

DVDre-writers

Don't buy a DVD re-writer until you read this definitive guide to the market

The last year has seen sales of DVD re-writers rocket, as this once pricey, niche market turned into an affordable, mass market in the space of months. Now, virtually every PC priced from £1,200 includes a DVD re-writer – but if you expected a mature, reliable technology, get ready for bad news.

We now have three DVD re-writing formats battling for supremacy: DVD-RW, DVD+RW and DVD-RAM. We discuss their merits and flaws in Performance analysis (see p94), but there's no clear winner across the board.

For instance, if you want a drive for burning DVD movies to play in your standalone player, DVD-R devotees say that it offers the best solution because, they claim, it works with almost all set-top players. Meanwhile, advocates of DVD+R technology claim 94 per cent compatibility. Unfortunately, our experience suggests that the figures for both are closer to 50 to 60 per cent. In short, if you're hoping to burn DVD movies and send them to everyone you know who owns a DVD player or DVD-ROM drive, expect quite a few disappointed phone calls in return.

If you want an archiving tool, DVD-RAM re-writers are more convincing. DVD-RAM has proven reliability and you can write to the

discs around 100,000 times – its rivals can only be written to 1,000 times. But DVD-RAM is slow. Panasonic tries to squeeze the best of both worlds into the Multi Drive (see p102), which supports both RAM and -RW, but this has been beset by delays in the manufacturing process. As a result, the US will get the first batch, while we Europeans must cross our fingers that it will arrive here in October.

To find out which drives are fastest, and what each technology is best suited for, make sure you read Performance analysis first. And to see which particular drive is right for you, take a look at the full reviews. ▶

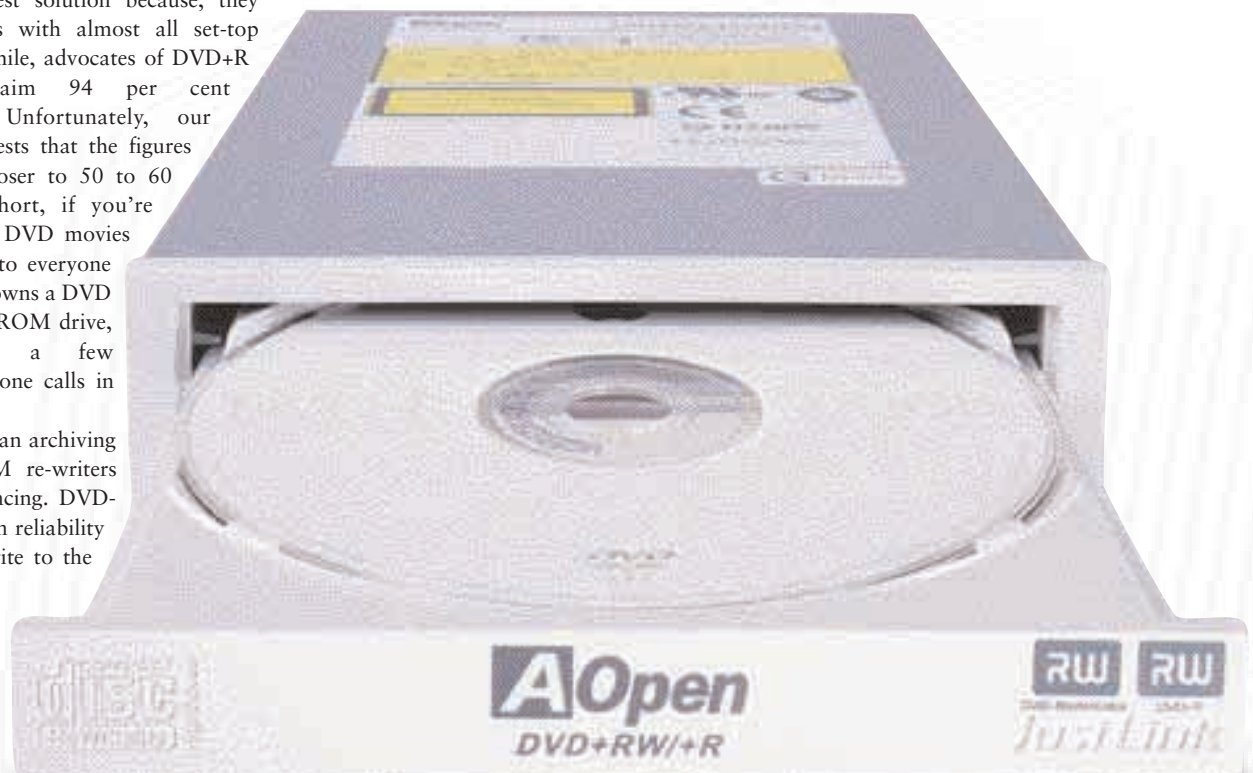
CONTRIBUTORS Alyn Sparkes, Andrew Nathanson

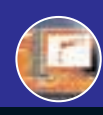
PHOTOGRAPHY Gary Kevin, Julian Hawkins

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Performance analysis

How the different DVD formats performed in our tests and their trials and tribulations

As this is *PC Pro's* first DVD re-writers Labs, we've had to devise a new set of performance tests. Similar to our CD-RW tests, they cover the write and re-write capabilities of each drive in addition to the read and CD audio extraction speeds. Where applicable, we also test each drive's CD-R and CD-RW capabilities.

All tests are carried out on our usual Labs systems, based around 1GHz AMD Athlon CPUs, 256MB of SDR RAM and Seagate Cheetah X15 hard disks.

The first DVD test involves copying a 2GB movie file onto either a DVD+R or -R disc. Rather than use the software included with each drive for this test, we use Nero Burning ROM 5.5 to give a fair and accurate comparison across the different drives and formats. The second test is to copy approximately 1GB of small files to a DVD+R or -R. Again, we use Nero for this test. For every test, we time the process from the moment we click the 'burn' button to the time the software confirms the write was successful.

