



Get personal

It's with you all the time – without it you feel lost – palmtops and handhelds have a special place in many users' hearts and arguments abound over the best form factor and OS, but there are other considerations. We've looked at the 12 best devices to help you make the right decision.

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• PDAs tested and reviewed by Nik Rawlinson, Will Head, Jason Jenkins, Lars-Goran Nilsson, Niall Magennis, David Rae, David Ludlow and Nigel Whitfield.

Ask someone how they feel about their PC and they'll probably tell you it does the job, crashes occasionally and is pretty uninspiring. Ask the same question of a PDA user and you'll most likely get a passionate response. PDAs inspire true devotion in their owners and entering into a conversation about the benefits of a competing device is not something to be taken lightly.

The reason owners become so attached is that PDAs take time to really appreciate. Users have to have total trust in their mobile companion as it holds their contacts, appointments and notes, without which they would be lost. Talk to someone whose closest buddy has been sent off for repair and you'll come back with the impression that they've lost a limb (as well as their memory).

You have to dive in headfirst into a relationship with your PDA and for this reason most people can only cope with one PDA while quite happily giving a couple of desktop machines the runaround.

It's extremely important then that you choose the right device the first time around, but this is no easy task in a market that is awash with variety: you've got three major OSs (EPOC, Palm OS and WinCE) and two predominant form factors (palmtops and handhelds). To add to the confusion, you've also got to weigh up the constraints of features versus battery life, and cost versus capacity.

With new players entering the market almost every month (such as Handspring) and others dropping out (Philips and Everex, for example), it's a very dynamic market. We've taken an in-depth look at 12 of the best, covering all the OSs and form factors currently available. Whether you're new to the PDA game and looking to dip your toes in the water, or a seasoned professional after reassurance, we've got the lowdown on the best devices available.

Compaq Aero 2130

PALMTOPS



COMPARED TO SIMILAR machines on test here, the Aero feels very nippy, although it's not as fast as the Cassiopeia. This is down to its specs, as at its core is a 70MHz NEC MIPS R4000 processor, together with 12MB of ROM and 16MB of RAM. If you need additional memory, the RAM can be upgraded to 24MB.

The screen is a TFT colour display with a resolution of 320 x 240, which is capable of displaying 256 colours. It performs quite well even in the dark, thanks to a backlight that is adjustable in two steps, depending on the light conditions. This also helps conserve battery life.

The Aero's stylus is a little heavier than most, but this helps give it a more sturdy feel and it is very comfortable to use. It's stored in a spring-loaded compartment on top of the unit, which has a lockdown mechanism to stop the stylus falling out.

As with most handheld machines in this category, the 2130 comes with a docking cradle and a mains adaptor that doubles as a battery charger, but Compaq has been clever to allow the unit to be charged independently from the docking cradle. The only minor worry we have with the docking cradle is that it is supplied with a serial lead that is moulded to the cradle. If the cable gets damaged, you will need to replace the entire cradle.

Power is supplied by a rechargeable 1,000mAh lithium-ion battery pack that

fits in the base of the unit. Battery life according to Compaq is about 10 hours, which isn't bad for this type of device.

The 2130 is getting on a bit now, and there are newer CE models around with better screens and more memory, but it's still quite a capable machine and you can get plenty of accessories for it. For example, there's a deluxe leather case, an optional car charger and a Compact Flash V.90 modem available.

You'll find the CF slot at the top of the unit. However, before you use the V.90 modem or a CF memory card, you'll have to remove a small 'dummy' card that Compaq has thoughtfully placed in the slot to protect it against damage.

Like almost all of the CE devices on test here, the Aero can act as a dictaphone, since it has a built-in mic and voice recording software. For ease of use, there is a 'quick access' button for the voice recorder at the top left-hand corner of the Aero. The quality of recording isn't the best at the default setting, but it should be adequate for a quick memo. It also comes with an attachment that looks just like a mobile phone hands-free kit. This plugs into the top of the Aero and lets you listen to and record messages with a bit less background noise than the internal speaker and mic. This has a disadvantage, though, as the headset supplied is mono and plugs into a 2.5mm socket. This means you'll need an adaptor if you want to use a pair of

regular headphones with the Aero, but sound output will still be in mono.

The design of the Aero might not appeal to everyone as it's slightly boxy looking, but we thought the matte-silver front bezel gave the device a cool futuristic look. From an ergonomic point of view, Compaq has designed the machine with most of the buttons in the right places (as long as you are right-handed), but the rocker switch is a bit hard to depress at times and tends to make an odd noise in use.

Portability is also an issue, and if you are looking to carry your Aero around in your shirt pocket you might have to think again. It's not the lightest of handheld devices, weighing in at 260g.

The Aero is also supplied with a set of useful software packages, but there are better bundles out there. Applications include the Compaq Asset Viewer, CoolCalc, AudiblePlayer, VCA Finance and Zio PalmGolf. AudiblePlayer is an interesting tool if you have access to the Internet, as it lets you download 'spoken word audio programs' from the Audible website, including books, news and audio magazines.

MS Active Sync 3.0 is also supplied on CD-ROM and it's very quick and easy to set up and use. You simply pop the CD in your drive, put the Aero in the docking cradle, select the sync option that you want and off you go. In practise it worked flawlessly with Outlook 2000. But don't worry if you haven't got Outlook 2000 installed on your PC, as there is a copy of the software on one of the CD-ROMs that is supplied with the Aero.

Overall, the Aero 2130 is one of the better handheld Windows CE devices available on the market. As well as looking quite stylish, it is also a good little performer. Unfortunately, there is one thing that really puts us off the Aero, and that's its price. At more than £350 it can't compete with similar devices that we have on test here, even other WinCE machines.

LARS-GORAN NILSSON

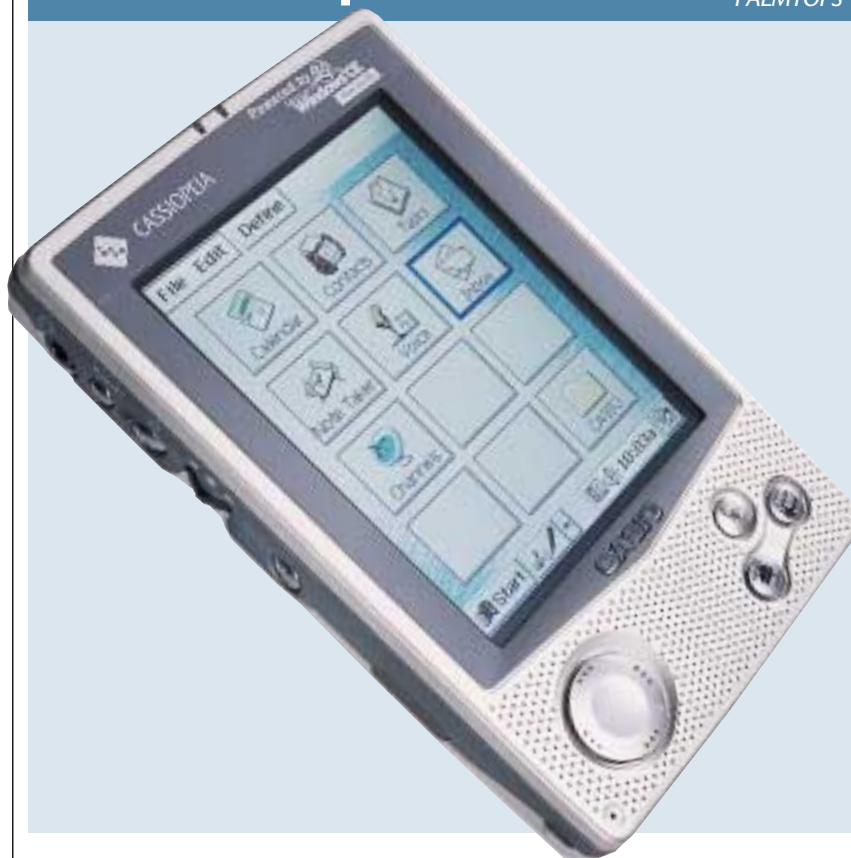
DETAILS

PRICE £399 (£339.57 ex VAT)**CONTACT** Compaq
0845 270 4000www.compaq.co.uk**PROS** Good stylus, quite fast**CONS** Heavy, not one of the latest CE machines, expensive**OVERALL** Compaq has come up with a good machine, but a few minor design mistakes and an over-inflated price let this unit down

BUILD QUALITY ★★★★★
PERFORMANCE ★★★★★
VALUE FOR MONEY ★★★
OVERALL RATING ★★★★★

Casio Cassiopeia E-105

PALMTOPS



WINDOWS CE IS RENOWNED for being slow. Well, it is unless it's running on this monster machine from Casio. The 131MHz NEC MIPS R4000 processor screams along, and combined with the 16MB of ROM and 32MB of RAM it all adds up to the fastest CE machine we've ever seen.

First impressions of the Cassiopeia E-105 are good, as the unit is attractively styled with a silver-coated finish matched by grey plastic edging around the screen. Casio has decided against the flip-screen protection lid you'll find on the Palm IIIc and Jornada 420. Instead you get a rather funky, hard leather-style pouch. It gives the unit a much more classy feel than those with the flip covers and is also a lot more sturdy in the long run.

Casio has also decided to go with a number of 'hard' buttons instead of using moulded touch-sensitive icons. Directly under the display you'll find three buttons arranged in a triangle. These give you access to the main Casio menu, the calendar and the contacts application. To the left of these buttons is a four-way cursor pad, which is similar to a direction pad on a game controller. It is useful for navigating those applications that support it - especially games such as Doom CE. On the left-hand side of the unit is the stereo headphone socket, the on/off switch, an exit button, the action/select jog controller and a button to spring the dictaphone application into action. The

left-hand side is also home to the IrDA 1.0 port. We would have preferred this to be at the top of the device, but it's still reasonably well placed. At the very top of the unit you'll find the Compact Flash card Type II slot and on the bottom is the serial port for connecting to a PC or the docking station.

One of the best things about the Casio is its screen. This uses the company's new Hyper Amorphous Silicon TFT (HAST) technology, to produce a very bright image without draining too much battery life. The result is a crisp display with a resolution of 240 x 320 and support for up to 65,536 colours.

