



Pen Computing
EDITOR'S CHOICE

AlphaSmart Dana Wireless

Student Palm

List price: Not set at press time
Contact: www.alphasmart.com

The original Dana came bundled with communication software, but unless you had a hard-to-obtain IrDA modem, you were hard pressed to use any of it. That all changes with the 802.11b Dana Wireless. Students and businesspeople are finding WiFi everywhere these days, and nothing is more suited to the task of note taking and mobile research than a widescreen Palm device with a large keyboard. The new Dana Web Browser, available in the optional Internet Solutions Pack supports HTML 2 through 4, plus JavaScript 1.3, and direct download of files, such as PRC (Palm program format) and MP3. It also includes MarkSpace Mail and VeriChat, a widescreen IM client. The Dana Wireless also has 16MB RAM, 2 SD slots, 2 USB slots and the excellent AlphaWord word processor as well as software for syncing and modifying Word, Excel, and PowerPoint files.

SPECIFICATIONS

Processor	Motorola Dragonball VZ 33MHz
OS	Palm OS 4.1.2
RAM/ROM	16MB/8MB
Expansion	2 MMC/SD/SDIO slots
Display Type	backlit monochrome LCD
Display size/resolution	7.75"/560 x 160
Color depth	monochrome
Input method	80% Qwerty keyboard/Graffiti 2
Voice recording	no
MP3 playback	no
Alarm	audible
Screen lid	no
Housing	semi-rugged ABS plastic
Dimensions	9.3 x 12.4 x 1.9 inch
Weight	2.0 lbs.
Power	Rech. Batt pack/3AAs, AC adapter
Cradle/Dock included?	N/A
Connectivity	2 USB, IrDA, 802.11b
Software bundle	Wide apps, AlphaWord, PrintBoy, Palm Reader, QuickOffice
Options	Admin software, ImagiWorks for Dana



Pen Computing
EDITOR'S CHOICE

Palm Zire 71

Consumer Palm

List price: US\$299
Contact: www.palm.com

Resembling the original Zire only in appearance, the Zire 71 is currently Palm's most universally appealing offering. Its vibrant high-res screen is shockingly bright, offering that paper-like contrast we've long desired. It also includes a nifty slider that reveals a VGA camera for quick capture of HotSyncable snapshots without an accessory. Instead of scroll buttons or 5-way nav disk, the 71 has a joystick for familiar and easy onscreen navigation. It has a powerful OMAP310 processor and runs OS 5.2, which gives it snappier performance than the Tungsten T at many tasks. Its SD card slot also reads and writes faster than existing T units. The only real drawback for existing Palm users is the substitution of Graffiti 2, a more complicated entry method; software is available to get around that, though. Otherwise, this is a best of class device that will surely impress.

SPECIFICATIONS

Processor	TI OMAP310, 144MHz
OS	Palm OS 5.2.1
RAM/ROM	16MB RAM
Expansion	SD/SDIO/MMC/Universal Connector
Display Type	Transflective TFT
Display size/resolution	320 x 320
Color depth	65,536 colors
Input method	Graffiti 2
Voice recording	no
MP3 playback	yes
Alarm	audible
Screen lid	no
Housing	plastic
Dimensions	4.5 x 2.9 x 0.67 inch
Weight	5.3 ounces
Power	Lithium Ion
Cradle/Dock included?	yes
Connectivity	IrDA, USB
Applications	PDA apps, picture software, MP3, Kinoma Player, VersaMail, Palm Reader, Solitaire
Options	Keyboard, Bluetooth adapter, etc



Pen Computing
EDITOR'S CHOICE

Palm Tungsten T2

All-Around Palm

List price: US\$399
Contact: www.palm.com

As good as the Tungsten T is, it was just a step behind the Zire 71 in some ways. You had to know that Palm couldn't let this stand. So just a couple weeks after the launch of Schwarzenegger's T3 came Palm's Tungsten T2. In addition to the T's Bluetooth, SD, and high-res screen comes a brighter backlit TFT, a faster OS, faster SD, and double the RAM. That it still has all that a Tungsten T has means it's a great choice as a personal data device, including truly wireless retrieval of email and Web data. One addition that some won't be ready for is the replacement of Graffiti with Graffiti 2. Most existing Tungsten T users will already be familiar with Graffiti, and might not like the conversion. However, users will be able to write on the screen, with the traditional Graffiti area closed. It's the already excellent Tungsten T made better, brighter, roomier and up-to-date.