We check the re-writing capabilities of each drive with two timed tests. Using the packet-writing software included with the drive, we drag and drop the 2GB movie file and then the 1GB of small files onto a re-writable disc.

Unfortunately, it's not possible to create a standard file to import into each of the different authoring packages bundled with the drives. Therefore, timing different files in these packages wouldn't be a sensible comparative measure – the tests above are enough to give an indication of the performance you can expect. We test the usability and features of each application and share our findings in each review.

Testing the CD-RW capabilities of each drive involves writing 400MB of TGA files to both CD-R and CD-RW. Our large file test, a 650MB Drive Image file, is also written to both types of media. We test the read speed of each drive by extracting five tracks of audio from a music CD.

PERFORMANCE

We usually have very few problems testing peripherals that feature in *PC Pro's* Labs. However, this DVD re-writers test has proved one of the most problematic that

we've encountered for a long time.

One of the first difficulties was that we had to restart the test rig every time we installed a new drive, as Nero wouldn't detect it the first time. But the main problem is that DVD writing is still a young technology – DVD-RAM, DVD-R and DVD-RW are only slightly more established formats than the new +RW and +R standards, which were introduced in October 2001. We found that all formats have their strengths and weaknesses, and we'll go into greater depth later on. For

standard's shorter lead-in and lead-out times. This makes DVD+RW a good format for packet writing as it takes less time to finalise than a DVD-RW. The discs also format quickly. An 'instant' format takes around one minute before the disc can be written to, while a quick format took between ten and 15 minutes. A DVD-RW disc took approximately two hours for a full format; a DVD-RAM disc took a shade under an hour.

The drives' CD-R and -RW results were less erratic than the DVD results. The AOpen, HP, Philips, Ricoh, Sony and Waitec drives all act as a 12x/10x/32x CD-RW while the Pioneer sports 8x/4x/24x speeds. The LaCie and Mirror drives don't have writing capabilities, but read CD-ROMs at 24x. The Panasonic Multi Drive provides the same speeds as

Our tests suggest that all the formats are far from perfect. We used six different drives and all the formats failed in two out of the six

more details on the features supported by each technology read Burning Desires (*see Features, issue 95, p150*).

Drives that support DVD+R can currently write to media at 2.4x, or 3,324Kb/sec. But, the latest DVD-R drives are capable of 2x, which equates to 2,770Kb/sec. This explains why the Panasonic Multi Drive and Pioneer DVR-A04 can almost keep up with the Philips and Sony drives in our single-write tests. A 2.4x drive can write a full 4.7GB DVD around five minutes quicker than a 2x drive. The graphs below show the exact times taken in our tests. Older DVD-R drives such as the Mirror and LaCie (which use the original Panasonic DVD Burner drive) can only write at 1x, hence their slower times in the tests.

We had problems using Nero InCD to write to DVD+RW discs, so resorted to the VOB software for the packet-writing tests on DVD+RW drives. These drives tended to be faster than those supporting DVD-RW in these tests thanks to the

the DVD+RW drives with a slightly slower re-write speed of 8x.

Comparing these results with those of the CD-R and CD-RWs, the Pioneer took significantly longer than the others in both the CD-R and CD-RW tests, while the fast CD-RW-only Asus and LG drives kept the lead in all tests. Oddly, the 48x/16x/48x Asus was slower than the 40x/12x/40x LG in all but one test – writing a full 650MB CD-R. See *Slow Burners?* on p105 for more details.

COMPATIBILITY

There are two primary uses for recordable DVDs: data storage and A/V work. Sharing home videos or still-photo slide shows burned onto a writable DVD requires compatibility with standalone DVD players and computer DVD-ROM drives.

Projects burned to General Use DVD-R are likely to be the most compatible, but older players or drives may not recognise or play discs. Newer drives – those



manufactured within the last two years – are much more likely to play a disc, but there still isn't a 100 per cent guarantee

The DVD+RW Alliance – Dell, HP, Mitsubishi Chemical/Verbatim, Philips, Ricoh, Sony, Thomson and Yamaha (www.dvdrw.com) – claims that +RW and +R discs are the most compatible on the market and provides lists of set-top players and DVD-ROM drives that can play these media. However, many other websites claim that DVD-R and -RW is more compatible – it simply isn't possible to conclude which standard beats the other.

Our tests suggest that all the formats are far from perfect. We used a total of six different drives (three standalone DVD players, three DVD-ROM drives) and all the formats failed in two out of the six.

DVD-RAM is the least compatible format as it uses a cartridge to protect the delicate disc. This obviously means that you can't physically load a RAM disc into a tray-loading DVD player. Panasonic's Multi Drive (see p102) supports both DVD-RW and -RAM, but its current tray-loading mechanism requires RAM discs to be removed from the plastic cartridge, reducing data integrity. A cartridge version is planned for launch in the future.

MULTISESSION

Both DVD-R and +R support multisession writing in the same way as CD-R. We had no problems burning multiple sessions on most drives, although when attempting to write a second session onto a DVD+R disc using the HP and Sony drives, Nero informed us that 'The disc is not writable'.

The main problem with writing multiple sessions is that even after a +R or -R disc is finalised, we couldn't find any standard DVD-ROM drives that could read the files written after the first session. Only the drive that it was created on, and other re-writers supporting the same format, could see data in sessions burned after the first.

