

MORE NOISE



It's in the area of sound reproduction that PCs are often lacking. Very often, a great system is let down with a pair of tinny \$20 speakers. Here we explain the options, and put some of the better sound options through their paces.

ON TEST

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People do a lot more with their PC than just write letters or balance their cheque books. Today the PC can be a home entertainment system, and it's not uncommon for people to listen to music or watch movies using their PC. And, of course, play games. With an entertainment system sound is very important, and you can make a huge difference to the experience using a good sound system.

The simplest computer sound systems use just two loudspeakers which often offer poor sound quality. The next step up uses two small speakers along with a subwoofer, which is a larger speaker that plays the low frequency (bass) sounds. You can get a much fuller sound with these better speakers, but the sound is still just stereo – two channels designed as left and right.

You'll probably have noticed that in cinemas, the sound can come from all around you. This is called surround sound, and it

certainly adds to the experience.

There are a number of sound technologies that bring this experience to your PC:

- **Dolby Digital 5.1** is a six speaker system with five small satellite speakers (two rear, and left, right and centre front), and a subwoofer. Dolby Digital is the big name in this area and you'll find it used for DVD movies.
- **DTS (Digital Theatre System)** is another digital sound format using five satellite speakers and a subwoofer. It's used by DVD movies and audio CDs. It uses less compression than Dolby Digital 5.1 and is reputed to offer better sound quality. To be honest, we think you'd need to have a much more sophisticated sound system connected to your computer than anything we've seen to notice any improvement – though we're told audiophiles will spot the difference.
- **Surround sound** is a term that's used to describe a system with

front and rear speakers for PCs. There are a number of systems designed to allow computer programs to offer better sound – not surprisingly they are almost exclusively used for games. They're all designed to work with up to four satellite speakers and a subwoofer, and can offer games programmers the ability to place a sound in a three dimensional space (rather than just left or right).

If you're interested in getting the best sound for a particular game, check which of the following systems are supported, and make sure the sound card you choose supports it, too:

- **DirectSound 3D (DS3D)** is a technology from Microsoft that's designed to allow sounds to be positioned above, below, or behind the listener using four satellite speakers. **DirectSound** is an older system. Both these systems are supported by most modern sound cards.
- **A3D 2.0** from Aureal Semiconductor is one of the more advanced sound technologies, and includes such features as occlusion (where an object moving in front of a sound source on screen blocks the audio as well).
- **Creative EAX** from Creative is another sound system designed mainly for games. Having been developed by Creative, it is mainly supported by Creative sound cards.

In this article we first review sound cards and then sophisticated speaker systems.

Sound cards



Sound card showing the joystick/MIDI connection [1], and 3.5 mm jack sockets [2]

To get the best sound out of your PC the first thing you need is a high quality sound card. At its simplest, a sound card has the circuitry to turn computer data into sound. Some computers have the electronics built onto the main circuit board (the motherboard), others use separate add-in cards – which can offer more features.

The sound cards reviewed in this article fit into the computer's PCI slots and have sockets which are exposed at the rear of the machine. PCI cards are actually quite easy to install, but you need to be handy with a screwdriver and not feel squeamish about opening up your PC.

In order to take advantage of the best sound, it needs to support some (or all) of the technologies listed on page 20 – this will ensure that it can use the most sophisticated system the source can provide.

When looking for a sound card make sure it has its own sound-processing chip, such as the Aureal Vortex 2 or the E-mu EMU10K1 – this means the sound card does the hard work of producing the sounds rather than PC processor (which can slow down your system).

The sound card also needs to support the connections used by the speaker system. There are two types of connections – analogue and digital. In an analogue system the sound is translated directly into a continuous electronic signal, which can mean loss of quality as it travels along the wire.

With a digital system the sound card sends a digital signal (computer information) to the

speaker amplifier, which then decodes the signal and turns it into sound. There should be no loss of quality in the transmission.

