

Hitachi CDR-8330

LG CRD-8240B

Mitsumi FX240S

Panasonic CR-585-B

Philips CDR 4825

Pioneer DR-A24X

Samsung SCR-2430

Sony CDU-611

Tashika Multimedia

TEAC CD-524E

Toshiba XM-6102B

Wearnes-CDS2420

A CD-ROM drive is essential for running the latest software, and the faster it is the better your programs will perform. We give advice on what to look for when buying, and compare the latest 24-speed models

# Speedy ROMs

**W**ith the majority of programs now available only on CD-ROM, no PC system is complete without a CD-ROM drive. Having one in your PC lets you run everything from games and encyclopaedias to mammoth office suites and graphics programs, many of which are simply too big to be distributed on floppy disks.

Some programs require their CD-ROMs to be in the drive whenever they are used: typically these are games, reference works, and other interactive multimedia titles. Others are installed once and thereafter they run from the PC's hard disk. In the latter case, the speed of a CD-ROM drive is of little importance because it doesn't really matter how long it takes to install a program if you're only going to do it once. In the case of programs requiring constant access to a CD-ROM, however, a faster drive will prove its worth over and over again by saving you time and providing smoother playback of video sequences.

Over the next four pages we explain everything you need to consider when buying a drive, and compare the latest 24-speed models.

## Speed merchants

The speed of CD-ROM drives is not a measure of how fast they spin; it's a measure of how much data they can transfer each second, and is expressed as a multiple of the original single-speed CD-ROM drives. The first drives were capable of transferring 150Kb of data per second - so a quad-speed CD-ROM drive can transfer 600Kb, an 8-speed 1,200Kb, and so on up to the 3,600Kb offered by 24-speed drives. These speeds can also be written as 4x, 8x and 24x.

Before you dash out and buy the fastest CD-ROM drive you can find, you should be aware that manufacturers' quoted speeds are based on a drive's maximum capabilities and not its average performance. This means that although 24x drives will, at certain times, achieve 24 times the throughput of single-speed

drives, at other times they'll drop back to 12x or even 8x performance. The significance of this is that if you've already got an 8x drive there's not much point in upgrading it to a faster one, but if you're adding a CD-ROM to a PC that wasn't supplied with an original drive it makes sense to buy the fastest available - provided, of course, that the price premium isn't too high. Another point to bear in mind is that a fast CD-ROM drive will require a correspondingly fast PC to keep up with it, so unless you've got at least a 166MHz Pentium you'll be just as well served by an 8x or 12x drive.

## Adding a CD-ROM drive

The ease with which you can add a CD-ROM drive depends on the design of your PC. Most CD-ROM drives require an Enhanced IDE (EIDE) controller and if your PC is so old that it doesn't have one, you'll need to buy a plug-in controller on an expansion card. If you're also in the market for a sound card you should buy one that incorporates an IDE connector

- nearly all of them do. An alternative, if your PC has a SCSI connector, is to buy a drive designed for this. The choice of SCSI drives is limited and prices tend to be higher, but SCSI drives work well on slower PCs because the PC's processor doesn't have to work as hard as it does for IDE drives.

If you want to connect a CD-ROM drive to a computer that has no IDE or SCSI connector and no room to fit one, all is not lost. You can buy external CD-ROM drives that plug into a PC's parallel printer port, and these drives are also a good solution for PCs with no room inside them for an internal drive. This includes notebook PCs, though if a notebook computer has a PC Card slot, it's better to use this instead. PC Card drives cost slightly more than parallel port drives but offer better performance.

## If you're upgrading

Just because your PC already has a single or double-speed CD-ROM drive doesn't mean that upgrading will be straightforward. Older drives were fitted with proprietary connectors which differed from maker to maker - Sony, Panasonic and Mitsumi variants were common. The connectors were either supplied on plug-in boards or mounted on sound



