisers around (bettered only by the Sony TRV20E), making it possible to shoot handheld at the maximum optical 10x zoom and keep the subject, if not rock-steady, at least reasonably centred within the frame. If you've tried this at home, you'll know that it's virtually impossible without some clever electronics to iron out innate judders.

We had no problems capturing and recording DV footage and the device control worked faultlessly right from the off. Incoming DV can be fed back out to a TV or monitor via the A/V port, but there's no analog input, which will be a big disappointment to anyone hoping to transfer their analog archives to DV.

The MV300i is a DV-in version of Canon's nEUtered (see box p201) MV300 which costs around £100 less. The big question is why? The additional tax doesn't come near that figure and the cost involved in not disabling a machine can't be significant.

If Canon wants to succeed in the DV market it needs to rapidly rethink its approach to pricing for DV-in models.

## DETAILS

**PRICE** £730 (€621.28 ex VAT)

**CONTACT** Canon 0800 616 417

[www.canon.co.uk](http://www.canon.co.uk)

**PROS** Compact; good picture quality; easy to use

**CONS** Poor low-light performance; no analog input

**OVERALL** The ideal take-anywhere DV camcorder

**FEATURES**  
**PERFORMANCE**  
**EASE OF USE**  
**OVERALL RATING**

★★★★  
★★★★  
★★★★  
★★★★



## JVC GR-DVX10



**THE SMALLEST OF THE** camcorders in this group test, JVC's GR-DVX10, is a compact palmcorder that, despite its diminutive appearance, is packed with features. Many of them come courtesy of the DVX-10's 8MB multimedia card that allows you to take digital still pictures while simultaneously shooting video, recording and audio dubbing MP3 sound effects and creating compressed, short video clips for emailing.

One of the ways JVC has managed to miniaturise the camcorder is to put most of the connectors on a docking station. This attaches to the bottom of the camera using the tripod bush and provides composite video and stereo audio RCA connectors, S-Video out, a digital still picture serial connector, printer port, mic socket and JVC's proprietary JLIP edit control socket. The IEEE 1394 DV in/out port and a separate composite video output remain on the camera.

Because of its multi-functional nature, the camera controls are quite complicated, although you can, of course, ignore most of them and point-and-shoot in fully automatic mode where exposure focus, image stabilisation and everything bar what goes on in front of the lens is taken care of. The power switch, auto/manual slider and a mode dial adorn the right side of the camera body where, with some contorting, you can reach them with the index finger of your right hand.

The power switch slides upwards

into the camera position and two downward positions provide video and memory card playback functions. The most useful position for the mode slider is 'dual' – where you can shoot video to tape and capture stills to the multimedia card. In video mode all images, still and moving, are recorded on tape. In the DSC position the camera functions solely as a digital still camera and PS mode produces non-interlaced 50fps (frames per second) video.

The record/pause button and the power zoom sit side-by-side on the back panel and the still picture button is situated just below them, which is a sensible arrangement and one that, in practice, works well. To the right of these a push-wheel controls OSM selection and doubles as an exposure and focus control in manual mode. The 2.5in TFT LCD panel folds out on the left and the slim battery sits just below it. On top is a disc with VCR playback controls which double up as a backlight compensator, manual focus and exposure selectors. Just above the lens there is a tiny built-in flash for still picture photography in low-light conditions.

The compact format takes a little getting used to. Compared with a 'conventional' camcorder layout, everything seems much more difficult to get at. If you rest your hand flat against the side and curl your fingers over the top when carrying the camera, it's difficult to reach the record button. Shifting position so that the corner of

the camera sits in the palm of your hand is the best compromise, but the absence of rounded contours means this provides neither a very comfortable, nor firm grip.

To activate the viewfinder you must pull it backwards until it locks into position. With the power switch left in the camera position, opening and closing either the viewfinder or LCD panel switches power on and off which is quite handy.

The 8MB multimedia card contains 12 sound effects in MP3 format, though it's difficult to imagine under what circumstances you might want to add an explosion, fanfare, applause, screams or jeers to your video. More usefully, the card can store up to 21 images at 1,024 x 768 resolution in 'fine' – the lowest of the two available compression modes. At this resolution the images are sampled from 962 x 654 which is the maximum the 680,000pixel CCD can produce. The multimedia card contains a small selection of picture frames that you can add to images but, as with the sound effects, you have to question the value of something like this when you can do it so much better and more easily on your PC – virtually for nothing.

Even more useful, you can transfer up to 20 seconds of compressed video from the tape to the multimedia card, download it to your PC, then send it as an email attachment. Simply locate the clip using the playback controls, press the email clip button, then hit record to start and stop the capture. Video clips can be viewed from an index in the same way as still images and sound clips.

The DVX10's biggest asset is its size. With this camera you can travel light and get the shots – moving and still – where you just wouldn't bother taking a bigger device. A lot of the features could easily be dismissed as gimmickry – the MP3 sound and picture framing and, to a lesser degree, the excellent range of video effects and transitions are all cut-price versions of the real thing now available on PC software. Nonetheless, there's undoubtedly a demand from people who haven't the time or the inclination for desktop video editing.

### DETAILS

**PRICE** £1,300 (£1,106.38 ex VAT)

**CONTACT** JVC 020 8208 7654

[www.jvc-europe.com](http://www.jvc-europe.com)

**PROS** Compact; lots of in-camera editing features

**CONS** Uncomfortable DV compatibility

**OVERALL** Large on features, but not in size. You won't want to leave home without it

**FEATURES** ★★★★★  
**PERFORMANCE** ★★★★★  
**EASE OF USE** ★★★★★  
**OVERALL RATING** ★★★★★



## Panasonic NV-DS150



**ALTHOUGH IT MAY** not look the part, in the important areas Panasonic's NV-DS150 is a real trailblazer. DV input, a host of novel features and a price tag of £650, make this the ideal choice for those who have been waiting for an affordable camcorder with the right features.