SPECIFICATIONS

Processor	TI OMAP1510, 144MHz
OS	Palm OS 5.2.1
RAM/ROM	32MB RAM
Expansion	SD/SDIO/MMC/Universal Connector
Display Type	Transflective TFT
Display size/resolution	320 x 320
Color depth	65,536 colors
Input method	Graffiti 2
Voice recording	yes
MP3 playback	yes
Alarm	audible, vibrate, LED
Screen lid	yes
Housing	metal
Dimensions	4 x 3 x 0.6 inch
Weight	5.6 ounces
Power	Lithium Ion Polymer
Cradle/Dock included?	yes
Connectivity	IrDA, USB
Applications	picture software, MP3, world clock Kinoma, VersaMail, Palm Reader, Docs to Go
Options	Keyboard, camera, 802.11b sled



Pen Computing
EDITOR'S CHOICE

Value Palm

Sony SJ20

List price: US\$129
Contact: www.sonystyle.com

Even the most basic Palm OS PDA offers a lot of functionality and can be very popular with users, as is exemplified by Palm's low-end Zire. By comparison, Sony's low-end SJ20 offers quite a bit more for just another US\$30. It has a 320 x 320 backlit monochrome screen. The backlight is excellent because it appears paper white. It has 16MB RAM and a Memory Stick slot, works with standard Sony cradles (optional) and runs a 33MHz Dragonball, which effectively leaves the Zire in the dust. The unit has a very long battery life compared to color units—up to 15 days—and this is the only place the Zire excels. Further, the SJ20 can accept the CLIE Audio Adapter and play MP3 or ATRAC3 music files for US\$99 more. With Docs to Go bundled as well, the SJ20 is an impressive machine for the money. The only drawback is that it doesn't include a cradle, very helpful for both new and old users.

SPECIFICATIONS

Processor	Dragonball VZ 33MHz
OS	Palm OS 4.1
RAM/ROM	16MB RAM
Expansion	Memory Stick, HotSync port
Display Type	monochrome TFT
Display size/resolution	320 x 320
Color depth	16
Input method	Graffiti
Voice recording	no
MP3 playback	optional accessory
Alarm	audible
Screen lid	yes
Housing	plastic
Dimensions	4 1/8 x 2 7/8 x 11/16 inch
Weight	4.5 ounces
Power	Lithium Ion
Cradle/Dock included?	no
Connectivity	IrDA, USB
Applications	PDA apps, Paint, Picture Gear
Options	World Alarm Clock, gMovie, Docs to Go, games keyboard, game controller, MP3



Pen Computing
EDITOR'S CHOICE

Advanced Palm

Sony NX80

List price: US\$599
Contact: www.sonystyle.com

If you're looking for a powerful multimedia PDA with a reasonable quality digital camera and all the other fancy stuff, but don't like the price and size of the NZ90, this is the perfect device. Its pop-out WiFi/CF slot can be used for either wireless or for massive data storage. For storage of pictures and video, however, you're going to have to stick with Memory Stick, with its faster interface. The digital camera is capable of 1.3 megapixel stills as well as video capture, and it includes an illumination light to improve both video and still captures. It has all you've come to expect from the NX series, including a remote control for thousands of devices, mail, Web browsing, voice recording, MP3, world alarm clock, Picel viewer, and a lot more. Sony really improved the feel of the NX design, and added a backlit keyboard. It's more of just what you need when and where you need it.

SPECIFICATIONS

Processor	Intel 200MHz StrongARM
OS	Palm OS 5.0
RAM/ROM	32MB RAM/32MB ROM
Expansion	Memory Stick, CF, USB
Display Type	Transflective TFT
Display resolution	320 x 480
Color depth	65,536 colors
Input method	Qwerty keyboard, Graffiti
Voice recording	yes
MP3 playback	yes
Alarm	audible
Screen lid	yes, via flip
Housing	metal
Dimensions	5.25 x 2.87 x 0.87 inch
Weight	8 ounces
Power	Lithium Ion
Cradle/Dock included?	yes
Connectivity	IrDA, remote IrDA, USB, WiFi opt.
Software bundle	PDA apps, Paint, Picture Gear
Options	World Alarm Clock, gMovie, Docs to Go, more Speaker cradle, WiFi card, game cont.