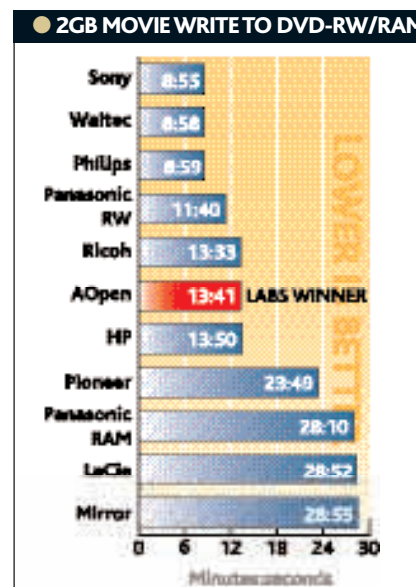
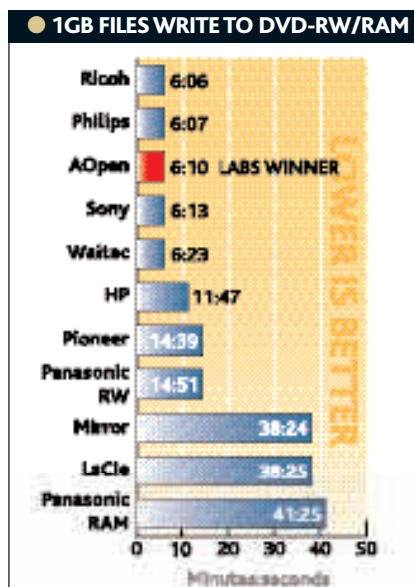
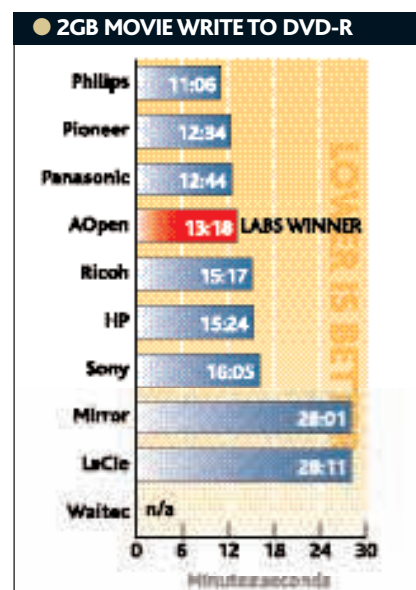
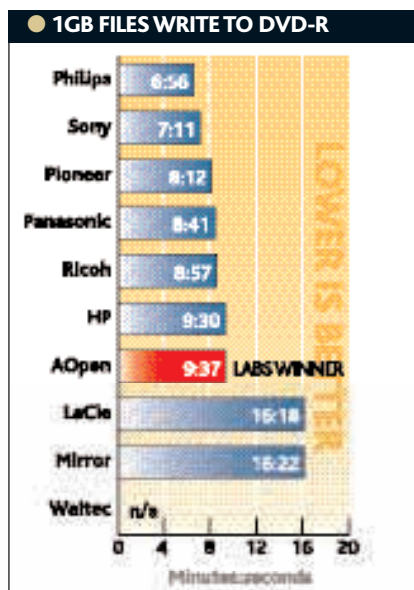
For the most part, this shouldn't be a huge problem – the majority of users will use re-writable discs for data and single-write discs for movies and photos. Plus, re-writables can be used to check how work-in-progress video projects look before burning the final edit onto a write-once disc.

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A benefit of DVD+R against -R is that it supports on-disc editing. This means that you can make minor changes to your project – although not to the actual video or audio content – after burning it onto the disc as DVD+R allows the TOC (table of contents) to be changed until the disc is finalised.

ARCHIVE IT

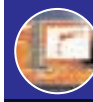
If you have to back up or store huge amounts of data, DVD is a fine choice – partially because the media is now relatively cheap.

DVD-RAM is the oldest and most established format here and has the advantage of a 100,000 re-write life. DVD-RW and +RW, in contrast, can only be over-written 1,000 times. This might sound a lot, but it's possible that certain sectors will be written and erased more frequently, and once they've gone through the cycle 1,000 times, the defect management (on

+RW discs) has to prevent data from being written to that block. We had no read or write problems, but once a DVD+RW disc has been in use for a long period of time, this aspect will be more apparent.

Like DVD+RW, DVD-RAM features random read and write, allowing data to be written using the Windows drag-and-drop feature. The software bundled with the Mirror drive allows you to format a disc to use either FAT16 or FAT32. This makes archiving data very simple – you add files to the disc just as you would with a hard disk. Many drives also include software that makes backing up data a simple, one-step process.

DVD-RAM also supports defect management, which avoids writing data to damaged or unusable areas of the disk. As RAM discs don't require finalising, it's also quick to eject a disc after writing data. Unfortunately this characteristic is another reason why DVD-RAM discs won't play in set-top players.