The DS150 won't win any prizes for its design, which will be recognisable to anyone who owns a Panasonic model, digital or analog, bought in the past few years. On the plus side, the DS150's dimensions make it comfortable to hold in the hand, as well as to operate on a tripod. It does, however, look quite dated.

Panasonic has opted for the bottom-loading mechanism which it also uses on the compact DS35 and DS55 models and is finding favour with other manufacturers, although not with users who prefer to do their shooting with the aid of a tripod. In all other respects the DS150's layout is conventional. The viewfinder sits atop the battery bay at the back of the camera and extends rearwards and up to provide an infinitely variable viewing angle. The viewfinder is well shielded with a rubber eyecup, but the image, which is not adjustable, is uncomfortably bright and has high contrast, and after prolonged exposure leaves an irritating after-image on your retina.

The camera is switched on using a two-position on/off thumbwheel with a centrally located record/pause button. VCR and camera mode is set by means

of a push-button with LED indicator. The zoom rocker is conveniently positioned for index finger operation as is the still picture 'shutter release'.

All setting and playback controls are located on the left-hand side of the camera, as is the LCD monitor panel which folds out to reveal a mono speaker. Playback display on the panel was soft and flat, even on the brighter of the two settings, and difficult to see outdoors.

The controls for exposure mode setting and the OSM are forward of the LCD panel, which creates two problems. You can't see the controls when making menu selections because they are behind the panel, although with a little practice this is not too difficult to get to grips with. And if you rotate the panel more than 45 degrees, as you would when shooting from a low angle, it obstructs the wheel used to operate manual focus and exposure when not in auto mode.

For everyday use the DS150 is dependable. Shooting in auto mode provided for the most part well-focused, bright pictures free from colour casts. The auto focus worked well in most situations including high zoom magnifications. However, when the foreground subject filled less than a third of the frame it had a tendency to lose it in favour of the background. The digital image stabiliser, while visibly minimising shake, failed to render a viewfinder image that could be described as stable beyond the limits of the optical zoom.

The stop, pause and play VCR

buttons double as backlight compensation, freeze-frame and fade buttons and can easily be operated with your left hand, providing you're not already using it for manual focus or exposure control. Playback functions from the camcorder are adequate though, as is usually the case, with greater control and more options available using the remote.

The DS150's built-in stereo microphone is unusual in that it zooms with the lens – the mic becomes super directional when in zoom mode. Sound quality from built-in mics is never great, and when the Panasonic's mic zooms, it records only mono. Nonetheless, in the absence of an external mic, it is a big improvement on the inaudible murmurs you hear when recording distant subjects with a built-in mic.

Another useful-sounding feature is what Panasonic calls the zero lux night-view function that is set by means of a sliding switch just rear of the lens mount. This records black and white video using refracted infra-red illumination provided by a beam emitter mounted below the lens. Used in combination with another novel feature – motion sensor control – this provides the perfect feature for wildlife videographers who value their sleep. The subject needs to be quite large in the frame for the motion sensor to work, and the effective range for the IR beam is about three metres. Once motion is detected the camera continues recording until the tape, or the power, runs out.

The DS150 provided no surprises, capturing and recording video via the FireWire port. All the camera's sockets are situated behind a plastic cover on the front-left of the camera – easily accessible when you need them, invisible when you don't.

Despite its conservative bad looks the DS150 has a lot to offer and at a price that brings DV into the mainstream. It has taken a long time for camcorder manufacturers to start listening to consumers, but Panasonic has most definitely got the message. Let's hope others follow suit.

## DETAILS

**PRICE** £650 (£553.19 ex VAT)

**CONTACT** Panasonic 08705 357 357

[www.panasonic.co.uk](http://www.panasonic.co.uk)

**PROS** Low, low price; novel features; reliable operation

**CONS** Dated styling; uncomfortable viewfinder; bottom-loading

**OVERALL** Low on price; big on features. Makes spending more hard to justify

<b>FEATURES</b>	★★★★★
<b>PERFORMANCE</b>	★★★★
<b>EASE OF USE</b>	★★★★
<b>OVERALL RATING</b>	★★★★

## Samsung VP-D55



**AT £630 THE SAMSUNG VP-D55** is the cheapest DV camcorder in this group test and, unless you can find an exceptionally good deal on Panasonic's NV-DS150, probably as cheap as it currently gets.

Make no mistake, this camcorder has budget written all the way through it, from the miniscule black and white viewfinder to the f1.6 Samsung lens. Let's start with ergonomics. At first glance the VP-D55 exhibits the same brick-like contours of so many of its competitors, but the corners haven't been rounded off and less care has been taken with the positioning of controls. The result is that it never feels at home in your hand and everything, from switching it on to operating the zoom, is a struggle.

The power switch, for example, is the usual two-way thumbwheel affair, but with a tiny green lock button that must be pressed in a long way before the switch will rotate to either the player or camera positions. It's almost impossible to rotate the switch to use the camera, unless you have extraordinarily long, dextrous thumbs.

The viewfinder differs from that used in most other models in two respects: it's mono and about half the size of a standard viewfinder. The coating on the inside of the viewfinder eyepiece is slightly reflective, so rather than seeing the image floating in a black void it's rather like looking down the inside of a toilet roll tube at a postage stamp. Thankfully, the LCD panel functions

pretty well, and as most of the setup buttons are behind it, you're better off using this anyway. As with all LCD panels it's not easy to see in bright sunlight, in which case you're stuck with the viewfinder.

