One step ahead

Baxall's Vivid DVR looks like being a long-term fixture in the market

What our experts say . . .

IN THE PAST COUPLE OF YEARS HARD-DISK based digital video recorders have become commodity items, and it's no exaggeration to say that the market is now awash with well-specified and often very attractively priced machines that have effectively consigned magnetic tape video recorders to the scrap heap.

You only have to look on the on-line auction site ebay to see how far and how fast tape has declined, and surveillance VCRs, some of them barely out of warranty, are now being sold off at a fraction of their original cost; how many others end up in skips and municipal tips can only be guessed at.

One by one most of the operational issues and

At the moment there are three models: the entry-level Vivid Lite, a high-end Vivid+ machine, and the mid-range Vivid, which we are looking at in this bench test. Common features include a choice of six, 10 or 16 input channels, hard disk capacities from 80gb to 1 terabyte (Vivid and Vivid+ only), and audio recording. So far there's nothing out of the ordinary, but the these machines do differ from the mainstream in one very important respect and that is the use of JPEG 2000 compression, which we will come back to in a moment.

Other features common to all three models include a front-mounted USB socket for downloading images or recordings on to portable

The Vivid machine we've been assessing is the 16-channel, 320Gb model (twin 160Gb drives) with triplex operation (Vivid Lite is duplex only) and a recording rate of up to 50 images per second (ips). Ethernet connectivity provides network viewing and control using provided software and email notification of alarm and system events.

JPEG 2000 compression is a key feature of the new Vivid DVR range and its principle benefits are improved efficiency and better image quality at higher compression levels. Baxall claim that JPEG 2000 provides a 30 per cent increase in recording time for a given amount of storage space, though in view of the ongoing reduction in cost of high

The front panel actually suggests some thought has gone into the layout of the controls

technical concerns that bedevilled early DVRs have been resolved, which is clearly good news for end users. However, manufacturers, especially long established brands at the top end of the market, are facing an ongoing challenge, and to survive they must come up with new and ever more innovative products and fend off competition from the host of new and less well known companies aggressively vying to make their presence felt.

Fortunately, digital video recording, unfettered by the physical and mechanical constraints of analogue tape, is an open-ended technology. This allows the manufacturers with the most progressive R&D departments to stay several steps ahead of their rivals, and that is precisely the position Baxall is seeking to secure and maintain with its new Vivid range of DVRs.

memory modules, copying configuration settings in multiple machine installations, downloading software upgrades or for connecting to external USB devices like keyboards.

Also included as standard is scheduled recording, external dome control (nine protocols), alarm inputs, motion detection plus pre and post-alarm recording to protected partitions on the hard drives.

An embedded version of the proven Linux operating system keeps everything ticking. There's a choice of linear, looping or event recording modes and resolution, depending on recording mode, is up to 720 x 288 pixels in a variety of single or multiple screen display formats (quad, 5 + 1, 3 x 3, 8 + 2, 12 + 1, 4 x 4, Picture in Picture and picture zoom).

capacity hard disk drives it is perhaps not as significant as it once used to be. On the other hand anything that results in clearer and sharper pictures has to be welcomed, and this is due to the way JPEG 2000 compression processes image data.

Conventional JPEG compression uses a Discrete Cosine Transformation (DCT) algorithm, which basically means data is broken down into segments, and this results in the characteristic 'blocking' artefacts, particularly at higher compression rates, when there is a lot of rapid movement in the image.

JPEG 2000 uses a 'Wavelet Transform' algorithm, which encodes image data in a continuous stream, and this reduces the impact of processing artefacts. When they do occur – which should be less often – it causes blurring in areas of

PHOTOGRAPHY: TOM DOBBIE

fine detail, rapid movement or high contrast, so the picture looks softer, almost out of focus, rather than breaking down into clump of coloured squares.

Layout of controls

In common with most current DVRs, Vivid is housed in a standard 19-inch rack-mountable case, but in another clear sign of Baxall's intention to stand out from the crowd, the front panel with its swooping curves actually looks quite attractive and suggests that some thought has been given to the layout of the controls.

The left side is taken up with two rows of camera selector buttons. The central bank of keys are for playback and follow familiar VCR conventions. Below that is a row of LED status and warning indicators, and the buttons on the right handle the various system functions (display mode, menu and so on). On the far right is the USB socket for plugging in memory modules and peripherals.