Pen Computing
EDITOR'S CHOICE

Value Pocket PC

Dell Axim X5

List price: From US\$199
Contact: www.dell.com

The Axim is Dell Computer's first Pocket PC and also the company's first offering in the handheld market. In most ways the Axim follows Dell's overall strategy of building solid, workmanlike products at economical prices. A fully equipped Axim X5 includes all the goodies you expect from a contemporary Pocket PC: a fast 400MHz XScale processor, 64MB of RAM, and an indoor/outdoor transfective color display. It also has a removable battery and both a Compact Flash and a SD Card slot. The Axim is relatively large and heavy by today's standards and we wish Dell had used the larger 3.8-inch display instead of the Axim's smaller 3.5-inch, but you can't argue with the price. For US\$325 the Axim is a terrific deal and a very good choice, and if you can live with a bit less memory and a 300 MHz chip, you can even get one for just \$199.

SPECIFICATIONS

Processor	Intel XScale PXA250, 300 or 400MHz
OS	Windows Mobile 2003
RAM/ROM	32 or 64MB/32 or 48MB StrataFlash
Expansion	1 CF Card Type II, 1 SD/MMC Card
Display Type	Transflective TFT
Display size/resolution	3.5-inch/240 x 320
Color depth	64K colors
Input method	onscreen kbd, hrw
Voice recording	yes
MP3 playback	yes
Alarm	audible
Screen lid	no
Housing	plastic
Dimensions	3.2 x 5.05 x 0.71 inch
Weight	6.9 ounces
Power	1,440 mAh Li-Ion ("up to 8 hrs.")
Cradle/Dock included?	yes
Connectivity	IrDA, USB, power, audio
Applications	Pocket PC apps
Options	Cases, wireless, 3.4 Ah battery
Options	Keyboard, extra memory



Hewlett Packard iPAQ h2210/2215

Consumer Pocket PC

List price: US\$399
Contact: www.hp.com

Hewlett Packard seems determined to cement its leadership position in the Pocket PC arena (as if that were necessary!) and the new iPAQ h2200 Series is another big step in that direction. The h2200 is considerably smaller and lighter than the "big" iPAQs and just a tad larger and heavier than the diminutive h1900 Series. Though the new speedier and SDIO/Bluetooth-equipped h1930/40 has narrowed the gap, the h2200 Series is faster yet with a 400MHz PXA255 XScale processor, and it also has both a SDIO-capable SD/MMC and a Compact Flash slot. That can make all the difference, especially since almost all useful peripherals and add-ons still use the Compact Flash format. The h2200's transfective display is very good, but not quite as good as that on the h1900 Series, but other than that, this is an absolute winner of a device. Pocket PC technology at its finest.

SPECIFICATIONS

Processor	Intel XScale PXA255, 400MHz
OS	Windows Mobile 2003
RAM/ROM	64MB/32MB Flash
Expansion	1 CF Card Type II, 1 SD/MMC SDIO
Display Type	Transfective TFT
Display size/resolution	3.5-inch/240 x 320
Color depth	64K colors
Input method	onscreen kbd, hrw
Voice recording	yes
MP3 playback	yes
Alarm	audible, LEDs
Screen lid	no
Housing	plastic
Dimensions	3.0 x 4.54 x 0.61 inch
Weight	5.1 ounces
Power	900 mAh Li-Ion ("up to 12 hrs.")
Cradle/Dock included?	yes
Connectivity	IrDA, Bluetooth, USB, dock, Pocket
Applications	PC apps, iPAQ Viewer
Options	Nylon case, cradle/dock, memory
Options	chargers, wireless, SD cards



Hewlett Packard iPAQ h5550

Corporate Pocket PC

List price: US\$649
Contact: www.hp.com

The 5550, successor of the identically styled 5450, is Hewlett Packard's top-of-the line Pocket PC. Like the slightly more basic 5150 it spawned, the 5550 refines the original Compag iPAQ's overall design but can still use all of the older sleeves. An enterprise handheld, the 5450 has both Bluetooth and integrated 802.11b wireless LAN. It also has a fingerprint identification scanner for security (located below the navigation disk). The 5550 has a 400 MHz PXA255 XScale processor, 128MB of RAM, and the awesome 3.8-inch transfective display that remains unmatched. Based on Windows Mobile 2003, the 5550 comes with lots of handy software apps and utilities including automatic internal data backups. Like its predecessor, the 5550 only has a SD slot and needs optional sleeves for additional expansion. Despite the steep price, this is a bargain.