With the panel folded out you can access the OSM which, among other things, lets you adjust the panel brightness, activate the image stabiliser, digital zoom, Program AE and manual modes, and set the white balance mode. The choice of which functions to allocate to dedicated buttons and where to put them is a little haphazard. On the top-left of the camera, and accessible even when the panel is closed, are buttons for backlight compensation, fade, and edit search – which automatically rewinds and plays the past three seconds of video before returning you to the exact same spot on the tape. There's also a dedicated button for displaying a picture-in-picture inset of the original image when one of the digital effects is in use. It would surely have made more sense to put the Program AE button here.

Day-to-day use served only to highlight further shortcomings. The camera has real difficulty maintaining white balance both when it's first switched on and when moving between different environments. This was most obvious when moving from outside to an artificially lit room and vice versa. In the first instance, colours appear overly warm – white walls were an unsubtle shade of peach. Conversely when you go

outside it's very much a case of the wide blue yonder.

You can set the white balance mode specifically for indoor or outdoor environments, or fix it on the current setting – which allows you take a reading from a 'white' surface at the shooting location, but it's no compensation for the poor performance of the auto function.

The digital image stabiliser was ineffectual which, given the visible reduction in image area seen in the viewfinder, is doubly irritating. Manual focus is activated by a button just forward of the LCD panel and this is straightforward and simple to use – just push the button and turn the focus wheel mounted below it. It's a shame there isn't the same kind of direct manual control of aperture and shutter settings accessed from the OSM, but at this price it's fairly remarkable they're included at all.

Further disappointment was in store when we connected the Samsung camera to our video-editing PC. While device control operated perfectly well, we were unable to display or capture a satisfactory image and were treated instead to a pixellated scramble only barely recognisable as our test footage.

This problem, which also occurred with the JVC and Thomson camcorders, is caused by the Microsoft plug-and-play drivers recognising the camcorder as an NTSC, rather than a PAL device (see boxout p201). While some FireWire card manufacturers recognise this problem and give advice on how to overcome it (Pinnacle, for example provides a utility to switch between the Microsoft and Texas Instruments driver), camcorder manufacturers seem happy to ignore the issue.

Full credit to Samsung for attempting to bring down the cost of DV by entering the market with a budget camera, but as a first effort it falls woefully short of the mark. Next time Samsung would do better to concentrate on the basics – good-quality components, functions that work, intelligent layout of controls and, of course, a DV-input. In the meantime spend a few pounds extra and get a lot more for your money with either the Panasonic or JVC.

## DETAILS

**PRICE** £630 (£536.17 ex VAT)

**CONTACT** Samsung 020 8391 0168

[www.samsungelectronics.co.uk](http://www.samsungelectronics.co.uk)

**PROS** Budget price

**CONS** No DV-in; tiny black and white viewfinder; poor white balance

**OVERALL** For a little more money you can get a lot more camcorder. Check out Panasonic and JVC

**FEATURES**  
**PERFORMANCE**  
**EASE OF USE**  
**OVERALL RATING**

★★★★  
★★★  
★★★  
★★★





## Sharp VL-SD20H



**LIKE THE JVC DVX-10**, the Sharp VL-SD20H is a marked departure from the 'standard' miniDV camcorder format adopted by most of the models reviewed here. As anyone who has seen a ViewCam will understand, compactness is not the only goal, rather a different approach to the way we use a camera. Sharp was first to introduce LCD panels for viewing and composing, rather than as an adjunct to a conventional viewfinder.

The ViewCam is really two components connected by a hinge that rotates through about 270 degrees. On the right the lens assembly houses the battery and provides a moulded hand grip. The bulk of the camera, which can be supported with the left hand, houses the cassette transport, video heads, 3in LCD panel and function controls.

All the important buttons are within easy reach of your right thumb – record/pause, still picture and zoom rocker switch. There's also an unusual three-way L-shaped power button that sets camcorder or VCR mode.

Below the LCD panel, four VCR buttons provide playback control and double as selectors for the OSM in combination with a push/rocker switch controlled with your right thumb. The camera has one menu that operates conventionally – you press the push/rocker switch and scroll through to activate the options.

Virtually all other options are set using the VCR control buttons to select options that appear in a horizontal menu bar on the LCD panel above them. In this

way you can quickly select one of the seven picture effects or four AE modes and set manual focus and exposure. Compared with the on-screen menu and push rocker selector system, commonplace on many other models, the Sharp method is easy to get the hang of.

In use, the SD20H was reliable, if a little unexciting. You either love or hate the ViewCam format. Our overall impression is that both the shape and rotational hinge make it feel less stable than a conventional model. Picture quality was excellent with the auto white balance coping well in all situations and the autofocus consistently finding its target. Motor noise was audible during recording, though, and was picked up by the mic on top of the LCD section which houses the cassette drive mechanism.

This is not the camera for you if you rely on the LCD panel as a front-of-camera monitor during shooting. First, you can't mount the camera on a tripod because in this configuration the tripod bush is pointing skywards – you need a special optional adaptor. Second, because many of the menu options co-opt the VCR buttons and panel menus, these too are non-functional when the panel is rotated 180 degrees.

For AE modes, say, and special effects, you can set them first, then rotate, but there's no manual focus, exposure control, or fade in this configuration. Given these limitations, it's hard to understand why Sharp didn't put some of these functions on the

remote, rather than those you're more likely to set on the camera.

The still picture button freezes the image on screen where you can view it before deciding to record it to tape, either for a preset six seconds or indefinitely and a strobe option records and displays nine or 16 still frames at tenth-of-a-second intervals. With no self-timer option why hasn't Sharp included a still picture button on the remote?

The absence of a viewfinder turned out to be less of a problem than expected. The LCD panel backlight automatically adjusts depending on the ambient light conditions and can be forced to bright mode if necessary. With the sun shining over your shoulder directly on to the panel it's possible to see the image reasonably well using your left hand to shade it. With the backlight in normal mode the camera consumes a hefty 4.8w, so a spare battery could be an indispensable extra.