Speaking of battery life, the Casio runs off a lithium-ion rechargeable battery and the unit can be charged either by using the docking cradle or by plugging the AC adaptor directly into a socket at the bottom of the device.

Alongside the standard Windows CE handheld applications, the E-105 is bundled with a multimedia software pack. This includes the Mobile Audio Player, which allows you to play files saved in Microsoft's audio music format. For those with a library of MP3s, Casio has included desktop software to convert these to the relevant Microsoft format. This can also compress the files to about half the size of an MP3, but the audio quality does suffer. We would have preferred MP3 playback software, but it's not a bad compromise.

Other applications in the multimedia

pack include a Mobile Video player that displays Casio format movies and an Image view for JPEG, BMP and CAM (Casio's digital camera format) images. For entertainment, Casio has also thrown in Palm Golf.

We found it a cinch to sync the E-105 to a PC, using the bundled Windows CE Services 2.2. The unit also had no problems syncing contacts and appointments with Outlook Express. Active Sync 3.0 is now shipped with the unit and existing owners who have Version 2.0 can download the software for free from Casio's website.

There are a lot of good features to rave about in the E-105. It has a fast processor, great screen and an abundance of RAM, but there is a price to pay for all this. The unit is a tad on the bulky side and in comparison to the Palm Vx, it's huge. It's not going to fit comfortably in a shirt pocket.

The other problem is that even though it has great hardware, the unit is still held back by the awkwardness of Windows CE on palmtop devices. It's simply a bit of a pig to use. And unlike Compaq, Casio hasn't bundled any application that helps you control the shutdown of applications. The result is that every time you need to close down an application you have to make a trip into Settings and then click on System to bring up the Task Manager so that you can close an active task. If there was an award for the least intuitive and most annoying feature in an OS, this would win hands down.

CE is fine for handhelds and very good when running on sub-notebooks, but there's no denying that Microsoft has a long way to go on this smaller form factor.

However if you've used CE before on a palmtop and have got used to its idiosyncrasies, then the Cassiopeia has great sound, a wonderful screen and unrivalled performance thanks to its speedy processor. It's the best Windows CE palmtop device on test here.

NIALL MAGENNIS



DETAILS

PRICE £499 (£424.68 ex VAT)

CONTACT Casio 020 8450 9131

www.casio.com

PROS Bright, easy-to-read screen, stereo sound, super-fast processor

CONS No add-ons to tame CE, bulky

OVERALL A good machine, but it suffers from being a bit too large and not having any extra add-ons to help make CE more user-friendly

BUILD QUALITY ★★★★★
PERFORMANCE ★★★★★
VALUE FOR MONEY ★★★★★
OVERALL RATING ★★★★★



Hewlett-Packard Jornada 420 PALMTOPS



THE JORNADA 420 HAS been around for a while – a fact that is pretty obvious. To start with it only comes with 8MB of ROM and 8MB of RAM, expandable to 16MB, which isn't all that great compared to the newer CE machines with 32MB of RAM. The core of the Jornada 420 is based around a 100MHz Hitachi SH3 CPU, which is just about sufficient for running CE.

This was one of the first handheld devices with a good colour screen to hit the market, but since then a lot of other devices have arrived with better displays. The screen is bright enough, but it's not the quickest when it comes to updating the display if you happen to toggle between applications a lot. In addition, to change the brightness and contrast settings you have to use a special HP display tool. This has four different default settings: outdoors, indoors, low power and special, so you have quick access to the different set-ups.

HP has made quite a few design choices with the 420 that leave it running behind its competitors. To start with, it doesn't come with a protective 'pouch'; instead HP has opted for a flip-over lid that is supposed to protect the screen. It does a good job – probably better than some of the pouches – but there are symbols on this lid to show what each button on the side of the Jornada does. If you then flip the lid over, to use the touch-screen you've got no guide markings.

The result is that when you're first getting to grips with the unit, you find yourself having to constantly flip the lid over and back.

Secondly, there are no 'hard' buttons for launching applications; instead HP has gone for touch-sensitive plastic icons below the screen. These function adequately, but we would have preferred the hard buttons.

It does have a 'hard' key linked to the Windows start button, so it's quick to access the start menu, but this also has a disadvantage. If you've got the Jornada in your pocket, it might accidentally turn itself on if it gets knocked about. This might be a minor issue, but battery life on PDAs is everything.

The stylus seems to have been copied from the Palm – it's almost identical to the one that comes with the Palm Series III – but sadly it's not as comfortable to use. It's stored on the right-hand side of the Jornada in a non-spring-loaded slot, so it has to be pulled out in the same way as on the Palms.

As with most CE devices, the 420 comes with a built-in speaker and mic. Sadly the latter is not one of the better ones we've used and produces quite poor recordings. The speaker isn't as loud as on some of the models on test, but the Jornada does come with a standard 3.5mm stereo headphone socket, so you can use pretty much any pair of headphones with it.

The power is supplied by a 1,500mAh lithium-ion battery pack,

that should last about four hours, which is well below average.

HP has also supplied a matching docking cradle, which has a lid to protect the connectors. When you put the Jornada in the docking cradle it's locked firmly in place, so there are also two release buttons. We're not sure why HP felt the device needed to be locked into the docking cradle, as it makes it slightly more awkward to dock and undock the device. On the plus side, both of the cables, the charger and the serial interface are removable so that they can be individually replaced if they get damaged.

Since this is an older device, synchronisation is taken care of by Windows CE Services 2.2, but you can download for free from HP's website. It also comes with a CD-ROM containing Trio Phone Manager 2.0, Outside In and HP PIM Translator.

The user guide is written clearly, with chapters covering just about everything that you would need to know about getting your Jornada up and running. HP has also supplied a pamphlet listing peripherals that are compatible with the 420 and can be bought from third-party vendors. These include Compact Flash memory cards, modem card and network cards.

However, if you do decide to buy one of these add-on cards, you will find that the 420's cover for the Compact Flash card slot is not as good as seen on some of the other models in this test. It's a small piece of plastic that is attached with a plastic ribbon to the unit and, once removed, it's very hard to get it back in place.

At the end of the day, Hewlett-Packard's Jornada has been superseded by other CE devices. However, if the company dropped the price it might be worth a look for those who are interested in buying their first Windows CE device. Unfortunately, you will almost certainly need to add a memory upgrade straight away.

LARS-GORAN NILSSON

DETAILS

PRICE £399 (£339.57 ex VAT)

CONTACT Hewlett-Packard
0990 47 47 47

www.hp.com

PROS Plenty of bundled software

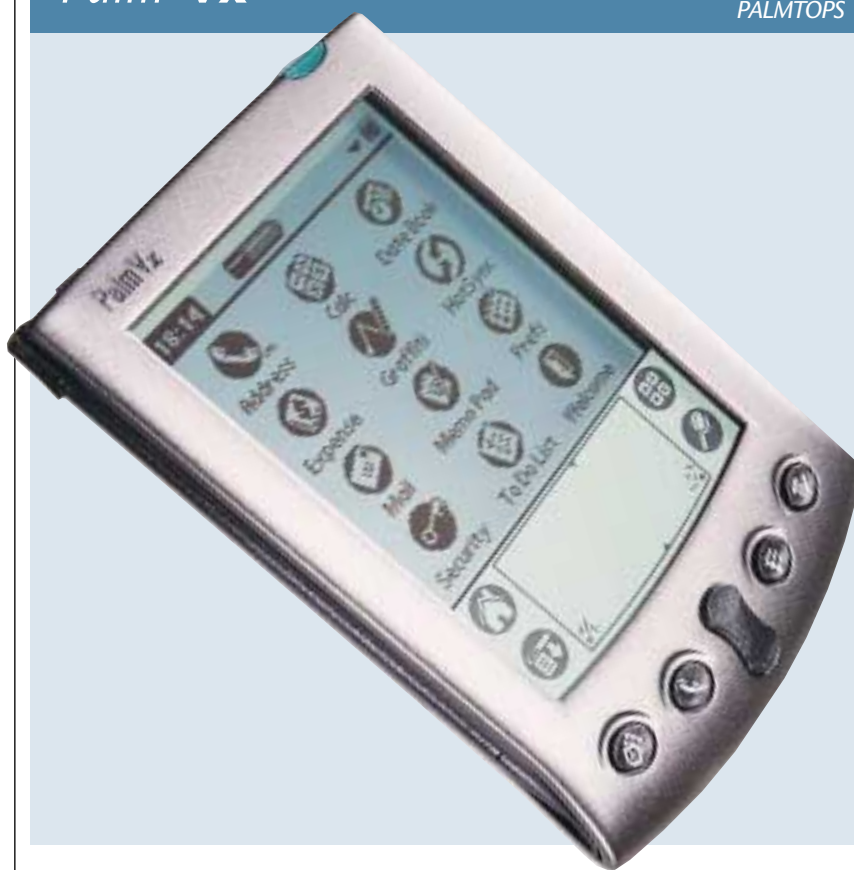
CONS Poor design, short battery life, poor performance, disappointing screen, small memory allotment

OVERALL Good in its day, the Jornada is now starting to show its age and unless HP decides to drop the price we can't recommend it

BUILD QUALITY ★★
PERFORMANCE ★★
VALUE FOR MONEY ★★
OVERALL RATING ★★

Palm Vx

PALMTOPS



IF THERE IS ONE ADVANTAGE the Palm range of products has over its Windows CE counterparts, it's got to be their size. The Palm Vx weighs in at just 113g and measures a mere 11.5 x 7.5 x 1cm – smaller than your average paper diary.

Looking at the device you'd be forgiven for mistaking it for its little brother, the Palm V, after all they're both kitted out in the same case. This isn't a bad thing, as the Palm V – in our opinion – had one of the best designs of all PDAs. The sleek metal case oozes style, yet fits snugly into the palm of your hand and a leather cover is included to protect the screen from damage.

When it comes to the stylus, 3Com, which owns Palm, has covered all the bases. Stylus slots are located on either side of the casing, so it suits both left and right-handed people. The stylus itself feels sturdy as it's made of metal. Its bottom can even be unscrewed to reveal a small pin and this can be used to hit the reset button if you happen to run into serious trouble.

The infra-red port still sits neatly at the top of the unit, and can be used to beam applications to other Palms or electronic business cards to other devices.