SPECIFICATIONS

Processor	Intel XScale PXA255, 400MHz
OS	Windows Mobile 2003
RAM/ROM	128MB/48MB Flash
Expansion	1 SD/MMC SDIO
Display Type	Transfective TFT
Display size/resolution	3.8-inch/240 x 320
Color depth	64K colors
Input method	onscreen kbd, hrw
Voice recording	yes
MP3 playback	yes
Alarm	audible, LEDs
Screen lid	no
Housing	metal
Dimensions	3.25 x 5.45 x 0.63 inch
Weight	7.3 ounces
Power	1,250 mAh Li-Ion ("10-128 hrs.")
Cradle/Dock included?	yes
Connectivity	IrDA, Bluetooth, audio, USB, WLAN,
Applications	Pocket PC apps, iPAQ Viewer
Options	Numerous expansion sleeves
Options	Extended battery, chargers, SD cards



Samsung SPH-i700

Pocket PC phone

List price: US\$649 + service plan
Contact: www.samsungusa.com

After the Palm OS-based, relatively low-tech i300, Samsung tries again with the significantly more advanced SPH-i700 Windows Powered Pocket PC. Since the FCC approval process for communications equipment can be quite lengthy, Pocket PC phones tend to be technologically on the trailing edge by the time they finally become available. The i700, too, lags behind a bit with its 300MHz PXA250 processor, but not by much. It is an amazingly small and handy little device that combines complete Pocket PC functionality with satisfyingly high-speed data transfer. A built-in 640x480 digital camera provides extra entertainment value. The i700 is initially available through Verizon for use with its digital CDMA network (no analog support). It may become available via other carriers. All in all, this is probably the most advanced Pocket PC phone available.

SPECIFICATIONS

Processor	Intel XScale PXA250, 300MHz
OS	Pocket PC 2002 Phone Edition
RAM/ROM	64MB/32MB Flash
Expansion	1 SD/MMC SDIO
Display Type	Transfective TFT
Display size/resolution	3.5-inch/240 x 320
Color depth	64K colors
Input method	onscreen kbd, hrw
Voice recording	yes
MP3 playback	yes
Alarm	audible, vibration
Screen lid	no
Housing	metal
Dimensions	2.76 x 5.2 x 0.63 inch
Weight	6.9 ounces
Power	1,1 AH LiPolymer, 2.2 hrs talk, 130 standby
Cradle/Dock included?	yes
Connectivity	IrDA, CDMA, GPS, camera, audio
Applications	Pocket PC Phone apps
Options	Extended battery
Options	Chargers, SD cards



Pen Computing
EDITOR'S CHOICE
"Flashlight-style" handheld

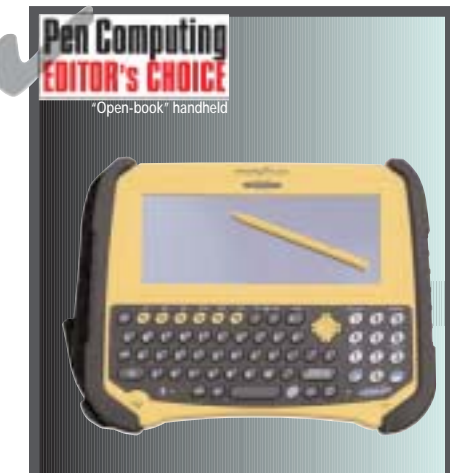
Casio
DT-X10

List price: NA
Contact: www.casio.com

Based on the modern and powerful Windows CE .NET, the Casio DT-X10 is a rugged industrial handheld terminal rather than a Pocket PC in a tougher housing. It has a small numeric keypad for rapid data entry as well as some function and navigation keys. Its speedy XScale processor and large battery combine to make the DT-X10 a powerful and flexible tool that can be used for a wide variety of industrial and business applications. The device shines in the communication arena, offering both integrated Bluetooth and 802.11b wireless LAN. There is also a built-in high-performance CMOS imager capable of reading one and two-dimensional codes as well as OCR. And internal PC Card slot offers additional expansion, and there is a separate CF Card expansion option. The 3.5-inch transmissive display uses a special coating for outdoor readability.