DV editing was no problem – once we had located the FireWire socket by rotating the panel through 90 degrees and looking on the side usually obscured by the lens section. This socket is DV-out only, ruling out the ViewCam for anyone interested in desktop video editing.

If you prefer to use an LCD screen to a conventional viewfinder you may find the ViewCam format to your liking. In the absence of a conventional viewfinder Sharp has made efforts to ensure that its LCD panel is visible in circumstances where others would struggle.

However, the swivel-hinged construction creates problems that have been overcome in an awkward fashion. With the tripod mounting on one half of the camera and the lens on the other, instability is inevitable. If you want to face the LCD panel forwards while shooting, you need to use an add-on tripod mount, which only compounds the problem. Finally, in this configuration you lose most of the OSM functions. All of this so that you can adjust the angle of the viewing screen independently of the lens. This may have been revolutionary five years ago, but these days most other models do it – without the compromises that Sharp has made.

## DETAILS

**PRICE** £700 (£595.74 ex VAT)

**CONTACT** Sharp 0800 262 958

[www.sharp.co.uk](http://www.sharp.co.uk)

**PROS** Easy to use

**CONS** No DV-in; motor noise; limited front-panel functions

**OVERALL** The ViewCam design is at the root of all this camera's problems from noise to the ridiculous tripod adaptor for 'self recording'

<b>FEATURES</b>	★★★★
<b>PERFORMANCE</b>	★★★★
<b>EASE OF USE</b>	★★★★★
<b>OVERALL RATING</b>	★★★

## Sony DCR-TRV20E



**THE SONY TRV20E** is a step up from the other camcorders in this group test. At nearly £1,200 you'd expect it to offer a lot more than models costing half the price, and you'd be right. In terms of build quality, specifications and features, the TRV20E has more to offer, but many of these features will only be of interest to the serious videographer.

The first thing you notice about the TRV20E is that it's weighty and robust. It's the only model that was supplied with a lens hood, giving it more of a professional look as well as keeping flare at bay. Behind this is mounted a proper focus ring on lens bevel. The thumb-operated power switch has four positions: off, VCR, camera and memory. The last of these lets you record still pictures to the 4MB Memory Stick. The maximum resolution of 1,152 x 864 doesn't come close to the resolution of a good digital still camera, but is far superior to anything you can capture on a DV tape. You can also produce digital mixing effects using the Memory Stick images – but more about that later.

Opening the LCD panel is something of a shock if you're not prepared – it's enormous. Measuring 3.5in diagonally compared with the more usual 2.5in and cramming in nearly a quarter of a million pixels it's ideal for those who intend to do a lot of shooting in widescreen 16:9 format. When opened it reveals a multitude of buttons on the inside panel. Sony seems to prefer physical buttons for many functions other manufacturers implement on the OSM

and there are additional ones for the Memory Stick functions.

Six buttons at the top of the panel are for playback and editing of digital stills on the Memory Stick, three in the middle toggle display information and another group lets you add digital effects and basic titling and provides access to the OSM. The LCD panel has a wide range of brightness adjustment which, like the volume, is controlled by, you guessed it, more buttons. The display itself provides the best monitoring and playback view you're likely to get without resorting to a separate monitor. As well as the usual three-portion battery graphic, you are given an estimate in minutes of the remaining battery life, which means you should never experience an unexpected power loss.

In use, the TRV20E is versatile and responsive. In point-and-shoot mode it gets on with the job, providing a clear, bright image with natural-looking, slightly warm, but not over-saturated colours. Sony's Super Steady Shot image stabiliser was the best we saw – no doubt due to the pixel-packed CCD sensor.

Whereas many of the cheaper models require a good deal of configuration for manual operation, the TRV20E lets you easily switch over mid-shot. For focus, a slider switches from auto to manual and a further push forces the focus to infinity – any subsequent moving of the focus ring automatically returns you to manual focusing. An exposure button on the

rear-left activates manual exposure mode and you use the OSM selector wheel for aperture control.

The TRV20E provides plenty of still picture features. You can shoot stills either to the DV tape, or the memory stick, though the latter provides better quality. Because a serial link and software is provided you can download pictures from either source to your PC. In-camera chroma key and luminance key features let you substitute a memory stick image for areas of the video image. For example, you can take a still picture of someone holding a blue board and then superimpose video footage on to it, or shoot video of someone in front of a blue background and substitute a still image in its place.

In-camera effects are good, but limited compared with what can be achieved on a PC. The TRV20E provides all the connectivity options you're likely to need or want. Of course, there's an IEEE 1394 port and this can be used to download digital video to a hard drive on your PC. The Sony device functioned without problems allowing us to capture using device control. The camera's A/V port is two-way, effectively turning it into a VCR capable of recording from both digital and analog sources. If you're fussy about picture quality you can plug the TV in and use it to video *Eastenders*. But this port is more likely to be of interest as a means of converting a library of analog video tapes to DV format.

You simply connect the S-Video or composite video output of your old analog camcorder to the Sony's A/V input, press play on the former and record on the latter and sit back and watch the show.

Other tasty features in this camcorder include IR recording and optional cordless connection to your TV for playback. However, it's not the gimmicks that make the TRV20E such an outstanding camcorder, but the combination of rock-solid high-spec components, excellent auto and manual features and comprehensive digital and analog connectivity.