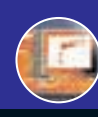


FEATURE TABLE



	AOpen DVRW2412Pro	HP dvd200i	LaCie DVR-RAM/R	Mirror DVD-R/RAM	Philips DVRW228K	Pioneer DVR-A04	Ricoh MP512SA-DP	Sony DRU120A	Waitec X-File	
Overall score	112	102	90	83	108	97	105	101	94	
Price (inc VAT)*	£218 (£256)	£309 (£363)	£369 (£434)	£254 (£299)	£259 (£304)	£221 (£260)	£265 (£311)	£269 (£316)	£297 (£349)	
Supplier	dabs.com 0800 138 5182 www.dabs.com	dabs.com 0800 138 5182 www.dabs.com	dabs.com 0800 138 5182 www.dabs.com	Comet 0845 600 7002 www.comet.co.uk	dabs.com 0800 138 5182 www.dabs.com	Jungle.com 08000 355 www.jungle.com	dabs.com 0800 138 5182 www.dabs.com	Carerra SSC 0870 066 0682 www.ssc.co.uk	Waitec 0031 773 261040 www.waitec.com	
Supplier's website	www.dabs.com	www.dabs.com	www.dabs.com	www.comet.co.uk	www.dabs.com	www.jungle.com	www.dabs.com	www.ssc.co.uk	www.waitec.com	
Manufacturer's website	www.aopen.nl	http://thenew.hp.com	www.lacie.co.uk	www.mirprod.co.uk	www.phillips.co.uk	www.pioneer.co.uk	www.ricoh.co.uk	www.sony.co.uk	www.waitec.com	
Basic warranty	2yrs RTB	1yr RTB	2yrs RTB	1yr RTB	2yrs C&R	1yr RTB	2yrs on-site swap out	1yr RTB	1yr RTB	
SPECIFICATIONS										
Technologies supported	DVD+R, DVD+RW, CD-R, CD-RW	DVD+R, DVD+RW, CD-R, CD-RW	DVD-RAM, DVD-R	DVD-RAM, DVD-R	DVD+R, DVD+RW, CD-R, CD-RW	DVD-R, DVD+RW, CD-R, CD-RW	DVD+R, DVD+RW, CD-R, CD-RW	DVD+R, DVD+RW, CD-R, CD-RW	DVD+RW, CD-R, CD-RW	
Interface	EIDE	EIDE	FireWire	EIDE	EIDE	EIDE	EIDE	EIDE	EIDE	
Loading mechanism	Tray	Tray	Cartridge/tray	Cartridge/tray	Tray	Tray	Tray	Tray	Tray	
Buffer underrun protection	✓	✓	Not stated	Not stated	✓	✓	✓	✓	✓	
Write speed control	✗	✗	✗	✗	✗	✗	✗	✗	✗	
Laser power control	✗	✗	✗	✗	✗	✗	✗	✗	✗	
CD text	✓	✓	✗	✗	✓	✓	✓	✓	✓	
Cache/buffer size	2MB	2MB	1MB	1MB	2MB	2MB	2MB	2MB	2MB	
Average random access time	CD 120ms, DVD 140ms	CD 120ms, DVD 140ms	Not stated	Not stated	125ms	CD 180ms, DVD 200ms	CD 120ms, DVD 140ms	CD 120ms, DVD 140ms	CD 120ms, DVD 140ms	
QUOTED SPEEDS										
CD-R	12x	12x	✗	✗	12x	8x	12x	12x	12x	
CD-RW	10x	10x	✗	✗	10x	4x	10x	10x	10x	
CD-ROM	32x	32x	24x	24x	32x	24x	32x	32x	32x	
DVD+R	2.4x	2.4x	✗	✗	2.4x	✗	2.4x	2.4x	✗	
DVD-R	✗	✗	1x	1x	✗	2x	✗	✗	✗	
DVD+RW	2.4x	2.4x	✗	✗	2.4x	✗	2.4x	2.4x	2.4x	
DVD-RW	✗	✗	✗	✗	✗	1x	✗	✗	✗	
DVD-RAM	✗	✗	1x	1x	✗	✗	✗	✗	✗	
DVD-ROM	8x	8x	6x	6x	8x	6x	8x	8x	8x	
PHYSICAL DETAIL										
Indicator lights	1	1	1	1	3	1	1	1	1	
Front panel manual eject	✓	✓	On internal drive	✓	✓	✓	✓	✓	✓	
Headphone socket	✓	✓	✗	✗	✓	✓	✓	✓	✓	
Front panel controls	Headphone volume	Headphone volume	✗	✗	Headphone volume	Headphone volume	Headphone volume	Headphone volume	Headphone volume	
Backplane outputs	Analog out, digital out	Analog out, digital out	2 x 6-pin FireWire	Analog out, digital out	Analog out, digital out	Analog out, digital out	Analog out, digital out	Analog out, digital out	Analog out, digital out	
PACKAGE CONTENTS										
Media included	1 x DVD+R, 1 x DVD+RW, 1 x CD-R, 1 x CD-RW	1 x DVD+R, 1 x DVD+RW, 1 x CD-RW	1 x DVD-RAM, 1 x DVD+R, 1 x DVD+RW, 1 x CD-R	1 x DVD-R, 1 x DVD+R, 1 x DVD+RW, 1 x CD-R	1 x DVD+R, 1 x DVD+RW, 1 x CD-R	2 x DVD-R, 5 x CD-R	1 x DVD+R, 1 x DVD+RW	1 x DVD+RW, 1 x CD-R	1 x DVD+RW, 1 x CD-R	
Software supplied	MedioStream neoDVDStandard 3, Ulead VideoStudio 6, Ahead Nero 5, Ahead InCD, CyberLink PowerDVD XP	Sonic MyDVD, ArcSoft ShowBiz, HP RecordNow, HP DLA, HP Simple Backup, CyberLink PowerDVD 3, MusicMatch Jukebox, ArcSoft Multimedia Email	Prassi PrimoDVD, Roxio Toast Lite, DVD-RAM drivers, CyberLink PowerDVD 3	VOB InstantCD/DVD 6, DVD-RAM drivers, Ahead NeroVision Express	Sonic MyDVD, Pinnacle Studio 7, Ahead Nero 5.5, Ahead InCD, CyberLink PowerDVD 3	Sonic MyDVD, VOB InstantCD/ DVD 6	MedioStream neoDVDStandard 2.6, Ahead Nero 5.5, B's Recorder Gold, B's CLIP, Dantz Retrospect Express Backup, CyberLink PowerDVD, MusicMatch Jukebox	MedioStream neoDVDStandard 2.6, Ahead Nero 5.5, Ahead InCD, Ahead NeroVision Express, CyberLink PowerDVD 3	MedioStream neoDVDStandard 2.6, Ahead Nero 5.5, Ahead InCD, Ahead NeroVision Express, CyberLink PowerDVD 3	MedioStream neoDVDStandard 2.6, Ahead Nero 5.5, Ahead InCD, Ahead NeroVision Express, CyberLink PowerDVD 3
Cables supplied	Analog audio	IDE, analog audio	6-pin to 6-pin FireWire	Eject pin, screws	Analog audio	Analog audio	Analog audio	Analog audio	Analog audio	
Miscellaneous	Screws	Screws	✗	✗	Screws	CD writing pen, eject pin, screws	Screws	Screws	Screws	
OPERATING SYSTEM SUPPORT**										
Windows XP	✓	✓	✓	✓	✓	✓	✓	✓	✓	
Windows 98/ME	✓	✓	✓	✓	✓	✓	✓	✓	✓	
Windows 2000	✓	✓	✓	✓	✓	✓	✓	✓	✓	
Other	✗	✗	Mac OS (not X)	✗	✗	✗	✗	✗	✗	