SPECIFICATIONS

Form-factor	Flashlight-style handheld
Market(s)	Any industrial
Processor/Speed	Intel PXA250/300 MHz
OS	Microsoft Windows CE .NET
RAM/ROM	32MB/32MB
Card slots	1 PC Card Type II
Display type	Coated transmissive color TFT
Display size/res	3.5-inch/240 x 320
Digitizer/pens	touch/1
Keyboard/keys	23-key keypad
Housing	plastic/rubber
Operating temp.	-20 to 50 degree C
Sealing	IP54/IP64
Shock	4 feet to plastic tile over concrete
Dimensions and volume	3.2 x 8.7 x 1.8
Weight	14 ounces
Power	3,400 mAh Li-Ion (8 hrs)
Interface	Bluetooth, IR, USB, 802.11b
Interface	1/4-inch CMOS Imager, audio, power
Options	CF extension slot, extended battery
Options	Vehicle-mount charger, chargers



Pen Computing
EDITOR'S CHOICE
"Open-book" handheld

DAP Technologies
Microflex CE8640

List price: NA
Contact: www.daptech.com

DAP Technologies' MicroFlex 8640 is a 9 x 7 x 2 inch block of ergonomically sculpted plastic that feels just about indestructible. Technically speaking it is a Windows CE device running CE 3.0 on a 206 MHz StrongARM processor. It has a wide-format 640 x 240 transfective color display that's very readable indoors and outdoors. The 8640 also has a full, albeit small, QWERTY keyboard. Two internal Type II PC Card slots provide expansion for internal radios and other add-ons. The battery is a beefy 15 Watt Hour Li-Ion unit good for at least a full shift. The 8640 comes with 32 or 64MB of RAM plus two 16MB NAND Flash storage units. The device carries an impressive IP67 rating which means it is almost completely sealed and impervious to the elements. The 8640 is complemented by a choice of charging and communications docks.

SPECIFICATIONS

Form-factor	Handheld PC
Market(s)	Heavy duty industrial
Processor/Speed	StrongARM SA-1110/206 MHz
OS	Microsoft Windows CE 3.0
RAM/ROM	32-64MB/32-128MB
Card slots	2 Type II PC Card
Display type	Transfective color LCD
Display size/res	6.5-inch/640 x 240
Digitizer/pens	touch/1
Keyboard/keys	64-key QWERTY, 65% scale
Housing	plastic/rubber
Operating temp.	-4 to 122 degree F
Sealing	IP67
Shock	4 feet drop
Dimensions and volume	9.1 x 7.3 x 2.0
Weight	2.4 lbs.
Power	Li-Ion ("2-3 working days")
Interface	Serial, IrDA
Interface	RJ45, USB, additional serial via dock
Options	Integrated laser, RFID
Options	Printer, scanner, cradles



Pen Computing
EDITOR'S CHOICE
Advanced Industrial PDA

Intermec
700 Series

List price: starting at US\$1,395
Contact: www.intermec.com

The very successful 700 Series is Intermec's state-of-the-art handheld mobile computer. Now available with a 400 MHz XScale processor and the powerful Pocket PC 2003 operating environment, the 700 Series is clad in a very rough, rugged body and has plenty of expansion capability (including many radio types and Bluetooth) and peripheral options to address the realities of harsh environment and industrial markets. A programmable 18-key keypad offers a wealth of functionality. A CF Card slot and an internal PC Card slot are used for a variety of wireless radio options. The 700 Series looks and feels rock-solid. Its ruggedness and the integrated keypad make it larger and heavier than a consumer market PDA (or the Intermec 600) but it is still handy enough to be put in a pocket. The mobile computing equivalent of a homerun.