## DETAILS

**PRICE** £1,150 (£978.72 ex VAT)

**CONTACT** Sony 0990 111 999

[www.sony.co.uk](http://www.sony.co.uk)

**PROS** Big screen LCD; Memory Stick digital pics; easy-to-use manual controls; analog input

**CONS** Expensive; a little heavy

**OVERALL** The obvious choice for those with movie-making aspirations and deep pockets

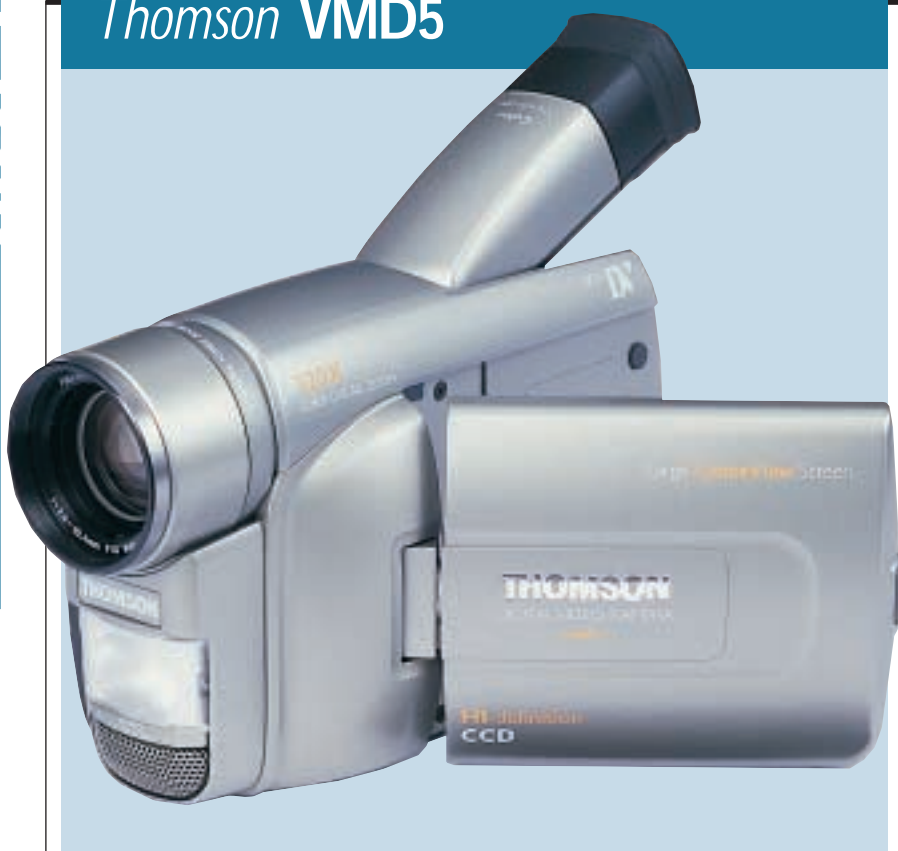
**FEATURES**  
**PERFORMANCE**  
**EASE OF USE**  
**OVERALL RATING**

★★★★★  
★★★★★  
★★★★★  
★★★★★





## Thomson VMD5



**THOMSON, PROBABLY** best known for its TV, VCR and DVD products, is a newcomer to the camcorder market. It introduced six new models at the CeBit computer show, including the VMD5, reviewed here. The entire Thomson line-up is based on JVC models but, although JVC also does the manufacturing, this is more than a mere rebranding exercise.

The VMD5 is the biggest and broadest of all the models on test, but its rounded contours feel snug and the controls are positioned so that even those with small hands won't find themselves straining to get at the buttons other manufacturers put beyond their reach.

There are several aspects of the design that break with current conventions and fashion. The first is that the cassette loading mechanism projects not from the bottom (hooray!), but the rear of the camera. Hang on though, if the tape comes out of the back, where's the battery? Well, that goes on the right of the camera body and rests in your palm.

The words 'Large ColorView Screen' printed on the outside of the LCD panel are no idle boast, like the Sony TRV20E's, it measures 3.5in diagonally providing a much bigger and better view for both monitoring and playback. However, the view through the viewfinder was bright, with a lot of contrast and visibly pixelated and, like the Panasonic, uncomfortable on the eye after a few seconds. Moving round to the front, the final surprise – a built-in 3.6w video light.

Pretty much everything about the design and layout of the VMD5, both physical and electronic, is pleasantly surprising and evidence that considerable thought has gone into it. Little things come to mean a lot when you make use of them frequently, like the way the play, off, auto and manual thumbwheel is labelled on the back so you can see it without having to turn the camera sideways.

The OSM is accessed by a push wheel behind the zoom rocker and is easily operated with your index finger. The top-level menu lets you set focus, exposure, effects and AE modes, and sub-menus provide things like macro, sound mode and image stabilisation.

The menu loop scroll, so you can easily get back to the top of a long menu from the bottom item with just one click of the wheel. If you make a selection from the top-level menu the OSM disappears and if you select from a first or second-level menu the selector goes to the end button so you can quickly exit, or go back and change another setting. The push wheel also functions as a brightness control for the LCD panel, manual focus wheel and aperture control in manual exposure mode.

There are no buttons behind the LCD panel – you don't need any as most functions are controlled from the OSM. The rear panel houses VCR playback buttons and a three-way on/off/auto switch for the light. All this swings open to the right to eject the cassette, which means you must first open the LCD panel.

In use, the camera performed very well. The autofocus in particular was quick and precise under most conditions, including low-light levels, and coped impressively with difficult situations such as shooting through Venetian blinds and dirty windows. When the light is set to auto it has a tendency to switch itself on in conditions where you would probably be happy to do without it, but using the rear-mounted switch you can easily turn it off. The illumination it provides is good for subjects between one and three metres from the lens and it's a good idea to set the white balance to lamp mode.

Outside the lamp is not much use as the illumination falls off rapidly, but for birthday parties, self-recording and other indoor low-light situations it's a big plus.

The image stabiliser was effective in the optical zoom range and beyond. Rather than smoothing movement, like the Sony TRV20E, it almost eliminates small movements altogether and translates larger movements into little jerks. In other words, it works at its best if you can hold the camera quite steady.