Common output connections that you will come across include:

- **Optical digital in and out (S/PDIF):** Allows you to connect to digital audio devices such as DAT drives. Some speakers also support optical digital. This is the best connection to use if it's available.
- **Coaxial digital in and out (also called S/PDIF):** Similar to the optical connection but uses conventional wires.
- **3.5 mm digital jack:** This is an alternative digital connection to coaxial. The socket may also double as an analogue jack for the subwoofer and centre speaker.
- **3.5 mm front and rear speaker jacks:** These provide the most common way of attaching an analogue amplifier to a computer (or even the speakers directly). Two-speaker systems use just the front jack (they're stereo jacks and so offers two channels). Four-speaker systems use both the front and rear jacks.
- **MIDI IN and OUT:** This for connecting MIDI devices such as music keyboards.
- **Headphone jack:** Allows you to connect a pair of headphones.
- **Line in jack:** For connecting devices like cassette players.
- **Microphone jack:** This is where you would plug in a microphone for voice input.
- **Joystick connection:** Connects to a joystick, and also doubles as a MIDI connection.

Digital connection options include coaxial [3] and optical [4] (shown here with the removable covers in place)



You'll may also find connections on the sound card itself for connecting internal devices such as a voice modem, CD-ROM, DVD-drive, or TV Tuner card.

Some sound cards also have RCA-in and out sockets so you can connect equipment like video recorders, TV and CD players.

Dolby Digital 5.1



Dolby Digital 5.1 is the high end computer sound system increasingly seen on DVDs and even in games. For Dolby Digital sound you will need a home theatre sound system with five satellite speakers. This "5.1" speaker configuration gives you five channels – left, centre, right, left surround and right surround – plus a sixth channel for the low frequency effects LFE (the subwoofer). Because the LFE channel needs only one-tenth of the of the bandwidth of the other channels, this is the ".1" channel.

Even if you don't have a 5.1 system, you can play Dolby Digital DVDs with a program called PowerDVD, which converts the Dolby soundtrack so it can be played with only four satellite speakers (though obviously you'll lose something in the translation).

Your speakers should be able to take advantage of the best type of connection provided by your sound card. For example, if your sound card has an optical digital output, you should try to get speakers that can take advantage of this connection – though sometimes you may decide that the benefits of an optical digital output are outweighed by the cost. In any case, you should always use the digital connection, whether its optical, coaxial or a 3.5 mm jack.



SoundBlaster Live! Platinum 5.1

ERP: \$499

Manufacturer: Creative

Technologies supported

Dolby Digital: Yes

Other: DirectSound, DirectSound3D, EAX

Connections

Digital optical: Yes

Digital coaxial: Yes

Digital 3.5 mm jacks: Yes

Analogue 3.5 mm jacks: Yes

Headphones: Yes (4.5 mm jack)

Rating: ★★★★★

This sound card comes with the lot – it has almost every type of sound-related input and output connection you can imagine. You'll find all the common analogue and digital connections, as well as DIN MIDI and provisions for connecting to consumer equipment like televisions and hi-fi systems.

To cope with the almost overwhelming number of options, this sound card comes in three parts – a PCI card, a backpane that takes up a second slot position at the back of the machine and a rack that fits in a spare 5.25 inch drive bay (check that your machine has all of these if you're interested in this product).

The rack means that you've got easy access to some (but not all) connections at the front of the machine.

Given it's a multi-part device, there's some degree of fiddling when installing this card, since there's a number of cables that need to be hooked up internally.

There's also a wireless remote control, so you can adjust the volume and select which songs you want to listen to, for example.

The sound card comes with a nice bundle of software, which includes games and music utilities so you can make good use of the features once it's set up.

This is quite an amazing sound card – though it may be a little overkill for the average computer user. If you want to be a power sound user, you'll love this.



Game Theater XP

ERP: \$329

Manufacturer: Hercules

Technologies supported

Dolby Digital: Yes

Other: Sensaura, DirectSound, DirectSound3D

Connections

Digital optical: Yes

Digital coaxial: Yes

Digital 3.5 mm jacks: No

Analogue 3.5 mm jacks: Yes (RCA-type rather than jacks)

Headphones: Yes

Rating: ★★★★★

This card offers a range of connection options (though not quite as many as the Creative product). It gets around the problem of too many connections and not enough space by putting them all into an external box (rack). This box connects to the sound card via a lead and can sit on top of your computer (or on your desk, for example). This makes it very easy to get to the connections when you're connecting different devices.