SPECIFICATIONS

Form-factor	Rugged PDA
Market(s)	Mobile, retail, industrial
Processor/Speed	Intel XScale PXA255/400 MHz
OS	Microsoft Pocket PC 2003
RAM/ROM	64 - 128 MB/32MB Flash
Card slots	1 Type I PC Card and 1 Type II CF
Display type	Frontlit reflective TFT
Display size/res	3.8-inch/240 x 320
Digitizer/pens	touch/1
Keyboard/keys	18 keys
Housing	Plastic with metal inserts
Operating temp.	-4 to 140 degree F
Sealing	IP64
Shock	26 times 5 feet to concrete
Dimensions and volume	3.5 x 7.25 x 1.5
Weight	16 ounces
Power	14.4 WHr Li-Ion ("6-10 hrs")
Interface	RS232, IrDA, power
Interface	LAN, USB
Options	Modem, Bluetooth, WAN, RF
Options	Lasers and imagers, printers, docks



Pen Computing
EDITOR'S CHOICE
Handheld PC

NEC
MobilePro 900
List price: US\$899
Contact: www.necsam.com

The NEC MobilePro 900's lineage goes all the way back to the first Windows CE-based HPCs in late 1996, which means NEC has a lot of experience with this form factor. More directly, the 900 goes back to the ground-breaking "large form factor" Mobile Pro 750 which then became the 770 (new design) and 780 (faster processor, scroll wheel) and finally the 790 with Handheld PC 2000 and extra Flash for custom applications. The 900 gets a state-of-the-art 400MHz XScale chip, and yet more memory and flexibility. With the MobilePro 900 you thus get a very mature handheld PC with an almost full-size keyboard, a large display, good battery life, good expansion, and the mature Handheld PC 2000 software. And with the demise of HP's Jornada 720, the best thing about the MP900 is that, like Disney's Tigger, it is the only one.

SPECIFICATIONS

Form-factor	Handheld PC
Market(s)	Various mobile field applications
Processor/Speed	Intel PXA 255/400 MHz
OS	Windows Handheld PC 2000
RAM/ROM	64MB/32MB Flash + 32MB
Card slots	1 Type II PC Card, 1 Type II CF Card
Display type	STN color LCD
Display size/res	8.1"/640 x 240
Digitizer/pens	touch/1
Keyboard/keys	78 keys, 92%-scale
Housing	Plastic
Operating temp.	-4 to 122 degree F
Sealing	IP53
Shock	4 feet to concrete
Dimensions and volume	9.7 x 5.1 x 1.2
Weight	1.8 pound
Power	Li-Ion ("8 hours")
Interface	2 USB 1.1, RS232, VGA
Interface	IrDA, RJ11, audio, power
Options	Large battery, case, charging station
Options	Serial cable, AC adapter



Pen Computing
EDITOR'S CHOICE
Advanced rugged PDA

Panasonic
Toughbook CF-P1
List price: US\$1,541
Contact: www.panasonic.com/toughbook

Panasonic's successful Toughbook line of reliable, ruggedized notebook computers includes a hardened PDA, the Toughbook 01. The 01 merges complete Pocket PC functionality with a ruggedized case and a 38-key RIM-style mini-keyboard. Features include the 206MHz StrongARM processor, a reflective color display, a MMC/SD card slot and an internal CF Card slot. The RIM-style keyboard allows for rapid data entry in situations where stylus/onscreen data entry are not appropriate. The moisture and shock resistant magnesium housing provides extra protection, and Panasonic also offers a variety of integrated wireless and data collection options. The Toughbook 01 is larger than a standard consumer class PDA, but still small and handy enough to carry in a pocket. A very worthwhile addition to the Toughbook line.