However, it's on the inside that this latest Palm really differs. Firstly the CPU has been upgraded to a 20MHz Motorola EZ Dragonball processor, and the memory has been boosted from 2MB to 8MB of DRAM. In lay terms,

this basically translates to a quicker machine with the opportunity to store more data, and download more applications. The biggest upgrade, perhaps, is actually on the software side. The Palm Vx comes with the new Palm OS 3.5, which offers a significant improvement over the previous version.

The first thing that we noticed was a slight graphical improvement. Items such as the power meter have been spruced up to look that little bit nicer, and the whole system feels a lot friendlier. But this is just the start of the improvements, as Palm has been working hard to fix some of those elements that were missing from the previous OS. Take, for example, the To Do List and Date Book applications. These are both able to store date-related items, such as appointments, but previously there was no way to view everything you needed to do in a single day. This function has now been added.

Also benefiting from the upgrade treatment are the connectivity options. The Hot Sync operation will now work over the infra-red link to another PC or handheld computer. This helps to make sure that multiple copies of items such as address books, and date books stay up to date. Still included in the package is the traditional method for syncing with a PC: the Hot Sync cradle. This connects to a PC via a serial port, and provides a method for recharging the Palm through the interface connector at the bottom of the device. Incidentally

this connector can also be used to connect the Palm to additional devices, such as a modem (for remote data transfer, not to browse the web) and a keyboard, if you're finding the Graffiti handwriting system too hard to get to grips with.

The rest of the interface remains much the same as the previous incarnation, with the stylus used on the touch-sensitive screen to select icons and navigate through the interface. The Home Page approach is still present, allowing users to group their applications together into categories such as Games and Utilities.

Data entry on the Palm Vx is still achieved through the Graffiti interface. A special area at the bottom of the screen is dedicated to inputting data. It's split into two boxes: one for text, and one for numbers. Characters and numbers then have to be drawn in a specific style for the Palm to recognise what you're writing. At first it takes a little getting used to, as some of the characters have to be formed in strange ways, but after a bit of practice it becomes reasonably easy to use. The only thing we have to say against Graffiti is that it does miss out on some of the more advanced features of newer PDAs, such as predictive text input.

The Palm desktop software comes with its own address and date book, which can be synced with Microsoft Outlook. However, if you're a Lotus user you'll have to splash out on some additional software called Easy Sync, which is provided by Lotus itself.

Overall, the Palm Vx is an excellent device. If you're after a portable organiser then it's the best available. It dumps all the frills – such as a colour screen and full-blown operating system – to provide you with just what's needed. If you already have a Palm V it's not really worth the upgrade, as you can download the new operating system for your existing machine, but if you're new to Palm, at only £50 more than the original V model, the Vx is well worth the extra cash.

DAVID LUDLOW

DETAILS

PRICE £352.50 (£299.99 ex VAT)**CONTACT** Palm Computing
020 7365 9820 www.palm.com**PROS** Fast, does the job well, looks good
CONS Graffiti isn't always easy to use, not suitable for those who need to input large amounts of data**OVERALL** If it's an organiser that you want, this is the PDA to buy

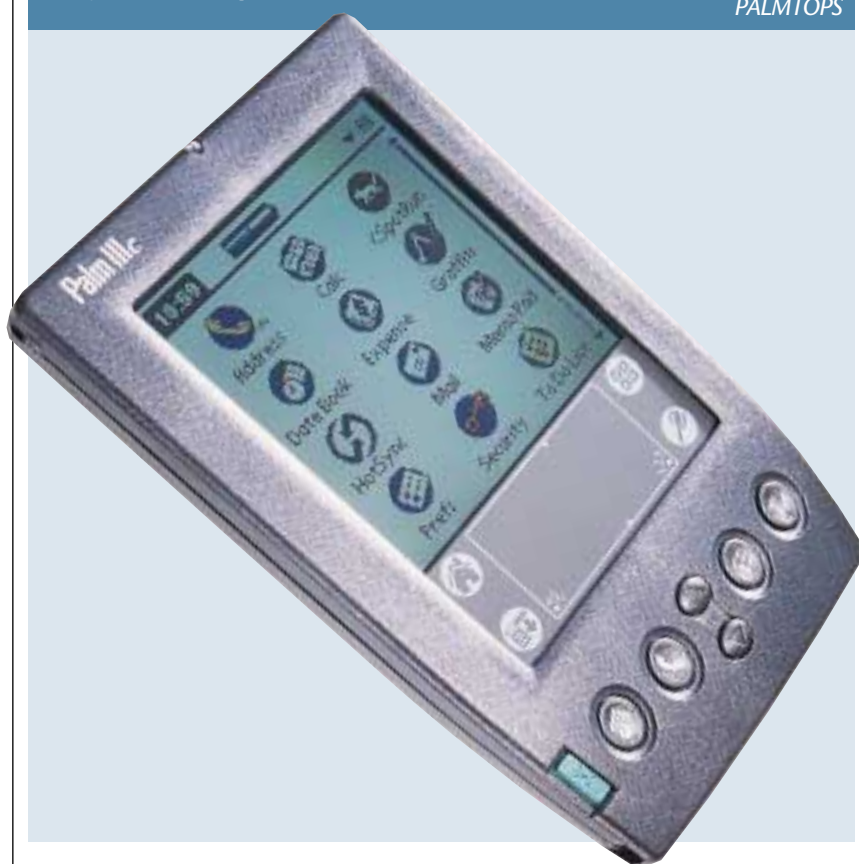
BUILD QUALITY
PERFORMANCE
VALUE FOR MONEY
OVERALL RATING

★★★★★
★★★★★
★★★★★
★★★★★



Palm IIIc

PALMTOPS



THE PALMPILOT WAS THE first real device to put palmtop computing on the map, so it's no real surprise that Palm would want to push the platform into the colour palmtop market. The question is, how will it fare against its multicolour rivals?

At first sight the Palm IIIc takes us back to the chunky days before the Palm V series – which immediately puts it at a disadvantage. The question that many people will have to answer for themselves is whether a colour screen is worth sacrificing the small form factor of the Palm V. Not only is the Palm IIIc physically bigger, but at a hefty 193g, it also weighs in at almost twice that of its featherweight sibling.

If you are willing to put up with the extra bulk, however, you will find an attractive PDA. Our first thought when we were given the Palm IIIc was why bother putting colour functionality on a device that had gone a long way towards showing us that we didn't need colour? But after a few days of use we really started to appreciate the colour screen, as it makes navigation of applications far easier and generally adds a lot to the pleasure of using the device.

On top of this, if the future of handheld devices involves them being used for multimedia applications, then a colour screen will become much more of a necessity.

Input, as with all Palm devices, is via the Graffiti software and although this is not quite as flexible as some of the

newer input methods offered on CE devices, it is still very good. The touch-screen is very smooth and responsive to the use of the stylus. This helps both writing recognition and general navigation around the device's interface.

One of the main concerns with colour PDAs is battery life. However, the Palm will last for up to two weeks of normal use after a full charge, which should be more than enough for most people's needs.

Like the Palm Vx, the IIIc comes loaded with the brand new Palm OS 3.5. As well as providing a generally better-looking interface for the user, this also includes some improved functionality – such as support for synchronisation via the IrDA port.

Speaking of the IrDA port, this remains at the very top of the device, which is our favourite home for it. Unfortunately, the screen's plastic protective lid actually flips upwards, and when this is open it obscures the IrDA port slightly. This doesn't have any effect on data transfers, but it is rather annoying.

Since Palm OS is a great deal more memory-efficient than Windows CE, the onboard 8MB of memory is actually pretty generous. It's enough to hold around 10,000 addresses, 3,000 notes, five years worth of appointments and a fair few extra applications. There's no way to upgrade the memory, but we doubt whether you would need to. The

efficiency of the Palm OS also means that the device feels very responsive when in use – there is an almost instant response to an application launch or a search.

We put the IIIc through its synchronisation paces by using Outlook as our Personal Information Manager. After installing the Palm software alongside Outlook, we then had to install a program called Pocket Mirror. This is supplied on CD-ROM with the device and allows the Palm to Hot Sync with Microsoft Outlook.

We were very impressed with how easy it was to set up Pocket Mirror, and once it is running it's as simple as hitting the Hot Sync button on the front of the cradle to have your PDA and PC synchronised. It has to be said that the standalone Palm Desktop software doesn't look as professional as Outlook, but because you can now use Pocket Mirror this is no longer such a big issue. However, if you're a Lotus user and you want to Sync to the company's products, then you'll have to purchase an additional piece of software called Easy Sync.

One of the nicest things about the Palm is its offline email function. Basically, after writing an email you simply click send, and the next time you sync the Palm with your desktop, the email will automatically be loaded into your email package and sent. You can buy a separate modem that allows you to send emails while you are on the move, but the offline email function will probably be enough for many users.

On the whole, the Palm IIIc is a good PDA that is easy to use, intuitive and fast. The problem is that the IIIc is so much bigger than Palm V. Given the choice we can't see that the colour screen is a significant enough advantage at the present time to justify both the large size and the high price tag.