This card has all the common analogue and digital connections, as well as DIN MIDI and provisions for connecting to consumer equipment like televisions and hi-fi systems.

You also get a collection of software – some of which are trial versions and game demos – but it does also include a full version of PowerDVD Pro 6 – a great program that allows you to watch DVD movies (providing, of course, you have a DVD drive in your computer).

One very good feature is that in addition to all the sound connections, you also get four USB sockets. It's convenient to have USB connections that are within easy reach, rather than at the back of the machine.

The Game Theater XP is a great package for anyone who wants to get better sound from their PC. It's great for gamers (with easy access for connecting peripherals) and also suitable for those who want to turn their PC into an entertainment centre.



VideoLogic Sonic Fury

ERP: \$245

Manufacturer: VideoLogic

Technologies supported

Dolby Digital: No

Other: A3D 1.0, DLS 2.0, Sensaura MultiDrive, DirectSound, DirectSound3D, EAX

Connections

Digital optical: No

Digital coaxial: No

Digital 3.5 mm jacks: Yes

Analogue 3.5 mm jacks: Yes

Headphones: No

Rating: ★★★☆☆

In contrast to the two other cards we looked at, the Sonic Fury is aimed at the games player who wants better sound for their games, but nothing more. So it doesn't support Dolby Digital, though it does support all the major game sound systems (except for EAX which is Creative's own system).

All connections are via 3.5 mm jacks, and these include analogue front/rear, stereo line in, Mic in, and a "VersaJack". The VersaJack looks like a normal 3.5 mm jack socket, but it can be used for different tasks (which we guess is because otherwise there wouldn't be enough space on the back of the sound card). The VersaJack provides digital output, as well as the centre/subwoofer connection for analogue surround sound, and can also be a second line in connection for four channel recording.

Installation is fairly straightforward – you just need to remember to hook up your CD or DVD drive.

There's a good collection of music software provided, some of which are demos or trial versions.

If you want a surround sound experience from your games this card will give it to you at good price.

Speakers

To make the most of the sound technologies available, you need good speakers. For this article we've reviewed speaker systems with five or more speakers which you place around the room so sounds can come from all directions.

These systems consist of:

- **Four or five satellite speakers:** Small speakers which are placed around the room. There'll be front left and right speakers, two rear speakers, and if there's a fifth it'll be placed in front of you.
- **A subwoofer:** A larger speaker dedicated to producing bass. This can be a single speaker because low frequencies are less directional than higher ones, so your ear won't detect a direction the sound is coming from.
- **Amplifier:** This takes the signal from the sound card and amplifies it for the speakers. Usually it's integrated into the subwoofer.

In the reviews we highlight the following features:

- **Output power (watts W):** A measure of loudness. For home theatre systems the output power is given as the sum of all the speakers. Make sure you compare like with like, and use the RMS figure (see Jazz review).
- **Frequency response:** A measure of the lowest and highest notes the speakers can produce. Generally, it's accepted that the lowest note the human ear can hear 20 Hz and the highest note is 20,000 Hz (20 kHz).
- **Rear speaker cable:** The rear speakers are set furthest away, so we tell you the cable length for those speakers.
- **Connections:** Here we tell you the types of input the systems can take. For best quality home theatre, digital connections are the ones to look for. For more about the different types of connection from sound cards see page 20.