As with all of the digital image stabilisers, you need to have realistic expectations – it will dampen your worst jitters, but if you want real stability you're going to need a tripod.

Full marks to Thomson for including a serial cable for transferring still images to your PC (a privilege for which Panasonic charges £140) and a copy of Picture-it 99. There's also a copy of JVC's JLIP video capture and editing software. It's also good to see a manufacturer include a DV tape. But, if you're going to make extensive use of the built-in video light, an extra fully charged battery is a necessity.

Unsurprisingly, we had the same video-editing problems with the VMD5 as with the JVC camcorder and had to switch to the Texas Instruments camcorder driver in order to capture digital video to a PC using the FireWire port. Once done, everything worked fine and we were able to capture, edit and record back to the camcorder using device control from Ulead Media studio.

## DETAILS

**PRICE** £850 (£723.40 ex VAT)

**CONTACT** Thomson 01732 520 920

[www.thomson-europe.com](http://www.thomson-europe.com)

**PROS** Bigger than average LCD screen; built-in video light

**CONS** Bulky, uncomfortable viewfinder

**OVERALL** Clever design that shows good attention to detail. The built-in light comes in handy for indoor shooting

<b>FEATURES</b>	★★★★★
<b>PERFORMANCE</b>	★★★★
<b>EASE OF USE</b>	★★★★
<b>OVERALL RATING</b>	★★★★

## DV editing denEUtered

Although DV camcorders have been around for nearly two years now, it's only in the past few months that models capable of recording digital video from an external source (ie your PC) have started to appear. This is not because it's technically difficult, or expensive, in fact camcorders destined for the European market have had their DV recording capability deliberately disabled – a process that has become known as nEUtering.

Why do the manufacturers do this? Because otherwise DV camcorders would be classed as VCRs and attract additional tax that would be passed onto you the consumer. Whatever you think of the rights and wrongs of this, clearly most manufacturers believed that European consumers weren't too interested in desktop video editing and those that were would be prepared to pay extra (about £25) for the privilege.

Thankfully, they've been proved wrong, largely by means of a thriving underground trade in software, and hardware 'widgets' designed to restore the nEUtered machines to their full DV-in potential.

So camcorder manufacturers have got the message and now, for a small extra charge you can get a DV-in model just about anywhere... well, not quite. For one thing, some have been slow to catch on – two of the models we've reviewed here are nEUtered, the Samsung VP-D55 and Sharp VL-SD20H. And some manufacturers are charging a hefty premium for DV-in versions of their nEUtered models, the Canon MV300i being but one example.

DV-in is important because, having downloaded DV footage from your camcorder to your PC and edited it you'll want to get it off your hard drive to a cheap digital storage device – and where better than the place it came from? DV eats up disk space – you could fill

a 20GB hard drive with the contents of one 90-minute miniDV cassette, so at less than £7 each they compare very favourably with other forms of storage.

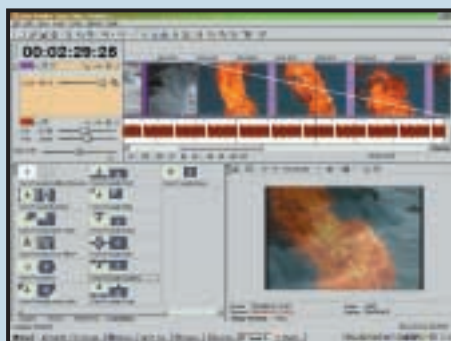
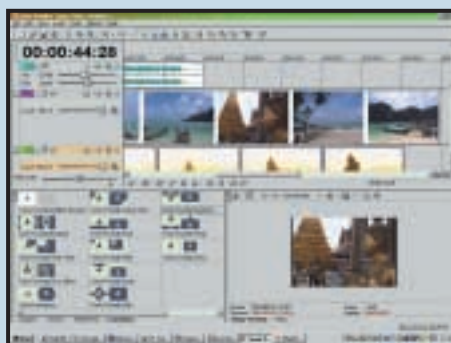
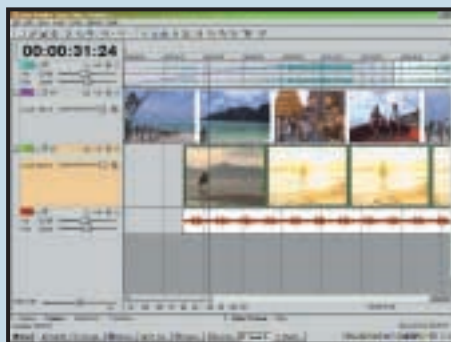
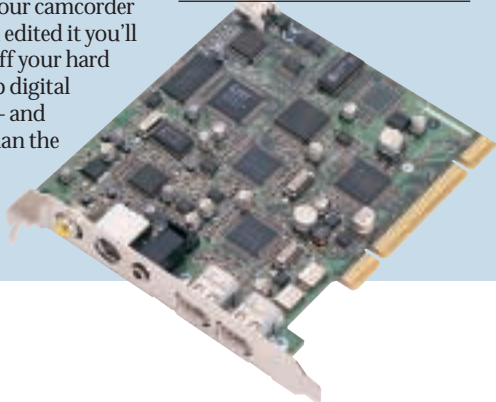
Recording your video back to the camcorder also provides an easy route to making analog copies of your digital master using the camcorder's composite, or preferably S-Video socket to connect to a domestic VCR.

To edit digital video on your PC you'll need an IEEE 1394 FireWire interface card and software that enables you to capture video clips from your camera, assemble and edit them, then record the finished project back to tape. If you don't already have a FireWire card, choose one with several ports – so you can connect an external hard drive, or scanner, as well as the camcorder.