*Prices correct at time of going to press. **Refers to included software.



AOpen DVRW2412Pro

PRICE £218 (£256 inc VAT)

SUPPLIER dabs.com 0800 138 5182

VERDICT AOpen provides a good software package, but can't currently manage packet writing onto DVD+RWs. At this price, however, it's a bargain.

The AOpen drive is a well thought-out package, with an impressive software collection and one disc for each of the four types of media the drive can write to: CD-R, CD-RW, DVD+R and DVD+RW.

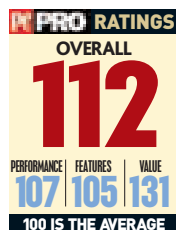


MedioStream neoDVDStandard is provided for authoring DVDs. It can import video direct from a camcorder, video files stored on the hard disk or another DVD. Simple fades in and out can be placed at the start and end of each clip, but that's about all. Menu creation is again very basic – the size and layout of the buttons are fixed, and can't refer to a position within a clip, only the start of one.

Ulead VideoStudio 6 is provided for video editing. It's simple to use, and allows effects and complex transitions between video clips. This is a beginner-friendly program and provides a good mix of power and simplicity, although Pinnacle's Studio 7 SE supplied with the Philips drive will give budding producers more flexibility. Ahead Nero and CyberLink PowerDVD take care of simple writing and DVD-playing tasks. Both are acclaimed in their field.

The only problem we had with the AOpen drive was packet writing. Ahead's InCD provided with Nero hasn't been patched to function correctly with DVD+RW discs at the time of writing. It wouldn't even recognise that a disc had been inserted, let alone format it. However, all other tests were performed flawlessly.

Thanks to the +R and +RW formats, the AOpen was one of the quicker drives on test. Including beginners' editing software as well as authoring and burning programs is clearly a plus, unless you're already more advanced in your skills and just need a drive. The AOpen makes an excellent buy for those starting on the DVD writing road.



HP dvd200i

PRICE £309 (£363 inc VAT)

SUPPLIER dabs.com 0800 138 5182

VERDICT With a massive selection of useful software, the HP is only let down by the high price.

HP provides something with its drive that seems to be going out of fashion throughout the industry – a paper manual. This covers the basics of which program to use for what task – important, as it's not immediately obvious from the install routine. However, to cram in as many step-by-step instructions as possible, it's very text-heavy, with only a few diagrams.

Sonic MyDVD takes care of DVD authoring. It's a simple program, with basic editing capabilities and limited menu features. For editing movies before authoring, ArcSoft ShowBiz is provided. Again, this is a beginner's editing software package, with only one layer available for video and a small set of unchangeable transitions and effects. It will still improve the average holiday video, though.

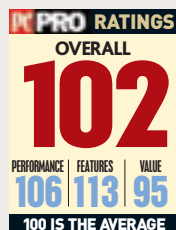
HP RecordNow takes the place of Ahead Nero and performs similar tasks – it's able to copy existing discs as well as create data and music CDs. HP



DLA offers packet writing onto either CD-RW or DVD+RW disks and HP Simple Backup gives peace of mind by backing up specified folders onto removable media. Also included are ArcSoft Multimedia Email and MusicMatch Jukebox for sending video emails and playing music respectively.

We had only one problem when testing. Trying to write a multisession DVD+R resulted in an error message stating that the disc was full. The apparently identical AOpen, Ricoh and Philips drives managed this task, suggesting a firmware or software problem. Packet writing with HP's DLA software worked without a hitch.

Although it's expensive, the HP dvd200i offers a good overall package. All the software is useful and with such a wide selection, every aspect of DVD writing is covered. The speed boost given by the DVD+RW spec is an added bonus.



LaCie DVD-RAM/R

PRICE £369 (£434 inc VAT)

SUPPLIER dabs.com 0800 138 5182

VERDICT The only external drive in the Labs, LaCie offers slow recording speeds. However, the drive's FireWire connection lets it bridge the PC and Mac divide.

With LaCie's trademark blue and grey enclosure, its submission this month dwarfs the internal drives on test, although the actual drive mechanism within the box is identical to the Mirror drive. LaCie includes a DVD-RAM disc, driver CDs and a six-pin FireWire cable. This means most notebook users will need to purchase a separate cable.

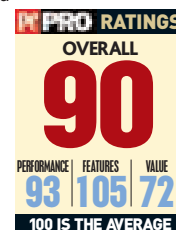
The Prassi PrimoDVD software provided for writing discs isn't as easy to use as Ahead's Nero software, and has no authoring facility. In a solely DVD-RAM drive this isn't so important, as the primary use will be archiving. However, since the LaCie has DVD-R support as well, we'd have liked and expected to see some form of DVD movie-creation software. LaCie plans to change the Prassi software to Sonic MyDVD, Sonic DVDIt! and Roxio Easy CD Creator in the future.