DAVID RAE

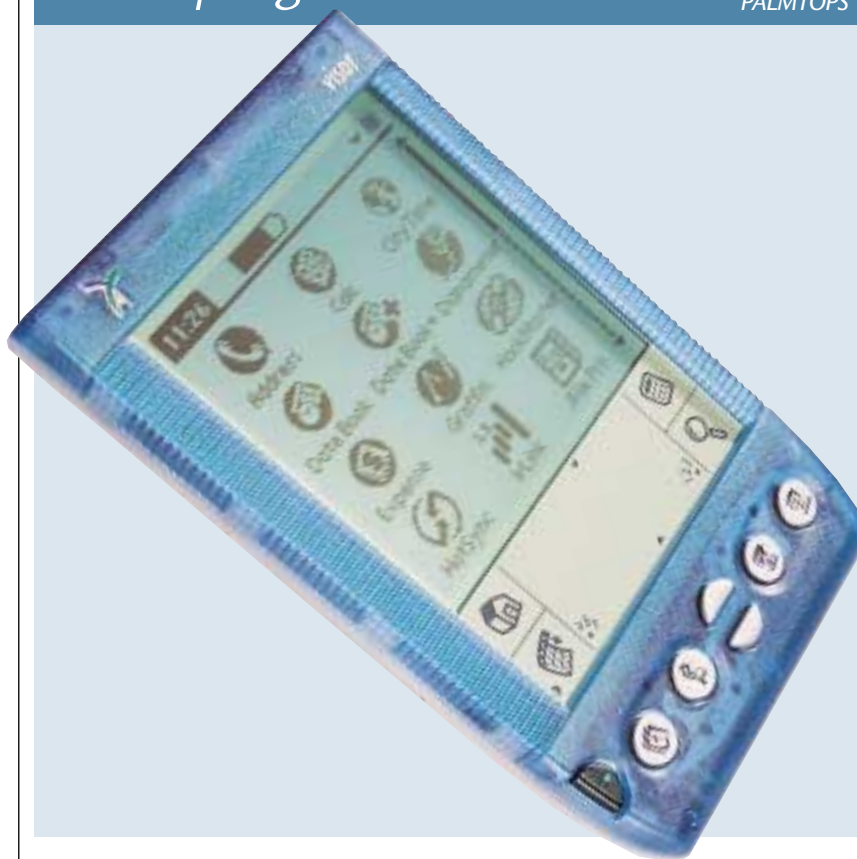
DETAILS

PRICE £349.99 (£297 ex VAT)**CONTACT** Palm Computing
020 7365 9820www.palm.com**PROS** Good colour screen, intuitive OS, very responsive**CONS** Considerably bulkier than the Palm V, a bit pricey, users who want a modem will have to buy one separately**OVERALL** The Palm IIIc is a respectable PDA, but unless you really want the colour screen you're better off with one of the other Palms

BUILD QUALITY ★★★★★
PERFORMANCE ★★★★★
VALUE FOR MONEY ★★★★★
OVERALL RATING ★★★★★

Handspring Visor Deluxe

PALMTOPS



THERE'S LITTLE DOUBT that Palm currently holds top place in the market for pocket organisers, but since it has allowed other makers to license its operating system, there should be plenty of alternatives hitting the market that share the same ease of use.

The first of these is the Visor from Handspring. The company was set up by the original creators of the Palm, which accounts for the tremendous interest initially surrounding the device's launch.

The Visor, which will be available in the UK shortly, comes in three versions – Visor Solo, with 2MB of memory and no cradle, Visor, which has a cradle thrown in, and Visor Deluxe, which has 8MB of memory and also includes the cradle.

Outwardly, the Visors all look pretty similar to 3Com's Palm III models, though the buttons feel more substantial, and the Deluxe model comes in a choice of translucent colours if you don't want plain old grey.

Turn the unit over, however, and you'll start to find a few differences. First, the connector on the bottom uses USB, rather than the serial port. That makes for faster hot-syncing and, of course, compatibility issues with software that uses the serial port.

Handspring has moved the infra-red port to the left side of the case, rather than leaving it at the top of the unit. This is because the top is now home to a plastic hatch about 1.5in long, that slides off to reveal the Springboard slot. It is this slot that's the key difference

between the Visor and other organisers.

Springboard is touted as a completely plug-and-play expansion system. There are a few modules already available, including memory expansion and a golf game, with additions such as an MP3 player, GPS receiver, Bluetooth and modem planned. Springboard modules don't require you to install any software yourself – the modules add whatever they need, and remove it cleanly when you unplug them. Some fit within the confines of the slot, while others, like InnoGear's forthcoming MP3 player, have a row of buttons that sits along the top of the Visor.

Being a new product, the range of modules is limited at the moment, but if the Springboard module format takes off, it'll make the potential of the Visor enormous. One small box, with dozens of functions, hot-pluggable and no software installation – it's a gadget lover's dream. But for now, you'll just have to wait to see which modules ship.

For most people, the real interest is in the Visor itself. It comes with a CD featuring software for both Windows and Mac, as long as you have USB (a serial cradle is optional, for around £15). It's largely the same as Palm's software, but modified to support USB synchronisation.

The software on the Visor itself is PalmOS 3.1H. That means it lacks some of the features found in 3Com's 3.3 or 3.5, like support for colour screens, but Handspring has added support for the

Euro currency, and the USB port, so for most purposes it'll be perfectly functional. Like some of the cheaper 3Com models, the Visor doesn't use Flash memory, so you can't upgrade the OS with anything more than patch files.

A few other changes under the hood give you a choice of two different date book programs – the standard one, or Datebook+, which has weekly and fortnightly views, and can show your To Do list on the current page as well. There's also a world clock, if you like that sort of thing. In fact, Palm users can download a similar date book from the net, called Datebk3.

Generally, you won't experience any problems using the Visor with software written for the Palm models, though there are some slight incompatibilities. There's a list on the VisorCentral site, but many applications are being patched, so in the long term, it won't be too much of an issue. We did find a few problems; TDK's GlobalPulse software modem, for example, can't be used with the Nokia 6150 phone, because it comes with a serial lead, and the USB port on the Visor means it can't be used. Also, 3Com's Enhanced Infra-Red Update isn't compatible with the Visor. If you want to connect the Visor to a phone with infra-red, the phone will need a real modem built in, and you should download IrLink to get a reliable connection. Some programs that use the infra-red port for things like remote control have problems with the Visor too.

However, these are relatively minor niggles, and not that surprising with a brand new product. For everyday use, the Visor works just as well as a Palm, and the updated Datebook makes it much more flexible. Add the fact that it's cheaper – though less so after Palm's recent price cuts – than a Palm III with the same 8MB memory, has faster synchronisation thanks to USB, and virtually unlimited expansion thanks to Springboard, and the Handspring Visor Deluxe is both a great buy and an indispensable tool.

NIGEL WHITFIELD

DETAILS

PRICE \$249 (UK pricing to be announced)

CONTACT 001 888 565 9393

www.handspring.com

PROS Great value for money, lots of potential for expansion

CONS No Flash memory for OS upgrades, some older Palm software may have compatibility problems

OVERALL A worthy competitor to the Palm products. The expansion slot promises to make it more than a PDA

BUILD QUALITY ★★★★★
PERFORMANCE ★★★★★
VALUE FOR MONEY ★★★★★
OVERALL RATING ★★★★★



Psion Revo

HANDHELDS



THE REVO IS EFFECTIVELY a cut-down version of the Series 5mx (see opposite) and replaces the 3, 3a and 3c models. Its focus is somewhat different to that of its fully-featured sibling, however. While the 5mx can be legitimately viewed as a handheld for the worker on the move, the Revo is aimed at those who want to organise their life. The spreadsheet and word processor software of the Series 5mx are still there, but they have been relegated to the Extras menu to make way for such applications as phone organisers and SMS messaging, which have found places on the primary toolbar for instant access.

Turning on the Revo opens the Today view – an interface that displays your appointments and tasks at a glance, as well as providing information on memory and battery usage. If you prefer Psion's traditional file view, you can choose to switch. However, if you stick with it, you'll soon realise that the Today view often makes it possible for you to see all the information you need at a single glance, without having to launch any applications. It does this by gathering together your current entries from the EPOC Agenda.

As far as applications for the Revo are concerned, there is a wide range of software being developed by third-party companies, even extending as far as a ZX Spectrum emulator, so you can run classic 1980s games.

The ROM-based email package is fully

featured, but the web browser is fairly basic, extending only to HTML 3.2, cookies and frames. It's enough to keep you in touch on the move, though, and considering the small screen, you probably wouldn't want to be accessing complex, applet-heavy sites anyway. Pages can be saved or cached for offline viewing, which is a great money saver if you're on the move and accessing through a hotel phone line. Unfortunately, there's no built-in modem, but the IrDA port on the back panel lets you connect to Psion Dacom's travel modem or a data-compatible mobile phone.

In terms of portability, the Revo is perfect. At only 157 x 79 x 18mm and weighing just 200g, it fits neatly into a suit pocket without ruining the lining. However, its diminutive size should not be taken to be an indication of its abilities. At its core is an ARM processor running at 36MHz that, while much slower than many Windows CE machines, is more than enough to run Symbian's conservative OS and applications. Memory extends to 8MB of RAM, which provides plenty of room for 10 years worth of appointments, notes, lists and addresses. Unlike the 5mx, there is no slot to upgrade using Compact Flash memory. A further 8MB of ROM is dedicated to application storage. Applications can be closed down when you've finished using them, which keeps memory free and available for future use.

The screen is by far the best to be

found on any PDA, easily matching the Palm Vx. Its 480 x 160 resolution display has a 0.24mm pixel pitch, making it as sharp as a good CRT monitor. Our only complaint concerning the screen is that it has no backlight, so if you're prone to sudden bouts of midnight inspiration you may find this an irritation, although it's not bad in low light.

The keyboard is not quite up to the standard of the 5mx but is still surprisingly usable, considering how flat it looks. The keys are only 12.5mm square, but this is understandable, because the Revo is built more as an organiser than a word processor. The stylus is a little flimsy, too, but it keeps the whole unit's weight down.

Batteries are built in – and if you dismantled the unit you'd find a couple of NiMH (nickel metal hydride) AAA cells lurking inside, but it's best just to take our word for it. These batteries are quoted to last 14 hours in normal use, which equates to about a week for the average user. Ideally, we'd have preferred to have seen lithium-ion batteries, as these have no memory and so will not suffer from top-up charging, which is what will happen if you dock your Revo with the power plugged in on a daily basis. Unless NiMH batteries are completely drained on a periodic basis (and preferably every time they are used) they slowly start to lose their ability to retain power, and so the usable period between charges will shorten. The docking station is also used to synchronise with your PC and transfer files. This is far easier than plugging in a lead, as is the method for getting the PC and a Series 5mx to talk, but it does mean you have to find somewhere to keep it near your PC. This, as with the 5mx, is a serial connection rather than USB, so it's not the fastest link on the planet, but EPOC files are fairly small so the wait is not unbearable.

Stepping down from a Series 5 or 5mx to a Revo might initially be a bit of a shock, but the more you use it the more you come to love it.