Several manufacturers sell packages consisting of a card and software. Pinnacle Systems' Studio DV, the ADS Pyro 1394 and UK company Datavision's DV Capture are all reliable boards with application software offering good value, see *PCW* June 2000 p147.

One advantage of buying a FireWire board with bundled software is that you shouldn't suffer any compatibility problems between the two. Making sure your board and camcorder work in harmony is, however, another issue. Three of the camcorders in our group test – the JVC GR-DVX10, Thomson VMD5 and Samsung VP-D55 all exhibited the same problem when trying to display and capture digital video connected to a PC using an OHCI-compliant FireWire card. Instead of clean crisp

*Pinnacle's FireWire interface card (see reviews)*



*You can produce amazingly professional results using a DV camera and digital video editing software such as Vegas Video from Sonic Foundry*








digital video they displayed an almost unrecognisable jumble of pixels that could no way be coaxied into a stable image.

Our video-editing machine was an 800MHz Athlon running Windows 98SE with an ADS Pyro 1394 card. The capture and editing software was Ulead Media Studio 6 and the system had been used successfully for many months with a DV-enabled Panasonic NV-DA1. It also had no problems with the other camcorders in the group test.

This is a problem JVC owners with DataVision boards have been aware of for some time and DataVision has published a software patch on its website [www.datavision.co.uk](http://www.datavision.co.uk). The pixel soup is the result of the camcorder being identified as an NTSC rather than a PAL model. We

managed to work around the problem by replacing the Windows 98 Microsoft camcorder driver with a Texas Instruments one. Pyro owners can obtain the TI camcorder driver from [www.adstech.com/resources/pyro.html](http://www.adstech.com/resources/pyro.html).

Unless you're lucky, you can expect to spend some time ensuring that your setup works perfectly and you are able to both capture and record digital video without problems. If you're planning on buying a camcorder to use with an existing setup, or would like to find out which FireWire card/editing applications/camcorder combination might give rise to problems, then the best sources of information are the websites for the card and software manufacturers, as well as video-editing newsgroups.

Table of features							
	MANUFACTURER	CANON	JVC	PANASONIC	SAMSUNG	SHARP	SONY
PRODUCT	MV300i	GR-DVX10	NV-DS150	VP-D55	VL-SD20H	DCR-TRV20E	VMD5
Telephone	0800 616 417	020 8208 7654	08705 357 357	020 8931 0168	0800 262 958	0990 111 999	01732 520 920
URL	<a href="http://www.canon.co.uk">www.canon.co.uk</a>	<a href="http://www.jvc-europe.com">www.jvc-europe.com</a>	<a href="http://www.panasonic.co.uk">www.panasonic.co.uk</a>	<a href="http://www.samsung-electronics.co.uk">www.samsung-electronics.co.uk</a>	<a href="http://www.sharp.co.uk">www.sharp.co.uk</a>	<a href="http://www.sony.com">www.sony.com</a>	<a href="http://www.thomson-europe.com">www.thomson-europe.com</a>
Price inc VAT	£730	£1,300	£650	£630	£700	£1,150	£850
Price ex VAT	£621.28	£1,106.38	£553.19	£536.17	£595.74	£978.72	£723.4
FEATURES							
CCD	.25in 540,000 pixels	.25in 680,000 pixels	.25in 800,000 pixels	.25in 800,000 pixels	.33in 770,000 pixels	.25in 1,070,000	.25in 800,000 pixels
LCD screen	2.5in TFT colour 112,000 pixels	2.5in TFT colour	2.5in 112,000 pixels	2.5in TFT colour LCD 112,000 pixels	3in TFT colour LCD	3.5in colour LCD 246,400 pixels	3.5in colour TFT
Viewfinder	0.44in TFT colour LCD 11 113,000 pixels	.44in colour LCD	Colour LCD	0.24in mono LCD	None	Colour LCD	0.55in colour LCD
Focus	Auto/manual	Auto manual	Auto/manual	Auto/manual	Auto/manual	Auto/manual	Auto/manual
Zoom (optical/digital)	10x/200x	10x/200x	20/400	22x/440x	10x/100x	10x/20x	16x/320x
Image stabiliser	✓	✓	✓	✓	✓	✓	✓
Still picture	✓ (cable not supplied)	✓	✓ (cable not supplied)	✓ (cable not supplied)	✓	✓	✓
Sound	16bit 48KHz or 12bit 32KHz	16bit/48KHz or 1bit 32KHz	1bit/48KHz or 1bit 32KHz	16bit/48KHz or 12bit 32KHz	16bit 48KHz or 12bit 32KHz	16bit/48KHz or 12bit 32KHz	16bit/48KHz or 12bit 32KHz
Effects	Art, black & white, sepia, snow	Twilight, sepia, B&W, classic film, strobe, video echo, plus assorted fades, wipes and dissolves and MP3 digital sound effects.	Wipe, mix, strobe, neg, sepia, B/W, tracer, solar, mosaic, mirror	Neg, B/W mosaic, mirror, ghost	B&W, sepia, mosaic, solarise, stretch, slim, neg	Neg, sepia, B&W, solarise, slim, stretch, pastel, mosaic	Sepia, B&W, Twilight, echo, classic film, strobe, fade, wipe
Ports	IEEE 1394 DV in/out, S-Video out, A/V out (comp video, stereo audio), LANC, mic, phones	On camera: IEEE 1394 DV in/out, A/V out. On docking station A/V out (comp video, stereo audio), S-Video, Digital Still Picture (serial), JLIP edit, printer, mic	IEEE 1394 DV in/out, S-Video out, LANC, mic, AV out (comp video, stereo audio) Digital still picture (serial)	IEEE 1394 DV out, A/V out, S-Video out, mic	IEEE 1394 DV out, S-Video out, A/V out (comp video, stereo audio), mic, still picture (serial)	IEEE 1394 DV in/out, S-Video out, A/V in/out (comp video, stereo audio), LANC, mic, phones	IEEE 1394 DV in/out, S-Video, JLIP, PC serial, A/V out (comp video, stereo audio)
Dimensions (mm w x h x d)	57 x 101 x 129	51 x 125 x 97	80 x 100 x 195	155 x 90 x 75	158 x 98 x 74	71 x 93 x 170	188 x 118 x 88
Weight (ex battery and tape)	550g	515g	520g	650g	555g	680g	710g
Accessories	Remote control, shoulder strap, lens cap, battery pack, mains adaptor/ charger, S-Video cable, A/V cable Scart adaptor, ferrite cores	AC adaptor/mains lead, battery pack, docking station, remote control, 8MB MultiMedia card, Scart adaptor, A/V cable, editing cable, JLIP cable PC cable, CD with JLIP video capture and editing software	AC adaptor/mains lead, battery pack, AV cable, S-Video cable, shoulder strap, remote control, head cleaner, lens cap	Battery, AC adaptor/ charger, A/V cable, remote control, S-Video cable, Scart adaptor	Battery, AC adaptor/charger, remote control, FireWire cable, A/V cable, S-Video cable, lens cap, DV tape	Remote control, mains adaptor/ charger, battery pack, PC serial cable, memory stick, A/V cable, Scart adaptor, lens hood and cap, and cap, PictureGear 4.1 Lite software	Battery pack, AC adaptor/ charger, remote, S-Video cable, A/V cable, serial cable JLIP editing cable, Scart adaptor, JLIP software, Picture It! 99, DV tape