Also included on the disc are drivers for Microsoft operating systems that don't include support for DVD-RAM as standard and a copy of Roxio's Toast Lite for the Apple Mac (although this doesn't support OS X). A second disc contains CyberLink PowerDVD to enable playback of movie DVDs on PCs.

In testing, the LaCie DVD-RAM/R would only work with its own software – not a major problem, but frustrating if you want to use Nero to burn DVDs. The drive doesn't support CD burning at all, so you'll need a separate CD-RW for this.

LaCie's DVD-RAM/R is a slow drive – it can only record DVD-Rs at 1x – and for anything other than archiving it's probably a waste of time. If an external drive is a necessity for you, then we'd recommend either looking at another one of LaCie's offerings or perhaps buying the AOpen DVRW2412Pro and fitting it into an external box yourself.





Mirror DVD-R/RAM

PRICE £254 (£299 inc VAT)

SUPPLIER Comet 0845 600 7002

VERDICT This internal DVD-RAM drive is cheaper than LaCie's external version, but leaves much to be desired with poor software and performance.

The Mirror drive takes the accolade as the cheapest DVD-RAM drive in this month's Labs. It's a Panasonic LF-D311SC drive branded and distributed by Mirror to high street stores, rather than mail order giants. This approach is likely to market the drive at those who aren't exactly sure of the differences between writable

DVD

formats, but who respond to price.

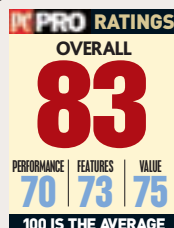
Mirror provides

not only the VOB

InstantCD/DVD package for creating archives of data and video CDs, but also Ahead NeroVision Express for authoring DVDs. Unfortunately, neither of these applications come with the necessary MPEG-2 encoder for authoring DVDs. To record a movie, you have to purchase another piece of software to do the actual authoring and then use the VOB software to write it to DVD-R. Plus, with no archiving software provided, you must use the VOB software for writing DVD-RAM discs for backup – a manual process that could have been so much simpler.

When testing, we had no problems using the included software, but ran into trouble when we tried to use Ahead's Nero and InCD. As with the LaCie drive, you'll have to use a separate drive to write CD-R or CD-RW discs – the capability to burn these isn't included in the standard DVD-RAM specification.

As it's lacking in features, the Mirror should cost less than other drives here, but it doesn't. At £254, it's more expensive than several of the latest drives, such as Pioneer's DVR-A04 which can write to DVD-R at double the speed of the Mirror. AOpen's drive is faster still, supports quick CD writing and it costs £36 less than the Mirror.



Philips DVDRW228K

PRICE £259 (£304 inc VAT)

SUPPLIER dabs.com 0800 138 5182

VERDICT At this low price, the Philips is an excellent package for those starting from scratch in the realm of video editing and DVD production.

As the second cheapest DVD+RW drive here, the Philips makes a good buy for those wanting to use the +RW or +R formats. While there isn't a large amount of software included, the packages in the box are some of the best in their relevant fields.

The first is Pinnacle's Studio 7 SE software. Although not in the same league as the likes of Adobe Premiere, it's one of the most flexible and easy-to-use beginners' packages. It can use both storyboard and timeline editing, although it only has one video channel. It has a wide range of effects and transitions built in, and you can add to these by creating greyscale images for the software to use as transitions.

Sonic MyDVD is included to author DVD movies. This is the same software as supplied with the HP drive. The software manages the basics of creating a DVD well, although advanced users will want to look elsewhere. CyberLink PowerDVD is provided for actually watching DVDs, while

Ahead Nero handles

general writing duties. It will

write to both

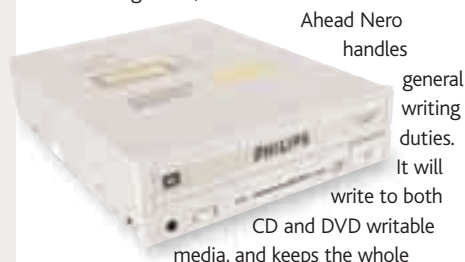
CD and DVD writable

media, and keeps the whole

process simple, with a Wizard for those who want protection from the main interface. As well as data discs, Nero is able to write music CDs from WAV, MP3 and unprotected WMA files.

Also in the box are a selection of discs – one each of DVD+R, DVD+RW and CD-R. The unit itself has the most helpful set of lights, with a pair to indicate either a DVD or CD disc and one larger light that indicates whether the drive is writing or reading.

Only AOpen beats Philips in the Labs – and that's only because of the price. If you're prepared to wait for a price drop, the Philips is a good choice.



Panasonic Multi Drive

PRICE £340 (£400 inc VAT)

AVAILABILITY To be confirmed

PROSPECTS If you don't want to risk using a DVD+RW drive, the Multi Drive offers an excellent solution thanks to DVD-RW and DVD-RAM support.

Panasonic has huge hopes for the Multi Drive, despite it being beset by delays. We expected it to go on sale six months ago but Panasonic is still refusing to commit to a date. The question is, will it be worth the wait?

The Multi Drive promises the best of both DVD-RW and DVD-RAM

worlds, combining the standards into one unit.

The sample we tested only had a tray, so couldn't load DVD-

RAM cartridges, but you can always remove the disc from the cartridge. Panasonic will release a cartridge-loading Multi Drive later on.

The Multi Drive writes to DVD-R and DVD-RAM discs at 2x and 1x for DVD-RW. Add 12x CD-R and 8x CD-RW speeds, and this is clearly a versatile drive. It can't write to DVD+R or DVD+RW, but as these standards aren't recognised by the DVD Forum, Panasonic is happy to be seen toeing the official line.