NIK RAWLINSON

DETAILS

PRICE £299.95 (£255.28 ex VAT)

CONTACT Psion 0990 143 050

www.pSION.com

PROS Small, light, great screen, good software base

CONS NiMH batteries, no internal modem

OVERALL If you want to organise your life and send a few emails on the move, the Revo should suit you down to the ground

BUILD QUALITY	★★★★★
PERFORMANCE	★★★★★
VALUE FOR MONEY	★★★★★
OVERALL RATING	★★★★★

Psion Series 5mx

HANDHELDS



THE 5MX SITS ON TOP of a tall pile of handheld products from British company Psion. It's less powerful than the Series 7, but with its larger form factor that unit is more of a sub-notebook than a PDA anyway. Steering clear of Windows CE, the Series 5mx uses EPOC instead, formerly developed in-house but now spun off to the safe hands of a separate company – Symbian. This is a crafty move, as it makes it far more attractive to a wide range of third-party hardware developers. One such developer is Oregon Scientific, which implemented the OS within its Osaris machine, but expect further development in the handheld computing and telephony arenas soon.

If there's one aspect of the 5mx (and its predecessor the Series 5) that everyone seems to agree is a good thing, it's the keyboard. Measuring 165 x 68mm at its furthest extremities, it boasts keys of a generous 14mm square. These have a satisfying travel and it doesn't take long to become experienced enough to achieve a fairly impressive typing speed, without miskeying. Not surprisingly this feature has been patented. Windows CE devices of a similar form factor have so far failed to come up with anything to rival it at the present time.

What the Psion devices do not feature, however, is any form of built-in modem. Instead, users are expected to send emails either by first passing them

through the desktop PC, or by positioning a data-compatible mobile phone with infra-red capabilities next to the infra-red port of the Psion. Connecting through a mobile phone is not only more expensive than using a built-in modem, but the chances are that if your phone is more than a year or so old, it will also not be data-compatible and you'll get nowhere. Something else to bear in mind is that while a built-in modem will work in many countries around the world, most mobile phones will be restricted to use in a certain number of countries. Many mobiles sold in the UK, for example, will not work in the US, which may be a problem for some travellers.

Dacom, Psion's mobile-networking company, now produces a wireless modem for use with some Nokia and Ericsson GSM phones or a regular PSTN connection. Compatible with the Series 5, Series 5mx, Series 7 and Revo, this does solve the problem to some extent, but the missing internal modem is still a point of contention for many users. Almost all horizontal Windows CE devices, on the other hand, have a modem built in. A copy of EPOC Runtime for Java is included on the bundled software CD, and this will upgrade the built-in browser to access Java-enhanced websites.

A quick tour around the edges of the machine reveals a microphone and buttons for recording and playing audio, the stylus receptacle, power socket and

IrDA-compliant port on the back – perfectly placed for data swapping. There's also a small door covering the home for a Compact Flash module. The screen stretches to 640 x 240 pixels in 16 shades of grey and is impressive under almost any light, whether indoors or out, although not quite matching up to that found on the Revo. This screen is both touch-sensitive and, if required, backlit. It weighs 354g with its two AA batteries installed, and when the clamshell is shut measures 170 x 90 x 23mm, so it's neither bulky nor particularly heavy.

Internally, there's a 32bit RISC-based ARM processor running at 36MHz and 16MB of RAM. Combined, these help it speed along with no discernable lag between issuing commands and seeing the results. It's a tidy OS, too, allowing you to close applications after use, helping you operate with the maximum amount of RAM available at any time. Psion quotes a battery life of around a month in normal use, and this was confirmed in our tests.

For organisation, the 5mx comes with Psion's Agenda. Many users cite this as the best diary module on the market, and it's easy to see why. Looking and acting like a standard paper organiser it is easy to use and can even include sketches and images within its entries. The range of other third-party application software available for the 5mx is vast. This is helped primarily by the fact that it uses a programming language that has been in existence for the past 15 years.

The 5mx ships with PsiWin, Psion's Windows connection software, making it compatible with a wide range of applications, including Outlook 97/98 and above, and Lotus Organiser 97. It can also export its word processor files for use in all of the most popular office suites. It connects to the PC's serial port using a supplied cable, but while this is easy, USB would have been preferable in terms of speed.

NIK RAWLINSON

DETAILS

PRICE £429.95 (£365.91 ex VAT)

CONTACT Psion
0990 143050

www.pSION.com

PROS Excellent keyboard, extensive range of software available, great price

CONS No built-in modem

OVERALL If typing on a hand-held device is important, then the Series 5mx is a sensible choice. Its applications are intuitive, and it benefits from a large developer community

BUILD QUALITY ★★★★★
PERFORMANCE ★★★★★
VALUE FOR MONEY ★★★★★
OVERALL RATING ★★★★★

★★★★★
★★★★★
★★★★★
★★★★★



Ericsson MC218

HANDHELDS



AROUND THE TIME of the CeBit trade show last year there was lots of speculation about new devices that Psion was tipped to introduce at the event. Unfortunately the rumours turned out to be groundless and many people were disappointed that a successor to the 5 was not on display. Showgoers would, however, have had a chance to play with Ericsson's MC218 organiser.

The MC218 was widely rumoured to be the same spec as the forthcoming 5mx and in hardware terms this has turned out to be true. Ericsson has made some subtle changes to the appearance of the unit to differentiate it from the 5mx. The MC218 is blue whereas the 5mx is silver and a different font and icons have been used for the keyboard and display. Nevertheless, under the hood you'll find the same ARM processor ticking away at 36MHz and pretty much the same EPOC release 5 operating system (although the Ericsson uses the newer revision 256, compared to revision 250 used on the 5mx). The main difference is that you get more bundled software with the MC218, and it also comes with a clip-on IrDA modem for compatible Ericsson phones.

Running through the silkscreen icons in order gives: Desktop, Contacts, Calendar, My Phone, Message, Internet, Word, Sheet and Extras. All of these, bar My Phone, are found on the 5mx, some under different names. Developed by Ericsson, My Phone is a utility to organise your mobile's phonebook,

similar to Purple Software's Phone on the Revo. Ideally Ericsson would rather you used its own application with an Ericsson phone, although limited testing showed it would at least talk to a Nokia 7110 and download the SIM entries.

Ericsson has also bundled the D127 clip-on IrDA modem for compatible Ericsson mobile phones to help you get the devices talking to each other. There's even a voucher to allow you to swap for a D128 if you need that model instead. The IrDA modem and software means that it's easy to manage your mobile's phone book and change its settings, and you get the added bonus of being able to compose your very own melody rings (because comedy melodies just aren't annoying enough already...)

Moving onto the Extras bar, the main additions to the usual line-up are Postcard and Setup. Postcard is a utility that allows those blessed with an IrDA-enabled digital camera to capture and then send digital postcards. You can also import images as files from Flash media if your camera doesn't have an IrDA port. The message is transferred to your outbox ready to send next time you connect to the Internet.

Setup allows you to quickly set up an Internet account through Ericsson Mobile Internet – the company's own Internet service. The wizard is incredibly simple and we were on the net in a matter of minutes, the only time we've experienced a setup this seamless was using the iMac, which goes to show how

easy the configuration is. If you use Ericsson's free trial connection then you're limited pretty much to its mobile site and you can't browse the whole of the Internet. For those who have an account set up with another provider, you can plug your details into the wizard and it will happily go away and automatically set it up for you.

On the CD is a beta of Ericsson's WAP browser for EPOC with a more recent version available from the website. Psion 5mx users shouldn't get too excited by this though, as Ericsson has decided, somewhat misguidedly, that any software it develops for EPOC should only be usable by MC218 users. If you've got a 5mx the software will refuse to run. This is a shame since it creates a distinction between EPOC users, fragmenting the platform when it really needs to be united to stand up against Palm OS and Windows CE.

There are also two Windows-based applications that, again, only work with the MC218 platform. My Pocket allows simple synchronisation between your PC and MC218. Drop a document in your 'pocket' and then every time you connect up to your PC any changes that have been made to the document will be updated on both sides – which is very neat.

The second program is called Offline Web. This allows you to download lots of web pages on the PC and then transfer them to the MC218 for reading, say, on the train.

With an RRP of £399.99 the MC218 including the IrDA modem (worth £79.99 if bought separately) comes in nearly £30 cheaper than the Series 5mx. A quick browse through Widget's website (www.widget.co.uk) brings back £399.98 for the MC218 and £399.99 for the 5mx so you're still saving a penny. Even if you just chuck the modem in the bin the Ericsson works out better value due to the extra software bundled with the device.

WILL HEAD

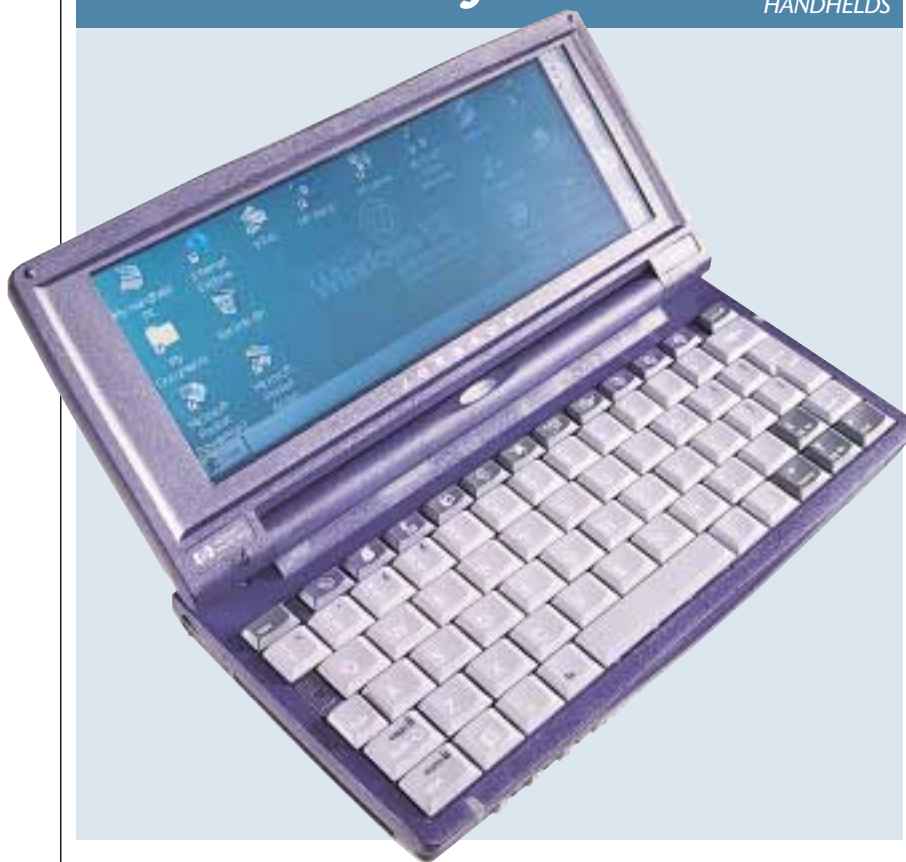


DETAILS

PRICE £399.99 (£340.42 ex VAT)**CONTACT** Ericsson 0990 237 237www.ericsson.co.uk**PROS** Same design and hardware as a Series 5mx. Extra software, cheaper**CONS** None to speak of**OVERALL** If you've got a compatible Ericsson phone then the MC218 is a superb buy. If you haven't you can chuck the modem in the bin, enjoy the extra software and save a couple of quid on the price of a Psion 5mx