# Editor's Choice



**T**ake away all the frills and features and fundamentally what a camcorder does is to record and display video. All the models we reviewed make an excellent job of this with the possible exception of the Samsung VP-D55 which, even despite its shortcomings can be made to produce reasonably good results.

When deciding on the Editor's Choice we first took into account each camera's features. Perhaps the most important of these was the capability to download video to a PC over FireWire (IEEE 1394) and then record back edited video footage. For too long European DV camcorders have had their DV-in port disabled, pointlessly crippling one of the most exciting features on offer. Unless you can record your video projects back to DV tape on the camcorder there's nowhere for them to go except the Recycle Bin. At 1GB for under five minutes of video you certainly won't want to leave them on your hard drive for too long.

A IEEE 1394 interface also allows you to control your camcorder's VCR functions from video editing and capture software. This makes capturing clips from the DV tape in your camcorder much easier and is absolutely essential for batch capture. If you have a lot of clips to capture you can view the entire tape, marking in and out points where you want capture to begin and end. The software then locates the relevant point on the tape, plays the marked segment and captures it to disc before fast forwarding to the next bit – all while you sit back and watch.

A problem with the Microsoft camcorder drivers resulted in scrambled video using the JVC, Thomson and Samsung models, but once we found the solution (which came from the FireWire card manufacturers) this was easily sorted out. Apart from this one problem all of the camcorders performed straight out of the box when connected to a PC.

Ease of use is, of course, important and what differentiates the excellent from the merely functional is the way in which features like auto focus and exposure, white balance, digital image stabilisation, Program AE modes and so on have been implemented.

In day-to-day use it matters more that you can easily switch from auto to manual focus, or instantly compensate for backlit subjects when the situation demands, than being able to shoot in black and white, sepia, negative or any one of a dozen special effects on offer.

All of the camcorders we looked at provided some form of still picture function. At its most basic this records a 640 x 480 digital still picture to the DV tape which you can transfer using a (not always supplied) serial cable and software. A new trend is emerging, where still images are recorded to a multimedia card. Both the Sony TRV20E and the JVC GR-DVX10 take this route.

Effectively, this gives you two cameras in one, doing away with the need to carry a second camera for stills. While camcorder CCDs are no match for dedicated still picture cameras, at resolutions of around one megapixel, the images they produce are more than

good enough for the web, can be inkjet printed with good results up to 6 x 5in and reproduced in a magazine at half that size.

## The winners

The **Editor's Choice** award goes to the **Sony TRV20E**. About the only negative thing you can say about this superb model is that its price puts it out of the reach of most of us for whom video is an amateur pursuit. The Sony's build quality is excellent – it looks and feels like it could stand up to rough handling without serious consequences. Every component, from Carl Zeiss lens to the megapixel CCD and the 3.5in LCD panel, is built to the highest specification. The result is clarity of view and quality of images that are significantly better than the cheaper cameras.

For those who want to venture beyond automatic point-and-shoot operation the Sony provides the best manual features. Thumbwheels are all very well for operating OSMs but you can't beat a proper lens-mounted ring for manual focusing. Switching into manual from the Sony's auto mode is as simple as flicking a switch and the infinity focus option is the inspired design of someone who's actually fumbled with a focus ring and thought 'there's got to be a better way'.

As a still camera the Memory Stick gives it the edge in resolution and versatility over capture-to-tape devices, though it still falls short of the capabilities of a dedicated digital still camera. Nonetheless in a news gathering role or any situation where quick on-scene editing is the only option, these could prove invaluable. As with the JVC DVX10 the multimedia route is clearly the future for digital camcorders.

Those of us with more modest budgets could do very much worse than the **JVC GR-DVX10** which gets our **Highly Commended** award. The DVX10 is only slightly bigger than many digital still picture cameras, yet provides much of their functionality as an added extra.

You may not make use of them all, but the DVX10 also has the widest range of special effects and transitions as well as sound dubbing features. Lastly, its ultra-compact design makes it a good choice for situations where size is important or when you just don't want the bulk of a conventional camcorder.



*Sony's DCR-TRV20E is a superb camcorder and the price reflects the specs*



*JVC's GR-DVX10 is very compact but has a wide range of functions and special effects*