The Panasonic also impresses with its software bundle. There's Pinnacle Studio 8 for video editing, while VOB InstantCD/DVD 6.5 offers an excellent solution for any writing task.

Although this isn't the fastest drive on show, it held its own in most tests. It only lagged significantly behind the rest (apart from the Pioneer) when writing to DVD-RW discs.

But Panasonic isn't selling the Multi Drive on speed alone – its greatest strength is the ability to archive to DVD-RAM yet also burn movies to DVD-R or DVD-RW. Although DVD+RW may yet win the DVD format wars, the Multi Drive is the safest bet yet. The trouble is you can buy a faster drive in the AOpen for £100 less – and you can buy that now.

TIM DANTON





Slow burners?

We find out just how fast DVD re-writers are when matched against CD-RW drives

CD-R and CD-RW discs are currently the most cost-effective way to store up to 750MB of data. CD-Rs can cost as little as 40p, while CD-RWs have dropped to around £1. CD-RW drives won't break the bank either, and here we look at three of the latest offerings from Asus, LG and Mitsumi to see how much faster they are than the DVD burners this month.

First up is Asus, with its 48x/16x/48x CRW-4816A – the current fastest spec available. It costs only £69 and can burn a full 650MB CD-R in just three minutes. The second is LG's GCE-8400B, which held the A-List CD-RW position for two months and has quoted speeds of 40x/12x/40x. The final drive is our current A-Listed model, the Mitsumi CR-485CTE. This is a 40x/20x/48x drive but the Super Speed Writing only allows 20x re-writing on a fresh disc – after the first burn, it can only write at 12x.

The fastest CD-R media we could find was rated at 40x, so we were limited when testing the 48x Asus drive. This could explain why the Asus was only quicker than the 40x LG in one of our tests. But it doesn't explain why 400MB of TGA files took the Asus 204 seconds – 50 seconds longer than the LG. The Mitsumi fell between these two at 168 seconds. However, when writing the single 650MB PQI file, the Asus overtook both other drives with a time of just over three minutes.

Audio extraction provided some interesting results. We ripped six tracks from an audio CD but the 48x-rated Asus was slowest at 111 seconds. The LG came second with 95 seconds and the Mitsumi stormed into first spot with just 82 seconds on the stopwatch.

In the two packet-writing tests, which involved writing the TGA and PQI files to two CD-RWs, the three drives were inseparable. Again, despite their supposedly different specifications, all three wrote the PQI file within six seconds of each other, taking around seven minutes. The Asus was slowest at writing the TGA files at 291 seconds, while the other two were around 15 seconds quicker.

Ultimately, all three CD-RWs are

very quick drives – faster than all the DVD re-writers on test.

Most of the DVD burners here can burn to CD-Rs at 12x. This meant they were all able to write the 650MB PQI file to CD-R in around seven minutes – twice the time of the dedicated CD-RW drives. The difference was under two minutes when burning the TGA files onto CD-R. Only the Pioneer was significantly slower, with its 8x write speed resulting in 425 seconds against 270 seconds from the others.

The majority of the DVD burners can burn to CD-RWs at 10x, which means they can almost keep up with modern CD-RWs, including the three tested here. For example, most of the drives tested managed to write the 650MB PQI file in eight minutes, while the CD-RWs were only around a minute faster. Plus, with generally fast CD read speeds, the DVD burners weren't that far behind the CD-RWs when it came to extracting CD audio or copying files onto the hard disk.

Unless you really need your CDs burned those few seconds sooner, it makes more sense to use the DVD burner for CD writing. For digital copying, it's handy to have two optical drives, but you can save money and buy a second DVD-ROM drive if you don't already have one.

Only the Pioneer should be avoided as a CD-RW drive because of its slow speeds. Of course, the LaCie and Mirror drives don't have CD writing capabilities, so if you're thinking of buying one of these drives, the Mitsumi CR-485CTE, with its Mount Rainier support, makes an ideal partner.

JIM MARTIN

MODEL Asus CRW-4816A

PRICE £69 (£81 inc VAT)

SUPPLIER Yellow Square 08707 701955

MODEL LG GCE-8400B

PRICE £71 (£83 inc VAT)

SUPPLIER dabs.com 0800 138 5182

MODEL Mitsumi CR-485CTE

PRICE £55 (£65 inc VAT)

SUPPLIER dabs.com 0800 138 5182

Pioneer DVR-A04

PRICE £221 (£260 inc VAT)

SUPPLIER Jungle.com 08000 355355

VERDICT With the performance

disadvantage of the DVD-RW format, the Pioneer is best used by those wanting the highest level of compatibility.

As this Labs' sole available proponent of the -RW format, Pioneer has a struggle on its hands getting the public to accept the standard over the faster and more widely used +RW format. The only other -RW supporter is the Panasonic Multi Drive, but this isn't available in Europe yet. There are fewer compatibility issues with DVD-RW discs in older ROM drives, but our experience this month suggests +RW is the route to take.

The software suite provided with the Pioneer is, on the surface, one of the least comprehensive. It includes only two pieces of software: Sonic MyDVD for authoring and VOB InstantCD/DVD 6 for standard writing. However, the VOB software is actually a suite in itself, with a total of seven programs.

InstantBackup allows scheduled backups of selected directories to be made onto either disc or a second hard disk. There's InstantCopy for making copies of discs and

InstantWrite for UDF

formatting of re-writable optical discs, while

InstantDisk is

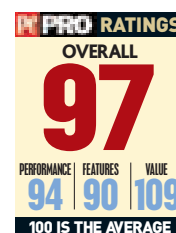
included for simple writing

tasks. Two editing programs are also in

the suite: InstantWave and InstantMusic. No dedicated video-editing software is supplied, so you'll be restricted to cutting the start and end from clips in MyDVD and reliant on the very basic transitions included with that software. InstantVideo is included for the creation of video CDs. However, it can't author DVDs, which must be done with Sonic MyDVD.