BUILD QUALITY ★★★★★
PERFORMANCE ★★★★★
VALUE FOR MONEY ★★★★★
OVERALL RATING ★★★★★

Hewlett-Packard Jornada 690 HANDHELDS



AS CE DEVICES GO, this isn't a bad example, but the Jornada 690 is never going to be the most desirable of units. The first thing that hit us about the 690 was its size – it's quite bulky compared to some of the other models on test here. It's also quite heavy, weighing in at a hefty 0.53kg once the standard lithium-ion battery is attached to the slot at the rear. It's not a device you can just throw in your shirt pocket. Having said that, though, it does have a lot of extra features that are not present on other, lighter models, and this will make it an attractive option for some users.

Turn the unit on and you'll initially be impressed with its screen. At 6.5in, it is large enough for everyday use. The screen is a CSTN display with a resolution of 640 x 240, using 65,536 colours – which is adequate for all but the most demanding tasks.

Indoors, the screen is bright and clear, but if you take the unit outside it becomes much more difficult to read, which can be annoying. Nevertheless there are some pre-programmed settings provided, so that when you change locations, you don't have to change each of the brightness and contrast settings individually. You can override these presets, though, and specify your own.

The keyboard is not the worst we've seen by any stretch of the imagination, but that's not really saying all that much as PDA keyboards are often a poor compromise. The keys themselves feel

very sturdy and are responsive to the touch, but they are extremely small. This makes touch-typing nigh on impossible. As well as the usual qwerty layout, you also get 11 hot keys, which act as shortcuts to the installed programs.

Another neat timesaving addition is the four hard icons to the right of the display. These allow you to change system settings such as volume and display controls. Mounted on the front of the case, you'll find three audio controls for recording and playing back memos. An audio lock-slider is located next to these and helps to stop you accidentally entering record or play mode. The built-in microphone and speakers give relatively good recording and playback quality, but they're nothing special.

A nifty little stylus is provided for use on the touch-screen. This fits neatly into a spring-loaded slot on the front of the Jornada. The touch-screen's sensitivity is very good, and it's easy to select items on the display and perform drag-and-drop operations.

Under the bonnet, the Jornada 690 is powered by the Hitachi SH3 processor running at 133MHz. This makes it a fairly responsive machine, but the battery life does suffer a bit – coming in at around eight hours.

The 690 comes with 32MB of SDRAM as standard – a healthy amount for a Windows CE machine. If you want to opt for a model with less memory, then you could always choose the

Jornada 680 series. These PDAs come with 16MB of memory as standard, but cost less than their successors.

One real plus point for the Jornada 690 is the number of ports it has. On the left of the unit you'll find a Type II PC Card slot. Next to this you'll find the IrDA port. We would have preferred this to be placed at the rear, but at least it has been included. On the underside of the unit, you'll find a slightly cumbersome flap that opens to accept Type I Compact Flash cards.

At the rear of the unit, you'll find a proprietary socket that acts as a serial port when the supplied cable is attached. On the right-hand side is a modem port, and this is a great addition to the Jornada, which makes it a cinch to browse the Internet and check up on your email.

The supplied web browser is, naturally, Microsoft Pocket Internet Explorer, since this is a CE machine we're talking about. Pocket Outlook is used to perform all the functions of an email client, contact management program and calendar. You'll also find pocket Access, Excel, PowerPoint and Word. These work quite well as cut-down versions of the popular desktop programs, and you can synchronise the Jornada with Microsoft Outlook, Schedule+ and Exchange.

Included in the box, you'll also find the docking cradle, but this doesn't add any extra functionality to the Jornada as such. It has got a DC port and the proprietary slot for the serial cable at the rear – once you place the unit in the cradle it will start to charge and you can also connect it to your PC. Both of these ports are present on the PDA itself, but you might find them easier to manage through the docking cradle.

Overall, the Jornada 690 will have some appeal for those who value a unit with PC slots, Compact Flash card slots, and a modem. Ultimately, though, we found it to be a bit too unwieldy and expensive when compared to the other models on test here.

JASON JENKINS

DETAILS

PRICE £755 (£642 ex VAT)

CONTACT 0990 47 47 47

www.hp.com

PROS Lots of software, modem, PC Card and Compact Flash slots included

CONS Display could be better in sunlight, expensive, bulky

OVERALL Its features will appeal to certain types of users, but it doesn't stand out in this company

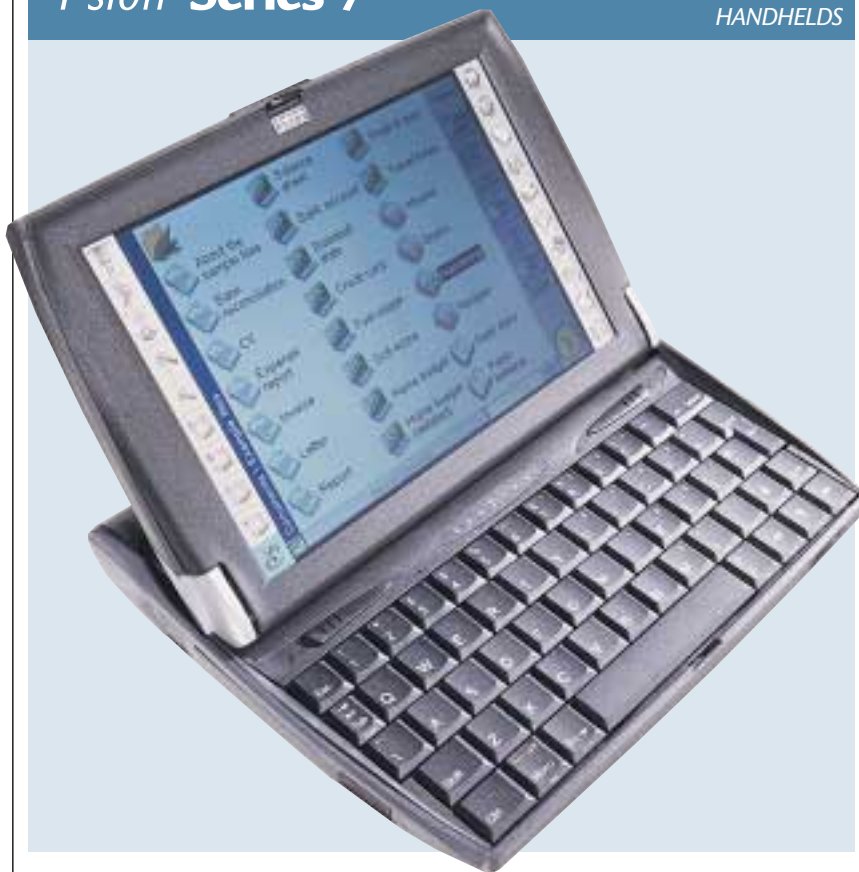
BUILD QUALITY ★★★★★
PERFORMANCE ★★★★★
VALUE FOR MONEY ★★★★★
OVERALL RATING ★★★★★

★★★★★
 ★★★★★
 ★★★★★
 ★★★★★



Psion Series 7

HANDHELDS



TO USERS OF THE LOWLY Series 5 (and even those with a 5mx) the Series 7 screams bigger, better, faster, more. However, despite its many obvious advantages the first thing to note is that it is in no way as portable as the Series 5, which can just about fit in to your jeans pocket.

The Series 7 started life as a Psion Enterprise project codenamed Jedi: a mobile computer aimed solely at the corporate user. During its development wild rumours abounded within the Psion community about the device, but when Psion enthusiasts asked when they could buy the machine they were flatly told they couldn't. Since Jedi, later renamed the Netbook, was designed for the corporate market, interested parties were expected to buy in bulk – and no matter how good the device seemed no-one wanted a couple of hundred of them. Campaigns then emerged from the likes of online EPOC sites 5Alive (now incorporated into pdanews.tucows.com) and Foxpop (www.foxpop.ndirect.co.uk). These must have had some effect since in late summer 1999 Psion unveiled a consumer version of the Netbook called the Series 7.

The Series 7, however, is not the same as the superior (albeit more expensive) Netbook. The main differences are a slower processor – a StrongARM SA1100 running at 133MHz versus a 190MHz StrongARM chip in the NetBook – and 16MB of

RAM as opposed to either 32MB or 64MB.

Although the Series 7's 16MB of RAM initially sounds paltry in comparison to a fully loaded 64MB Netbook, there is a fundamental difference in their architecture. The Netbook stores the OS in RAM, whereas the Series 7 has it hardcoded into ROM.

Psion has a good reputation for design and the Series 7 is no exception to this. The unit has a clamshell design where, when you open the machine, the base of the screen slides forwards to ensure that the machine remains stable and doesn't topple over backwards when you tap on the display with the stylus.

Once open, the first thing that strikes you about the Series 7 is EPOC in glorious colour thanks to the 7.7in STN 640 x 480 resolution LCD display. The addition of colour to EPOC seems to have been a bit of a rush job, with some menu bars and other items still noticeably harking back to the old grey days but, on the whole, colour has been used effectively.

Also benefiting from the unit's increase in size is the keyboard which is a joy to use. One downside for those moving up from a Series 5, or planning to use both, is that the position of the 'Menu' and 'Fn' keys has been switched. This is slightly annoying, but Psion seems to make a habit of switching around key placement. The 'Ctrl' and 'Fn' keys on the Series 5 took the place

of the 'Psion' and 'Menu' keys on the Series 3.