The back panel also keeps to a tried and tested layout with two rows of BNC sockets for camera inputs and loop-throughs and two monitor outputs. A 26-way terminal block carries the alarm inputs and output connections, and there's also a nine-pin D-sub socket for RS232 serial communications, three 3.5mm minijack sockets for audio input (line level and microphone) and line-level output.

An RJ45 socket handles the 10/100 Ethernet connection, two more RJ45 sockets are used for dome camera communications and daisy-chaining two or more Vivid DVRs using the proprietary Baxnet protocols and a 50 pin SCSI connector is used to connect up to three daisy chained RAID high capacity storage devices. Power is supplied by an external 12-volt mains adaptor, which plugs into a socket in the bottom right hand corner of the panel.

Setup and operation

To be frank configuring some DVRs can be a real pain, but Baxall has taken the sting out of the initial setup and the Vivid is ready to go, straight out of the box, automatically optimised to record for a duration of 31-days. All operations are controlled from a menu-driven on-screen display, and this is

perhaps the machine's only weakness. There are two levels of access to the menus, for operators and installers, each requiring a separate PIN code. The menu display appears to be based on the same OSD system used on other Baxall products we've reviewed. In short, the menus are small and difficult to read, moreover they are not very intuitive and can be awkward to use. Unless you are very careful the screen you are working on can suddenly disappear and to get it back you have to re-enter the password and drill back down through the menus, which can get very frustrating.

The good news is that many key functions have been grouped together on the full screen Camera Setup menus, which are called up by holding down the appropriate camera selector button for a couple of seconds and entering the Installer password.

This displays a variety of parameters, including composing the camera title, a switch for show/covert operation, input termination, dome camera enable, operating mode, adjustments for saturation, contrast, brightness, hue, alarm recording mode, recording duration and picture file size (0.3 to 60kb), which has a direct bearing on recording quality.

Changing the latter automatically updates a minimum/ maximum recording time display, which for the record on our sample (with 320gB storage) is from 153/187 days to 41/50 days. The adjustment for the picture settings is a mixed blessing, though: it's easy enough to change a value but since the camera setup display fills the whole screen it's not possible to see what effect the changes are having until after exiting the menu screen, which potentially means a lot of messing around to achieve the desired effect.

The rest of the OSD menus appear as a series of inconveniently small drop-down boxes in the top left hand of the display and they are simply horrible to use, made worse by the need to keep your wits about you and not press the wrong button. To be fair there are a fair number of OSD options in relation to the position and colouring of the menu displays, but nothing - as far as we could see - to alter the size. The main menu has six choices (Hardware Setup, Configure Display, Alarm Status, Recording Setup, Replay and General), all of which

Factspanel

Equipment	VIVID16/320
Product group	DVR
Application	Multiplexed Digital Video recording
Manufacturer	Baxall Limited
Address	Unit 1 Castlehill Bredbury Park Ind. Estate Bredbury, Stockport Cheshire SK6 2SU
Telephone	+(44) 161 406 7406
Fax	+(44) 161 406 8988
Email	sales@baxall.com
Available from	Norbain SD Ltd
Trade price (inc VAT)	£1095 (for model shown)
CE Mark awarded	Yes
Format	PAL/NTSC
Recording system	JPEG2000
Recording times	Automatic 31 day configuration
Audio recording	Yes
Sound system	Line + mic in line out
Horizontal resolution	Display 720(H) x 576/480(V) Record 720(H) x 288/240(V) "PAL/NTSC(V)"
Supply voltage	12v DC, 100V-240v AC/DC adaptor supplied
Max power consumption	33W
Size:	65mm x 440mm x 370mm (HxWxD)
Weight	5kg (single disk fitted)
Need of tools	No special tools required
Warranty	1 year

The back panel keeps faith in a tried and tested DVR layout

lead to a series of lengthy sub menus so making any significant changes to the initial configuration can be a time-consuming business.

Thankfully most of the options are reasonably straightforward, though setting up a motion detection target grid (14 x 15 matrix with five sensitivity levels per target) is likely to keep even the most deftly fingered installer occupied for quite a while... Network operation is also an area where things can go awry though for once the Vivid DVR is an absolute breeze to set up and most configuration settings can be safely left in the hands of automated systems.