Pioneer can boast that it ships the most discs with its drive, but five of the seven supplied are only CD-Rs. There are also two DVD-R discs, but no re-writables. With lacklustre performance compared to DVD+RW drives, it's only the backing

of the DVD Forum and slightly better claimed compatibility that makes the DVR-A04 attractive. But with the Panasonic Multi Drive on the horizon, we can't recommend it outright.





Ricoh MP5125A-DP

PRICE £265 (£311 inc VAT)

SUPPLIER dabs.com 0800 138 5182

VERDICT The basis for all the +RW drives on test bar one, the Ricoh is popular in the industry. The AOpen drive offers a better package overall though.

The Ricoh MP5125A-DP drive is actually used by the other DVD+RW supporters, although they rebrand them as their own. AOpen, HP, Philips and Sony have taken this route, while the Waitec is a rebranded version of Ricoh's old drive, which can't write to DVD+R discs.

The software included with the drive isn't as extensive as that given elsewhere, and with only £4 difference between the Ricoh and the Sony, we're a little disappointed by this. Two discs are provided in the bundle, one DVD+R and one DVD+RW.

InterVideo WinProducer 2 is the video-editing portion of the suite, but it can't hold a candle to the likes of Pinnacle's Studio 7. It has several strange idiosyncrasies during the editing process and, perhaps worst of all, captures straight to MPEG-2 files, instantly losing quality from DV footage. Transitions and effects can't be previewed in real-time, unlike both Studio 7 and Ulead VideoStudio, which ships with the AOpen. It

also lacks the facility to send footage back to tape after editing – a feature of both the other packages.

MedioStream's neoDVDstandard 2.6 is included for authoring DVDs. This is an earlier version of the same software shipped with the AOpen drive. While not the most fully-featured authoring solution, it does the basics well and allows simple editing to be carried out without having to resort to WinProducer 2.

Unfortunately for Ricoh, some of its licensees offer the drive with a better value bundle. Although the Sony is available with a better software suite for only a little more money, the AOpen is much better value package as it costs so much less.



Sony DRU-120A

PRICE £269 (£316 inc VAT)

SUPPLIER Carrera SSC 0870 066 0682

VERDICT The Sony offers the speed advantages of the +R and +RW formats, and has a good software bundle that takes full advantage of the standard's benefits.

After the HP drive, with its huge selection of software, the Sony is the second most expensive DVD+RW drive in our Labs test. The price is matched by a comprehensive bundle, although it omits such niceties as IDE and audio cables.

Sony includes its own disc-writing and UDF-formatting software in the form of B's Recorder and CLiP. The CLiP software was the only other program apart from HP's that was able to

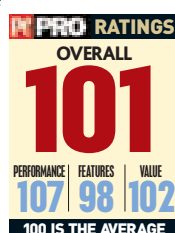


format DVD+RW discs for packet writing. Oddly, the copy of Ahead's InCD supplied with the other drives and available on the website isn't quite up to speed with the new format yet. B's Recorder is similar in form and function to Ahead Nero, so it's simple to use and can make music CDs, data CDs and DVDs.

Dantz Retrospect Express Backup is provided to make scheduled backups of whole drives, specific folders or even specific files within folders. It's quick and simple to use – exactly the sort of software that would make a good addition to the DVD-RAM products from LaCie and Mirror, which are designed for backup and archiving.

For creating music compilations to be burned to disc, MusicMatch Jukebox is included, and the ubiquitous CyberLink PowerDVD lets you watch DVD movies rather than create them. For this latter task, MedioStudio's neoDVDstandard software, as provided with several other drives, is shipped.

With only one DVD+RW disc, the non-software part of the bundle is lacking, but overall the Sony is a good buy for those who already edit video and just need to get it onto DVD. For beginners, however, the Philips drive has a better all-round bundle.



Waitec X-File

PRICE £297 (£349 inc VAT)

SUPPLIER Waitec 00 31 773 261040

VERDICT There's little to recommend this drive, which doesn't write to DVD+R discs and has an extremely uncompetitive price.

Despite having a similar name to the popular US sci-fi show, there's nothing mysterious about the drive submitted from Waitec. It's a rebadged version of Ricoh's older DVD+RW drive, which doesn't support DVD+R discs. Unfortunately, Waitec hasn't updated the drive to the new format, and there's no guarantee that discs written by the drive will work in DVD-ROM drives and standalone players.

Aside from the DVD player software – the ever-present CyberLink PowerDVD – all the software in the Waitec bundle is provided by Ahead. The impressive Nero 5.5 handles writing to CD-R and CD-RW – it's capable of writing music CDs from MP3, WAV and unprotected WMA files. It can also create DVD movies if provided with pre-compiled AUDIO_TS and VIDEO_TS folders from a DVD authoring package.

InCD is included to facilitate UDF formatting and packet writing. The version included with the drive has been specially patched to work with the Waitec X-File. This wasn't the case with most of the drives capable of packet writing.



NeroVision Express is provided for authoring movie discs, but it isn't supplied with an MPEG-2 encoder, and thus can't actually create playable DVDs. This is a major omission in a program shipped with a DVD writer.

Only a single DVD+RW and CD-R disc are provided and the inability to write DVD+R discs certainly counts against the Waitec. Another problem is that Waitec was still looking for UK suppliers at the time of going to press, so you'll have to call the Dutch office for now. Add an uncompetitive price, and this is one drive to avoid.