The top and rear parts of the machine are encased in leather which does give it a fairly stately feel, although it may not suit everyone – especially those who feel cows shouldn't suffer just to make a PDA look cool.

On the left-hand side of the unit you'll find a standard Psion RS232 connector and a CF-II tray. Good news for those with large storage demands is that the tray will happily accept IBM's spectacular Microdrive – seeing 340MB of free space on an EPOC machine was quite a shock, but we soon began to feel comfortable with it! Unfortunately, since the mechanism is a tray and not a slot, you can't take advantage of the CF-II modems and network adaptors that are increasingly appearing on the market, but getting drivers for EPOC would be problematic anyway, to say the least.

The right-hand side of the machine plays host to a Type II PC Card slot, but you'll only find drivers currently available for Psion Dacom's range of modem cards, which is a shame. Towards the rear you'll also find a power socket for the supplied mains adaptor. A lithium-ion battery pack provides power when you're on the move and, according to Psion, provides 8.5 hours' typical usage between recharges. Also on the rear of the machine is a fast IrDA port supporting connections of up to 4Mbps/sec.

On the whole, the Series 7 is a stylish machine that would make a worthy notebook replacement for those who only need to do a little bit of word processing, use a spreadsheet on the move and want to organise their life with the built-in Agenda software. The lack of a modem is disappointing, but if you've got a suitably equipped IR port on your mobile phone you could always use that.

WILL HEAD

DETAILS

PRICE £699.95 (£595.70 ex VAT)

CONTACT Psion 0990 143 050

www.pSION.com

PROS Terrific screen and keyboard, faster processor

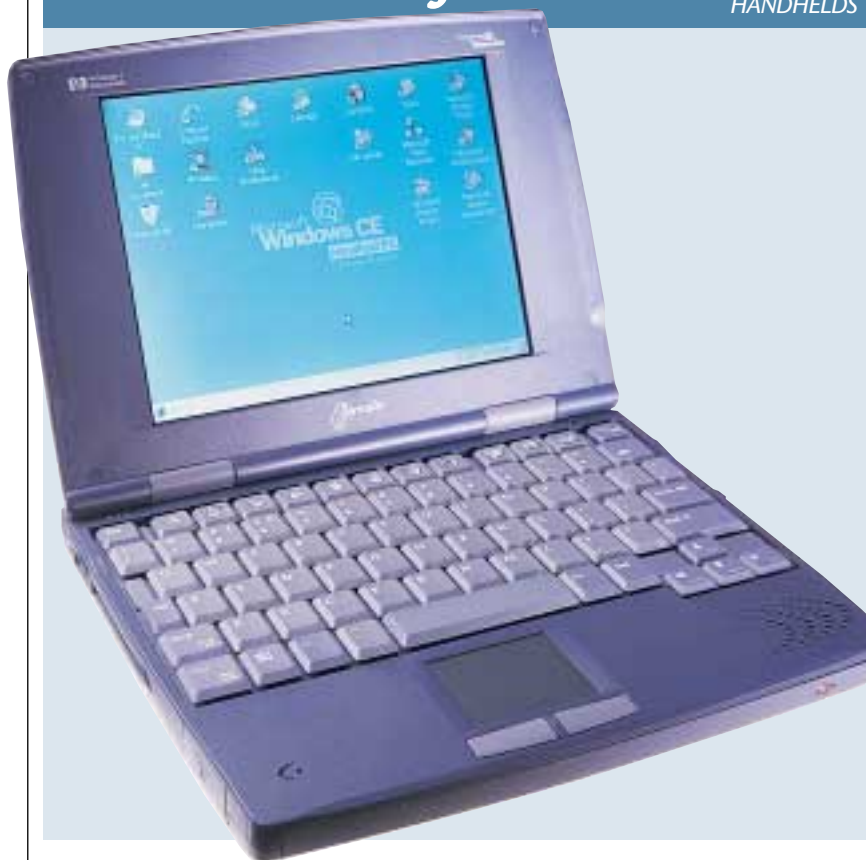
CONS CFII port is a tray rather than a slot, currently only Psion Dacom PC Cards have the relevant drivers

OVERALL If you are looking for a small notebook replacement then the Series 7 is ideal. EPOC shines on a full-colour screen and the machine retains Psion's inimitable design style. At nearly £700 it may not suit everyone's budget, but you do get a quality machine for the price

BUILD QUALITY
PERFORMANCE
VALUE FOR MONEY
OVERALL RATING

★★★★
★★★★
★★★★
★★★★

Hewlett-Packard Jornada 820 HANDHELDS



IT'S VERY RARE THAT you get a piece of kit in for review that makes you re-evaluate what you want from a computer, but the Jornada 820 is one of those beasts.

The first thing to mention here is that the 820 is pushing the limits of what you can actually call a PDA. It's more of a sub-notebook – but then again it runs Windows CE, which is part of the attraction of this device. It brings together the best bits of both worlds, but more on that later.

The 820 is the top-of-the-range device in Hewlett-Packard's CE range of PDAs. With dimensions of 246 x 178 x 33mm and weighing in at 1.1kg, it's a lot larger than any of the Windows CE handheld devices on test here, but it is still relatively diminutive when you compare it to a full notebook.

One of the benefits of its larger size is that there is very little compromise when it comes to inputting data. You are presented with an excellent keyboard, that is responsive and has plenty of travel. The good news for those who expect to do a lot of typing is that it is comfortable to use for extended periods. Just below the keyboard you'll find a touchpad. This is slightly smaller than those you'll find on a notebook, but because the 820's screen isn't as big as that of a laptop, you don't need as much surface areas to navigate the screen.

The only problem we found with the keyboard is that it doesn't tilt, so when

using the device on a flat surface your hands are at an uncomfortable angle. Nevertheless, most people are likely to use the 820 on the move, where you are more likely to be resting the unit on your knees and this gives you a better typing angle anyway.

The other advantage of the larger form factor is that HP can afford to kit out the device with a pretty impressive colour screen. While the CSTN technology used is a little outdated, the screen is bright, displays vibrant colour and offers a very respectable resolution of 640 x 480. The viewing angle, while not amazing, is easily good enough for everyday use. If you are working at a desk you can even plug the device into a standard desktop monitor via the VGA port at the rear of the unit.

If you do venture around the back of the unit, you'll also find a USB connector nestling next to the VGA port. We tried plugging a Microsoft USB Intellimouse into this and it worked first time – without even pausing to load a driver. This was a true demonstration of plug and play, but then again there aren't many other USB devices that come with Windows CE drivers. HP says that Y-E Data's Flashbuster-U floppy drive will also work, but we haven't tested this. It's a great shame that you can't make use of the USB connection to transfer files between the 820 and a desktop PC; instead you are stuck with the slower serial option.

To the right of the USB port you'll

find the telephone connector for the modem, which is a 56K model. While the modem's performance is not wonderful, it is still a welcome addition. If you feel you can do without the modem, you could always opt for the 820e model.

On the rear you'll also find a 4Mbps/sec IrDA port, which is a nice location for it, as it means you can leave another device communicating with the 820 while you type away at the front of the unit.

Other slots and ports can be found on either side of the device. The right side is home to the Compact Flash card slot, the AC port and the serial port, while the opposite side sports the PC Card slot and the battery backup compartment.

The main battery slot is underneath the unit much like a laptop battery. The only difference is that with the 820 you get a whopping 10 hours of battery life, due to the lack of moving parts and general efficiency of the device.

Syncing the device to a PC is simply a matter of loading up Windows CE Service 2.2 on the PC and making sure both devices are set to communicate at the same speed. We had no problem transferring contacts and appointments between the device and Outlook 2000.

As far as software is concerned, you get the full Pocket office suite. HP has also included some extra utilities, such as settings applets for the VGA port and the touchpad. There are also some extras on the CD-ROM bundled with the device, such as software to allow you to print directly from the 820 and Outside In email attachment viewing software from Inso.

All in all, the Jornada is a joy to use. The keyboard is touch-typing friendly, the screen looks great and the supplied applications take care of all your daily needs. If you were thinking of buying a laptop, but wanted something a bit smaller with long battery life, the 820 is the machine to go for.

NIALL MAGENNIS



DETAILS

PRICE £805 (£685 ex VAT)

CONTACT Hewlett-Packard
0990 474 747 www.hp.com

PROS Great battery life, a serious competitor to a notebook, the best format for Windows CE, excellent keyboard
CONS Modem performance isn't wonderful, the pointer tends to get lost on the CSTN display when you move it at high speed

OVERALL An excellent machine that is a joy to use

BUILD QUALITY	★★★★★
PERFORMANCE	★★★★★
VALUE FOR MONEY	★★★★★
OVERALL RATING	★★★★★



Windows CE superseded by PocketPC

Reading recent news about Windows CE, you can't help wondering if Microsoft feels like a kid in a playground who has suddenly becomes really unpopular overnight and doesn't know why.

Philips, Everex, Sharp and even IBM were all firm backers of Win CE but have now thrown in the towel after suffering heavy bouts of consumer apathy towards their devices.

Microsoft spent many hours in marketing seminars and press briefings explaining how CE was just like Windows, except you could carry it around in your

pocket. The problem was that when consumers got hold of the product they agreed wholeheartedly: CE crashed just as often as Windows, you needed loads of RAM to run it and it ate processing power for breakfast.

However, Microsoft was never going to back out of a market that it believes could grow to be bigger than the desktop market over the next few years. The company is trying again with a new version of the OS that was codenamed Rapier, but now goes under the more consumer-friendly moniker of PocketPC (Microsoft was, of course, successfully

stopped from using the name PalmPC following a court battle that was instigated by Palm).

So what's new in PocketPC? Ironically, prototype devices shown to journalists lacked the 'Start' button, and instead operate in a similar way to units based on Palm OS 3.5. There is a Windows icon located at the top left-hand side of the screen, which, when clicked on, gives the user access to a drop-down menu and a series of icons which require only a single click to launch applications such as the mail and calendar programs.

Microsoft has also taken a

browser approach to the new interface and this can also automatically detect if the device is online. It will even reformat a page to suit the device's display abilities.

Palm devices also now get copies of Pocket Word and Excel, which were previously only available on handheld CE machines, and there is also a new version of Explorer which will not be compatible with older devices.

