

**Q** "I have read so much about different sound cards that I am not sure of anything except that *PCW* recommends at least a wavetable version.

I currently have an Amiga with MIDI interface connected to a Roland e-10 keyboard and run the Sequencer One software. This is quite good, but I am limited to the keyboard for sounds as the Amiga is a bit limited (only four channels) and the keyboard is not general MIDI, just plain MIDI. I plan to buy a Gateway P100 with an Ensoniq sound card and speakers in the next couple of weeks.

How does PC sequencing work? Will I be able to use my Roland for just the keys and utilise the GM-sounds on the PC-card? Do sound cards have MIDI interfaces built in? How good will the PC sounds be — on a par with a good keyboard? Is a good sound card like a synthesiser without the keys? I don't want to buy a PC and then find I still have to use my Amiga. And what does 'wavetable' mean? Your advice would be appreciated."

**Neil O'Connor**

*The de-facto standard sound card for the IBM PC is the SoundBlaster 16 made by Creative Labs. Most other sound cards are compatible with this and use it as their base-level specification, so it's a good place to start.*

*There are six main components to the card: a synthesiser, a DAC/ADC section for playing and recording digital sound (known as wave files), a mixer which adds the various sound sources together, a MIDI and a joystick port, and some form of CD-ROM drive interface.*

*The joystick port is really only useful for entertainment applications and needs no further explanation. The CD-ROM interface is generally of the IDE type in current sound boards, if they support one at all. In the early days, sound boards formed the hub of a multimedia upgrade so included proprietary CD-ROM interfaces.*

*The ADC and DAC (Analogue to Digital Converter and vice versa) is used to record and play sound samples. These days they are nearly all capable of operating in several quality modes up to 16-bit samples at 44kHz or greater, and in stereo. However, this isn't as useful as it sounds for music applications unless you are interested in using the PC as a digital recorder; which is actually a practical proposition.*

*The interesting parts for the music maker are the synthesiser, the mixer and the MIDI ports. The basic synthesiser is of the FM (Frequency Modulated) type. This uses the same principle as the Yamaha*

*DX7, among others, which was responsible for many of the uninspired backing track sounds of the early eighties.*

*The normal FM synthesiser chip found on sound boards is the OPL3. If you like this sort of sound you can certainly have some fun with its 20 partials (simultaneous sounds). However, just because it can make 20 distinct noises at once, you might be disappointed to find it isn't much of an improvement on the Amiga's four.*

*The Amiga had a system which allowed each of its sound channels to play very rich sounds, whereas you have to gang up several FM partials to get good effects.*

*The better sound cards use a system called Wave Table synthesis, in which the notes are actually stored as digital recordings. These sample recordings are used to calculate the output wave for the required note as and when required — not an easy job, but the effect is often quite realistic.*

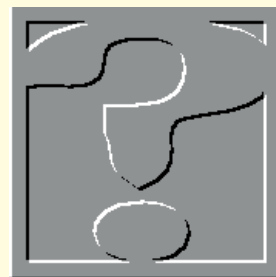
*Most wavetable synthesisers can handle 32 partials. Each partial can be used on its own and still produce a rich sound. While this may be adequate for popular music, don't try to simulate an orchestra!*

*If you have a sound board with basic FM synthesis and you want to upgrade to wavetable, this can sometimes be done using a daughterboard. These plug on to a sound board with a suitable socket and appear to the PC to be an extra, external, MIDI synthesiser. In fact, it is possible to upgrade some wavetable cards like the AWE-32 with an additional wavetable module if you want to go mad. Several upgrade daughterboards are available, the most famous being Creative Labs' own WaveBlaster.*

*The MIDI ports are all fairly standard and trouble free once you've discovered*

*that they need an external adaptor cable to make them work. The cable itself contains the opto-isolators missing from the sound board in a large plug.*

*For some strange reason, the MIDI signal comes out of spare pins on the joystick socket rather than having a connector of its own.*



## Any questions?

**If you have a PC problem or think you could help out other readers, contact Frank Leonhardt.**



**Make musical waves with a card like the SoundBlaster AWE-32 PnP**



You will certainly be able to make use of the Roland keyboard by connecting it to the MIDI port. Sequencing software is readily available and basic packages are often bundled with the sound boards. The synthesiser built in to the sound board appears just like any other MIDI instrument in the chain.

Don't get too concerned about General MIDI. What it boils down to is that a GM instrument will have the same sounds on standard patch numbers (for example, 1=Piano, 2=Electric Piano). If your instrument doesn't conform to GM numbering you will have to configure to software so it knows how to translate GM-numbered MIDI files.