Altec Lansing ACS54

ERP: \$229

Manufacturer: Altec Lansing

Description: 4 x satellite speakers, subwoofer

Output power: 70 W (8.75 W per satellite + 35 W subwoofer)

Freq. response: 30 Hz – 20 kHz

Rear speaker cable: 3.2 m

Digital sound systems

Dolby Digital 5.1: No

DTS: No

Connections

Digital optical/coaxial: No/No

Digital jack: Yes

Analogue front (L + R): Yes

Analogue front (centre): No

Analogue rear: Yes

Analogue subwoofer: No

Listening test: Good clear sound, though perhaps not as rounded as some of the other speaker systems. Fairly good bass

Rating: ★★★★★☆

Designed for gamer, these speakers are not designed for listening to Dolby Digital, (despite accepting a digital signal).

The digital input is designed for PCM (pulse code modulation) digital audio, which offers a better connection than analogue, and so should provide better sound quality in games.

The right front speaker houses the controls, which includes a volume knob, and controls for bass and treble.

These speakers have a good feel to them, and sound quite good. If you're a gamer who doesn't want to go the whole hog with a 5.1 system you'll be happy with this offering from Altec Lansing. Good value.



Cambridge SoundWorks DTT 2200

ERP: \$349

Manufacturer: Creative

Description: 5 x satellite speakers, subwoofer, small volume control unit

Output power: 42 W (5 W per satellite + 17 W subwoofer)

Freq. response: 40 Hz – 20 kHz

Rear speaker cable: 5 m

Digital sound systems

Dolby Digital 5.1: No

DTS: No

Connections

Digital optical/coaxial: No/No

Digital jack: No

Analogue front (L + R): Yes

Analogue front (centre): Yes

Analogue rear: Yes

Analogue subwoofer: Yes

Listening test: A nice set of speakers, delivering clear audio with a punchy bass. Sounds great at low volume, though distorts slightly when loud

Rating: ★★★★★☆

These are not Creative's high-end speakers, and as such, don't have digital inputs, so no Dolby Digital. Having said that, they're a good set of speakers which can go quite loud – you'd be able to use them to entertain at a party.

Volume control and balance is adjusted with a wired remote knob.

There are lots of parts so it takes a little time to set up – the exposed copper wires of the speaker leads have to be inserted into little terminals in the speakers.

Make sure you have a look at the instructions before setting this one up.



Digitheatre LC

ERP: \$495

Manufacturer: VideoLogic

Description: 2 x front speakers, 1 x centre, 2 x rear, subwoofer, amplifier

Output power: 63.5 W (7.5 W per satellite + 25 W subwoofer)

Freq. response: 50 Hz – 20 kHz

Rear speaker cable: 8 m

Digital sound systems

Dolby Digital 5.1: No

DTS: No

Connections

Digital optical/coaxial: No/No

Digital jack: No

Analogue front (L + R): Yes

Analogue front (centre): Yes

Analogue rear: Yes

Analogue subwoofer: Yes

Listening test: Nicely built speakers provide a full sound, though it's not as crisp as some

Rating: ★★★★★☆

What strikes you about these speakers is that the satellite speakers are specifically designed for each job. So rather than five identical satellite speakers, you get two front speakers, a centre speaker and a two rear (surround) speakers. You also get a large subwoofer/amplifier unit.

This was one of the loudest systems we listened to – though as you expect there was some distortion at the higher volumes.

This system only accepts analogue input. If you want Dolby Digital you'll also need a Dolby Digital decoder.

These speakers sound good, but lack the bells and whistles of some of the other systems we looked at.



Jazz J-7907

ERP: \$99

Manufacturer: Jazz

Description: 4 x satellite speakers, subwoofer, amplifier

Output power: Not stated

Freq. response: 40 Hz – 20 kHz

Rear speaker cable: 2 m

Digital sound systems

Dolby Digital 5.1: No

DTS: No

Connections

Digital optical/coaxial: No/No

Digital jack: No

Analogue front (L + R): Yes

Analogue front (centre): No

Analogue rear: Yes

Analogue subwoofer: No

Listening test: Better than most standard PC speakers, but nothing outstanding. A little tinny at times

Rating: ★★☆☆☆

These speakers are designed for the budget conscious gamer who wants surround sound.

The input is analogue front and rear only – there is no separate subwoofer connection.