Illustration by Paul Wootton





CD-ROM drives compared

	Hitachi CDR-8330	LG CRD-8240B	Mitsumi FX240S	Panasonic CR-585-B	Philips CDR 4825	Pioneer DR-A24X	Samsung SCR-2430	Sony CDU-611	Tashika Multimedia	TEAC CD-524E	Toshiba XM-6102B	Wearnes CDS2420
<b>Price (inc VAT)</b>	£111.62	£109	£89	£79	£79.95	£92.82	£76.37	£92.83	£93.94	£116.32	£99	£110
<b>Type of drive</b>	Internal	Internal	Internal	Internal	Internal	Internal	Internal	Internal	Internal	Internal	Internal	Internal
<b>Interface</b>	EIDE	EIDE	EIDE	EIDE	EIDE	EIDE	EIDE	EIDE	EIDE	EIDE	EIDE	EIDE
<b>Designated speed</b>	24x	24x	24x	24x	24x	24x	24x	24x	16x	24x	24x	24x
<b>Loading system</b>	tray	tray	tray	tray	tray	tray	tray	tray	tray	tray	tray	tray
<b>Vertical mounting option</b>	●	●	●	○	○	○	●	●	●	●	●	○
<b>Play/skip button</b>	○	●	○	○	●	●	○	○	●	○	○	●
<b>Fixing screws</b>	○	●	○	○	●	●	○	○	●	○	○	●
<b>Audio lead</b>	●	●	●	○	●	●	●	●	●	○	●	●
<b>Data cable</b>	○	○	○	○	●	○	○	○	●	○	○	○
<b>Windows 3.1 drivers</b>	●	●	●	●	●	●	●	●	●	●	●	●
<b>Features</b>	★★★	★★★★	★★★	★★★	★★★★	★★★★	★★★	★★★	★★★★★	★★★	★★★	★★★★
<b>Documentation</b>	★★★	★★★★★	not supplied	★★★★★	★★★★	★★★★	★★★★	★★★★★	★★★★★	not supplied	★★★★★	★★★★
<b>Performance</b>	★★★★★	★★★★	★★★★★	★★★★★	★★★★★	★★★★	★★★★	★★★★	★★★	★★★★	★★★★★	★★★★
<b>Value for money</b>	★★★	★★★★	★★★	★★★★★	★★★★★	★★★★	★★★★	★★★★	★★★★★	★★★	★★★	★★★★
<b>Overall</b>	★★★	★★★★	★★★	★★★★	★★★★★	★★★★	★★★★	★★★★	★★★★★	★★★	★★★★	★★★★
<b>Contact</b>	Hitachi 01628 585000	LG 01753 500400	Mitsumi 01276 671029	Panasonic 01344 853336	Philips 0181 781 8372	Pioneer 01753 789884	Samsung 0800 521652	Sony 0181 760 0500	Tashika 01675 466467	TEAC 01923 819630	Koch Distribution 01256 707767	Wearnes 01256 333570
<b>Notes</b>	Not supplied in a retail package	Slot-loading model costs £10 more	CD not held very securely when vertically mounted	Not supplied in a retail package	An 0800 helpline is available seven days a week	Capable of very fast data transfer speeds but only intermittently	Cheapest drive on test	New model, released in October	Includes GoldStar drive, Aztech sound card, microphone, headphones, software	Not supplied in a retail package	CD not held very securely when vertically mounted	Also plays CD-RW discs at quad speed

○ No ● Yes \* = Poor ★ = Below average ★★★ = Average ★★★★ = Good ★★★★★ = Excellent

The future of CD

The speed of CD-ROM drives has jumped from 8x to 24x in just over a year but this trend is unlikely to continue. One reason is that mechanical constraints make it almost impossible for ordinary CD-ROM drives to go any faster, but more significant is that factors other than speed will come to the fore. CD-R drives, for example, can be used to create your own CD-ROMs as well as to read commercial titles, and they've already dropped in price to little more than people were paying for ordinary CD-ROM drives only a couple of years ago. Another innovation is the recent introduction of CD-RW drives, able to play ordinary CD-ROMs as well as to erase and rewrite data up to a thousand times on special reusable CDs.

Perhaps the biggest threat to conventional CD-ROM drives comes from DVD, the digital versatile disk format that even in its early form can be used to store the equivalent of seven ordinary CD-ROMs. DVD capacities are set to increase fourfold over the next two years and when current wrangles over copyright issues are settled, DVD's capacity to deliver high-quality video and store full-length feature films on a single CD could make it the drive of the future. Current DVD drives can also be used as CD-ROM drives, in which case they deliver 8x performance.

cards. These days it's impossible to buy drives with proprietary connectors so before you choose a new drive make sure you'll be able to use it with your existing equipment.

If you do decide to upgrade from a proprietary drive to an IDE model you'll have to attach the drive to a sound card with an IDE controller or to the IDE controller used by the hard disk. In the latter case, if the IDE controller has two connectors (one will be used by the hard disk) it's better to attach the CD-ROM drive to the spare connector. Attaching a CD-ROM drive to the same IDE connector as the hard disk is possible using a dual cable, but might impair the performance of the hard disk.

Ease of use

Apart from how you're going to connect it to your computer, there are two other points to consider when buying a CD-ROM drive. The first is to choose the

right loading mechanism. Tray loaders work just like audio CD players: you pop a bare CD-ROM into a motorised tray which retracts into the drive. Some SCSI drives require the CD-ROM to be put into a plastic caddy before loading, and while this provides protection for the disc it's inconvenient unless you buy a separate caddy for every disc in your collection. Tray loaders offer a good compromise between ease of use and reliability but if the design of your PC requires you to mount a drive on its side, you'll need a tray loader with retaining clips to stop the CD-ROM disc falling out when the drive is open.

The second point to bear in mind is whether you will make regular use of a CD-ROM drive's ability to play audio CDs. All drives have a play/eject button but some are also fitted with an extra button to let you skip tracks on audio CDs without having to use the software controls built into Windows.



All the drives performed well and there's little to choose between the 24-speed models in terms of data transfer speed, with the Philips CDR 4825 just coming out ahead. The expensive Hitachi CDR-8330 has a slight edge in terms of access speed and the Philips, Mitsumi, LG and Wearnes drives make least demands on the host PC. The Philips CDR 4825 is easily the best buy for its performance, features and low price.



The Tashika multimedia kit provides everything the upgrader needs, including cables, microphone, headphones and a sound card with an IDE interface. Surprisingly, the 16x GoldStar drive that is supplied in this bundle is only around 20 percent slower than the 24x opposition, and the entire kit costs less than some of the 24x drives. If you've already got a sound card our other recommendation is the cheapest model on test, the Samsung SCR-2430.

Paul Wardley