The first devices based on PocketPC are likely to start appearing in May. Only then will consumers be able to decide if Microsoft has gone far enough.

NIALL MAGENNIS

The way ahead with Bluetooth

Perhaps the technology that will have the biggest influence on PDAs towards the end of this year is Bluetooth.

Designed by a consortium of companies which includes Ericsson, IBM, Intel, Nokia and Toshiba, Bluetooth is a wireless standard which aims to do away with many of the cables we currently use to connect devices together.

Bluetooth devices transmit and receive in the 2.4GHz radio range and up to eight devices can be connected together in a network called a Piconet. The technology has a theoretical maximum bandwidth of 1Mbit/sec. Real-life situations are likely to yield asymmetric bandwidth of 721Kbits/sec with a 57.6 return route, or a 432.6Kbits/sec symmetrical

link. It is the ideal technology for mobile devices because it doesn't consume much power.

Most manufacturers are already developing prototype add-ons or new models incorporating Bluetooth technology, but the first batch of Bluetooth-enabled products are likely to come from mobile phone

manufacturers and include headsets and handsets.

Add-ons for PDAs are likely to follow close behind, but it may be some time before we see Bluetooth actually integrated into PDAs.

Handspring, for example, has already demonstrated two Visors talking to each other using prototype Bluetooth cards that plug into the

devices' Springboard slot, but the company is still some way from considering integrating the functionality into the device itself.

'If it becomes as persuasive as we think it will, we will integrate it into the Visor. However, the chipset costs \$25 (£16) today and that's a pretty significant hit to the cost of goods, so it's got a long way to go in pricing before we integrate it,' said Donna Dubinsky, president and CEO of Handspring.

NIALL MAGENNIS















Table of features						
MANUFACTURER	COMPAQ	CASIO	HP	PALM	PALM	HANDSPRING
MODEL	AERO 2130	CASSIOPEIA	JORNADA 420	PALM Vx	PALM IIIc	VISOR
Price (ex VAT)	£399 (£339.57)	£499 (£424.68)	£399 (£339.57)	£352.20 (£299.99)	£349.99 (£297)	\$249 (US price)
Telephone	0845 270 4000	020 8450 9131	0990 47 47 47	020 7365 9820	020 7365 9820	001 888 565 9393 (US)
Web address	www.compaq.com	www.casio.com	www.hp.com	www.palm.com	www.palm.com	www.handspring.com
Form factor	Palmtop	Palmtop	Palmtop	Palmtop	Palmtop	Palmtop
CPU and speed	MIPS R4000 70MHz	MIPS R4000 131MHz	Hitachi SH-3 100MHz	Motorola Drangonball 20MHz	Motorola Dragonball 20MHz	Motorola Dragonball 16.6MHz
RAM/ROM	16MB/12MB	32MB/16MB	8MB/8MB	8MB/2MB	8MB/2MB	2MB/2MB
Size (h x w x d in mm)	134 x 85 x 20	131.2 x 83.6 x 20	130 x 81 x 22	4.7 x 3.2 x 0.4	5.06 x 3.17 x 0.67	4.8 x 3 by 0.7
Operating system	Win CE	Win CE	Win CE	Palm OS 3.5	Palm OS 3.5	Palm OS 3.1H
Input method	Stylus	Stylus	Stylus	Stylus	Stylus	Stylus
Voice recorder	✓	✓	✓	✗	✗	✗
Modem and speed	✗	✗	✗	✗	✗	✗
Display type	TFT	TFT	CSTN	Backlit LCD	TFT	Backlit LCD
Display resolution	240 x 320	240 x 320	120 x 320	160 x 160	160 x 160	160 x 160
Colour/monochrome	Colour	Colour	Colour	Monochrome	Colour	Monochrome
Infra-red	IrDA	IrDA	IrDA	✓ proprietary	✓ proprietary	✓ proprietary
Compact Flash	✓	✓	✓	✗	✗	✗
PC Card slot	✗	✗	✗	✗	✗	✗
Serial	✓	✓	✓	✓	✓	✗
USB	✗	✗	✗	✗	✗	✓
BATTERY						
Quoted battery life	10 hours	6 hours	4 hours	Up to 1 month	Up to 2 weeks	Up to 1 month
Battery type	Lithium-ion	Lithium-ion	Lithium-ion	Lithium-ion	Lithium-ion	Lithium-ion

Table of features						
MANUFACTURER	PSION	PSION	ERICSSON	HP	PSION	HP
MODEL	REVO	5MX	MC218	JORNADA 690	SERIES 7	JORNADA 820
Price (ex VAT)	£299.95 (£255.28)	£429.95 (£365.91)	£399.99 (£340.42)	£755 (£642)	£699.95 (£595.70)	£805 (£685)
Telephone	0990 143 050	0990 143 050	0990 237 237	0990 47 47 47	0990 143 050	0990 47 47 47
URL	www.pSION.com	www.pSION.com	www.ericsson.co.uk	www.hp.com	www.pSION.com	www.hp.com
Form factor	Handheld	Handheld	Handheld	Handheld	Laptop replacement	Laptop replacement
CPU and speed	36MHz ARM 710	ARM 710T Risc 36MHz	ARM 710T Risc 36MHz	133MHz Hitachi SH3	StrongARM SA1100 133MHz	StrongArm 190MHz
RAM/ROM	8MB/8MB	16MB/10MB	16MB/10MB	32MB/16MB	16MB/12MB	16MB/16MB
Size (h x w x d in mm)	157 x 79 x 18	23 x 170 x 90	23 x 170 x 90	189 x 95 x 3 4	235 x 182 x 37	246 x 178 x 33
Operating system	EPOC	EPOC	EPOC	Win CE	EPOC	Win CE
Input method	Keyboard and stylus	Keyboard and stylus	Keyboard and stylus	Keyboard and stylus	Keyboard and stylus	Keyboard and touchpad
Voice recorder	✓	✓	✓	✓	✓	✓
Modem and speed	✗	✗	*	V.90	✗	V.90
Display type	LCD	Backlit LCD	Backlit LCD	CSTN	STN	CSTN
Display resolution	480 x 160	640 x 240	640 x 240	640 x 240	640 x 480	640 x 480
Colour/monochrome	Monochrome	Monochrome	Monochrome	Colour	Colour	Colour
Infra-red	IrDA	IrDA	IrDA	IrDA	IrDA	IrDA
Compact Flash	✗	✓	✓	✓	✓	✓
PC Card slot	✗	✗	✗	✓	✓	✓
Serial	✓	✓	✓	✓	✓	✓
USB	✗	✗	✗	✗	✗	✓
BATTERY						
Quoted battery life	14 hours	1 month	1 month	8 hours	8.5 hours	10 hours
Battery type	NiMH	2xAA alkaline	2xAA alkaline	Lithium-ion	Lithium-ion	Lithium-ion

KEY: * = IrDA modem for compatible Ericsson phones included

Editor's Choice

A PDA is for life and not just for Christmas, so it's important to make the right choice the first time around. Because people tend to become very attached to their PDAs the office was brimming with arguments over which was better, Palm OS, EPOC or CE. It's unlikely an EPOC user will ever switch to CE and vice versa, but in making the Editor's Choice we've tried to rise above any tribal allegiance to give a fair indication of how each device suits its particular purpose.

There is a huge difference between how you would use palms and handhelds, so we've awarded an Editor's Choice and Highly Commended in both categories.

◀ The palm category saw equal representation from the Palm OS camp and the Windows CE barracks, but in the

end the **Editor's Choice** was easy: The sheer design beauty of the Palm Vx puts it a long stretch ahead of the pack.

Weighing just 113.4g and measuring 11.5 x 7.5 x 1cm it's smaller than the average diary, and a lot more desirable. The sleek metal casing oozes style and the leather wallet cover finishes the whole machine off to perfection.

Palm has listened to fans' concerns over the OS and version 3.5 has a number of new user-friendly features. The screen is also outstanding and very readable, even under adverse lighting.

Connectivity was always a strength of the Palm series and the Vx is no different. Synchronising with Outlook 2000 was simply a matter of loading up the software and hitting sync on the docking cradle. We also loved the offline email facility.

When all is said and done, the Palm

Vx is just the ultimate design for a palmtop PDA.

Our **Highly Commended** award goes to Casio's Cassiopeia. This machine offers blistering performance using an OS that is renowned for being sluggish. Its multimedia features are also top class, with a processor and screen capable of showing short movie files, great sound and bundled software to take advantage of these features.

◀ The handheld category was a much closer-fought battle, but in the end the top slot was a choice between the Psion Series 5mx and the Ericsson MC218. Since both use the same hardware the additional software, bundled IrDA modem and lower RRP clinched the **Editor's Choice** for the Ericsson.

Despite its small size, the MC218 still manages to find enough room for a truly excellent keyboard. It doesn't take long to achieve a good typing speed. The screen, although mono, supports a resolution of 640 x 240, with 16 shades of grey. It is impressive under almost any light and the backlight can be switched into operation when required.

EPOC is also a very tidy OS and while the CE machines boast faster processors, the Ericsson makes better use of its lower horsepower. The result is a machine that feels very responsive, but also has great battery life. The MC218 comes with connection and sync software that is compatible with popular organisers from Microsoft and Lotus. It can even convert files for use in all major office suites.

The **Highly Commended** award in this category goes to a machine that pushes the limits of what you can term a PDA. The Jornada 820 from HP really is a wonderful piece of hardware, offering much of the functionality of a laptop, without the punishment of poor battery life. Due to the larger form factor, HP can afford to kit the device out with luxuries that handheld PDAs simply cannot accommodate. You get a great keyboard, a nifty touchpad and a screen with very respectable image quality and a resolution of 640 x 480. The VGA port at the rear of the unit – matched with the built-in PowerPoint viewer – makes the device ideal for those who need to make presentations while on the road.

Synchronising the unit is a cinch with Windows Service 2.2 and HP has included a generous amount of software on CD-ROM.



The Palm Vx's design, coupled with the improvements in OS, won it best palmtop



An impressive software bundle and low price won Ericsson the top spot among handhelds



Blistering speed helped boost multimedia uses for the Highly Commended Cassiopeia



Hewlett-Packard's Jornada 820 offers luxuries you can't get from handhelds