### Dash it all

"My friend's PC always adds a '-' in documents when using the right arrow cursor movement key. Can you tell me how to stop this from happening?"

**Max Waterman**

This sounds like an incompatibility between the keyboard driver and the word processor. The first thing to try is to remove any drivers like ANSI.SYS or NANSI.SYS from the CONFIG.SYS file and anything else which looks like it might be related to the keyboard from both



The key to compatibility is the keyboard. Since the IBM AT, shown here, all keyboards have been interchangeable

CONFIG.SYS and AUTOEXEC.BAT. The lines in question might contain KEYB, KEYBUK or KEYBOARD.SYS depending on your DOS version.

If this cures the problem, then start adding them one at a time to isolate the culprit. The reason for suspecting display drivers like ANSI.SYS and its numerous alternatives is that they often intercept the keyboard, too.

It could also be the case that the word

## Frank's Bargain Basement

By the time you read this, RAM prices will have fallen considerably — and about time, too. I expect 16Mb to be costing less than £200, which is probably low enough to tempt many into carrying out their Windows 95-induced upgrade plans.

So why has it happened? And will prices fall further? More rubbish is talked about RAM supply than most other aspects of the computer industry. Regarding this price movement, I've been told that it was down to the Chinese New Year creating a world glut because all the Far East clone makers closed down for the holiday. Oh yeah? If they did close down the factories, which I somehow doubt, it wouldn't have been for the full two weeks of celebrations. Pull the other one. I think it's far more likely that the DRAM manufacturers have decided to supply Europe direct and get around the 80 percent tariff imposed by the US government. I smell whole-output contracts lapsing left, right and centre.

In the short term, prices are bound to stabilise and probably go up a bit once dealers realise that their large stocks are a liability in a falling market. For the latest situation, have a look at the Computer Answers Web page (see the "Contacts" panel, below).

processor you are using requires a particular keyboard or display driver which you don't have installed. Check its documentation to find out.

You may have a hardware problem with the keyboard. If it is a standard PC, the best way to prove it is to try a different keyboard.

Since the IBM AT (and other 80286-based models) all the keyboards have been generally interchangeable as long as they have the right plug fitted. The main exception to this rule is the early Amstrads. Mixing pre-AT and post-AT keyboards is not good news as they run at different voltages.

### Taking a chance on Acrobat

"I have hundreds of documents in PageMaker 5 format and I need to get them into Microsoft Excel 5.0 or Microsoft Word for Windows 6.0.

Adobe have told me that PageMaker doesn't support any export facilities and that, basically, I don't have a chance. Is there any medium that could be used to convert PageMaker files with .PM5 format into a format such as .bmp or .wmf, that could be embedded into the above applications, or inserted as objects or pictures?"

**Jason Smith**

This could be a job for Adobe's latest bandwagon following PostScript — Acrobat. This is a system which is intended to allow you to create documents on one machine, which can then be read by all the computers in the entire world. Okay, so it's not quite universal yet, but they are doing quite well with DOS, Windows, OS/2, Macintosh and Unix support.

In case your intended recipient doesn't have an Acrobat reader on their machine, you're currently allowed to give them one free of charge.

To create the documents in the first place, you can use any application you like as long as it has a print option. You then

"print" the final version to Acrobat Exchange which converts it into its own standard format (PDF) and stores it in a file. It's as simple as printing it to a printer.

The results can be very good: when viewed, the documents appear to be practically identical to paper versions. PDF files can also be embedded as OLE objects under Windows, which is how they might solve your problem. Unfortunately, however, you don't seem to be able to see the contents unless you actually open the embedded object.

It's probably possible to convert documents into .BMP format but they would end up taking up somewhat more disk space than the originals, to say the least. PDF files appear to be relatively compact, especially considering the cross-platform compatibility they achieve.



## PCW Contacts

**Frank Leonhardt** is an independent technology consultant who can be contacted on **0181 429 3047** or via email as **frank@dircon.co.uk** or **leo2@cix.compulink.co.uk**.

There is a web site at **http://www.users.dircon.co.uk/~wombat/answers/** which may contain late-breaking news. Letters may be sent to PCW at VNU House, 32-34 Broadwick Street, London W1A 2HG.

Sorry, but due to the high volume of correspondence, individual replies are not normally possible.

### Monitor/keyboard sharing

Q-Data (MARC Software)  
01349 866127  
Keyzone (Various hardware)  
0181 900 1525

### Sound boards

Creative Labs (various Blasters)  
01245 265265  
Aztec (Galaxy series) 01734 814121  
Orchid (NuSound) 01256 479898  
Adobe (Acrobat) 0131 451 6888