The remote viewer program, supplied with the DVR is also a model of simplicity and very easy to use, though unlike some rival systems, which use standard browsers to access and view images, it is a little restrictive in terms of compatibility and best suited to relatively high specification workstations and PCs. On our 2.4GHz PII Windows XP Pro test

bed computer the viewer program slowed things down perceptibly and appeared to be consuming an unusually large amount of system resources.

The instruction manual covers a lot of ground and for the most part it does a reasonable job but one area that definitely needs clarification is the setting up and use of external memory devices. We initially had problems getting the machine to recognise a USB memory stick and then figuring out how to manually download images on to it, an extra section devoted to this immensely useful facility is definitely needed.

Performance

Playback quality is excellent, we tried a range of file size settings and on the highest value (60kb) picture detail, contrast balance and colour rendition were almost indistinguishable from a live camera feed. At the other end of the scale, with file size set to the minimum of 0.3k, a full screen image is very

soft indeed, verging on unusable, with coarse detail and blurred movement; however, in a multi-screen quad display, for example it doesn't look too bad at all. It's worth experimenting with this setting, and we found on our test setup that a file size of between 15 to 30kb yielded an acceptable compromise between picture quality and recording time. Archived recordings may be searched by alarm event or by specifying a date and time, and the playback controls are reasonably easy to use, though using the front panel keys to search out and analyse a small segment of a recording can be fairly cumbersome. It is the sort of operation that's ideally suited to a VCR-type jog/shuttle dial.

★ **Reader Service No 101 (or go to www.security-installer.co.uk/enquiries and key in 101)**

Overall**assessment**

The relatively small number of gripes we have with this machine mostly concern the operational side of things. The menu system is crying out for a makeover, aspects of the instruction manual could be improved – USB facilities, for example, require more detailed explanation – and more flexible and user-friendly playback controls certainly wouldn't go amiss.
From a performance standpoint there's very little to complain

about – we're not convinced there's any real need for the very highest compression levels – otherwise picture (and sound) quality are at least as good and in some cases better than many rival DVRs using more traditional processing technologies. Moreover, it provides some seriously long recording times, and if this machine is anything to go by we should be seeing a lot more of JPEG 2000.

What the manufacturer says ...

Available now from UK CCTV manufacturer Baxall Ltd, the Vivid range of Digital Video Recorders (DVRs) has been designed to take full advantage of the new JPEG2000 compression technology to give you better picture quality at lower storage rates.

With most DVRs on the market, there will normally be a trade off between picture quality and storage, but the Baxall Vivid range negates this.

When comparing Vivid with competitive products on the market, Vivid wins hands down on picture quality (images are sharper and less blurred), plus it can actually reduce drive sizes by 30 per cent. Now end users can have both quality and reduced storage without having to make any compromises!

But the good news also applies to the installer as Vivid DVRs are extremely easy to install. Vivid comes with a 31 day automatic recording set up feature, meaning installers can quite literally plug it in and leave it to operate. If more specific configuration is required, then a standard

PC keyboard can be used to program things such as camera titles. A USB memory stick can also be plugged into the front of the Baxall Vivid unit to quickly download settings from one unit to another to save time and reduce the possibility of configuration error.

Alternatively, set up and configuration can be done remotely, as all units come network ready, with a full suite of TCP IP protocols. This also enables remote users to view live and playback images without affecting local recording.

Almost any mass storage device can be connected to Vivid DVRs to quickly and effectively export clips and images. These same images can also be burnt to CD or DVD using the internal writers and transferred to a USB memory stick for practical and affordable archiving or for evidential purposes. A viewer can also be loaded for playback.

There are three models in the Vivid range – Vivid Lite, Vivid and Vivid+ – all with Ethernet connectivity as standard.

Product**assessment**

Design and design features	★★★★
Circuitry and components	★★★★★
Ease of installation and wiring	★★★★★
Range and variety of functions	★★★★
Technical advice and backup	★★★
Accompanying instructions	★★★★
Value for money	★★★★

Grading Key: Outstanding ★★★★★ **Very good** ★★★★ **Above average** ★★★ **Average** ★★ **Below average** ★