The box boasts of 800 W of total power PMPO. We think it's misleading to quote the PMPO (peak music power) on the box, as this is the wattage the speakers can withstand over a very short period – say half a second. The other speakers we looked at quote RMS (root mean square) output power, which is the power the speakers can operate at continuously.

The sound quality doesn't match the more expensive products, but a good choice if you want to experience surround sound on a budget.



KINYO D-525/560 5.1

ERP: \$749

Manufacturer: Kinyo

Distributor: GDB International

Description: 4 x satellite speakers, subwoofer, decoder box, remote control

Output power: 65 W (5 W per satellite + 40 W subwoofer)

Freq. response: 40 Hz – 20 kHz

Rear speaker cable: 7.5 m

Digital sound systems

Dolby Digital 5.1: Yes

DTS: No

Connections

Digital optical/coaxial: Yes/Yes

Digital jack: No

Analogue front (L + R): Yes

(RCA-type)

Analogue front (centre): No

Analogue rear: No

Analogue subwoofer: No

Listening test: A good crisp sound, with strong bass

Rating: ★★★★★

The packaging proclaimed that this home theatre system would allow you to “enjoy yourself in the fantasy (sic) home theater sound systems. Give you a full wonderful, crazy, explosive feeling.”

However, once out of its badly-worded packaging, the Kinyo is a good product. It was the only system that came with a separate Dolby Digital decoder. This had a large LCD display showing the sound channels in use. It also had a very slim wireless remote allowing you to adjust most functions, including volume, input mode, bass and balance.

There's a sizable subwoofer/amplifier, and the satellite speakers feel fairly solid.



SoundMan DSR-100

ERP: \$429

Manufacturer: Logitech

Description: 4 x satellite speakers, subwoofer, small control unit

Output power: 100 W (12 W per satellite + 52 W subwoofer)

Freq. response: 28 Hz – 20 kHz

Rear speaker cable: 3.8 m

Digital sound systems

Dolby Digital 5.1: No

DTS: No

Connections

Digital optical/coaxial: No/No

Digital jack: Yes

Analogue front (L + R): Yes

Analogue front (centre): No

Analogue rear: Yes

Analogue subwoofer: Yes

Listening test: You get the surround experience, but the sound quality is tinny and the bass is thin for such a large subwoofer

Rating: ★★☆☆☆

This system seems designed for gamers who watch the occasional DVD movie. It doesn't offer Dolby Digital, instead promises surround sound downmixed from Dolby Digital (a feature of the software provided rather than the speaker system itself).

Even on full volume, it's not very loud – though fine for watching DVDs or playing games.

The DSR 100 looks good, though the lightweight nature of the satellite speakers let it down.

The SoundTouch remote control has easy-to-use wheels for volume and distribution of sound between front and back speakers.

Not a bad system, but it doesn't really stand out in any way.



TSS1 Home Theater

ERP: \$499

Manufacturer: Yamaha

Description: 5 x satellite speakers, subwoofer, amplifier/processor

Output power: 48 W (6 W per satellite + 18 W subwoofer)

Freq. response: 40 Hz - 20 kHz

Rear speaker cable: 9 m

Digital sound systems

Dolby Digital 5.1: Yes

DTS: Yes

Connections

Digital optical/coaxial: Yes/Yes

Digital jack: No

Analogue front (L + R): Yes

Analogue front (centre): Yes

Analogue rear: Yes

Analogue subwoofer: Yes

Listening test: Good sounding speaker system – clear crisp sounds, and even the softest sounds are easily heard. Full sound, which becomes a little boomy at high volume

Rating: ★★★★★

This very nice system is ready for Digital Dolby right out of the box. The amplifier has a built in Dolby Digital decoder.

This system can cope with just about any type of input. If you've got lots of audio gadgets, you'll get them to work. The supplied digital optical cable is only one metre long, which is probably a little too short.

This system is about quality rather than volume. So, even at maximum volume it isn't loud, but more than enough for watching DVDs or playing games.

The system looks good and the subwoofer/amplifier unit has easy-to-use controls. Recommended.