SPECIFICATIONS

Form-factor	Rugged PDA
Market(s)	Any industrial
Processor/Speed	StrongARM SA-1110/206 MHz
OS	Windows CE 3.0 or Pocket PC 2002
RAM/ROM	32 or 64MB/32MB Flash
Card slots	1 CF Card Type II, 1 SD/MMC Card
Display type	Frontlit reflective TFT
Display size/res	3.5-inch/240 x 320
Digitizer/pens	touch/1
Keyboard/keys	backlit 38-key QWERTY
Housing	Magnesium
Operating temp.	-4 to 122 F
Sealing	"dust and moisture resistant"
Shock	"drop shock-resistant"
Dimensions and volume	3.9 x 6.8 x 1.6
Weight	1.0 pounds
Power	10.4 WH (1.4 AH/7.4V) Li-Ion (8+ hrs)
Interface	IrDA, expansion connector
Interface	Audio in/out, power
Options	Cradle, cables, barcode scanner
Options	GPS, USB, holster, chargers, RF



Pen Computing
EDITOR'S CHOICE
Special Purpose PDA

Trimble
GeoExplorer CE Series
List price: NA
Contact: www.trimble.com

The GeoExplorer CE Series from GPS (Global Positioning Systems) specialist Trimble is a unique device that combines a Windows CE-based with an integrated Trimble GPS receiver. Trimble offers different models. The GeoXM brings real-time corrected GPS info with two to five meter accuracy into GIS applications whereas the GeoXT adds a submeter-accuracy receiver and multipath rejection technology. USB and serial support modules provide communication capability for wired and wireless data transfer. The display has an anti-glare coating and an extra-strong backlight. The heavily ruggedized GeoExplorer has its own GPS controller and connector software and can run GIS software from ESRI, Trimble and others. The GeoExplorer comes with no less than 512MB of Flash, enough even for large databases and maps.

SPECIFICATIONS

Form-factor	Rugged PDA
Market(s)	GIS data collection and maintenance
Processor/Speed	StrongARM SA-1110/206 MHz
OS	Windows CE 3.0
RAM/ROM	64MB/512MB Flash
Card slots	1 Type II PC Card, 1 CF Card
Display type	Transmissive anti-glare color LCD
Display size/res	3.8"/240 x 320
Digitizer/pens	touch/1
Keyboard/keys	onscreen
Housing	PC/ABS Plastic
Operating temp.	14 to 122 degree F
Sealing	IP54
Shock	NA
Dimensions and volume	3.9 x 8.5 x 3.0
Weight	1.6 pound
Power	21 WH Li-Ion ("up to 10 hrs")
Interface	GPS, USB
Interface	Audio in/out, power
Options	Serial clip, antennas, hard case
Options	Vehicle power, GPS software, cameras



Pen Computing
EDITOR'S CHOICE

Rugged Tablet PC slate

Intermec CT60 Rugged Tablet PC

List price: starting at US\$4,850
Contact: www.intermec.com

Designed by ruggedness experts WalkAbout Computer (which sells this model as the WalkAbout XRT, the Intermec CT60 compares to consumer-grade Tablet PCs the way a Hummer does to a family sedan: both drive, but the Hummer is designed to take extreme punishment under the harshest conditions. Same for the CT60. Its case is milled from a solid block of aluminum. It carries a IP67 rating, which means it is almost completely sealed from the elements in every respect. Since Tablet PCs like the CT60 are likely to be used outdoors, Intermec offers a version with a transfective display that is viewable both indoors and outdoors. Due to the tight sealing, the CT60 doesn't have many onboard ports, so you'll need one of the several docks. We'd also recommend getting the CT60 with two rather than just one battery.

SPECIFICATIONS

Form-factor	Slate
Processor/Speed	Mobile Pentium III/800 MHz
Chipset	Intel 830MG
OS	Microsoft Windows XP Tablet PC Edition
Standard/Max RAM	256MB/512MB
Disk	20 or 40 GB
Card slots	2 PC Card Type II
Display type	Transmissive or transfective TFT
Display size/res	10.4-inch/800x600
Color depth	16.7 million
Digitizer/pens	Wacom/1
Keyboard/keys	Optional external
Ruggedness	ultra-rugged (IP67)
Housing	Milled aluminum
Dimensions and volume	10.6 x 8.25 x 1.6
Weight	4.5 lbs.
Power	Dual 21 WHr Li-Ion ("4 hour typical")
Interface	1 USB external, 2 USB internal
Interface	other ports via dock
Options	Office and vehicle docks, carry cases
Options	Port replicator, CDPD, GPS, GSM, GPRS



Pen Computing
EDITOR'S CHOICE

Tablet PC slate

Motion Computing M1300

List price: starting at US\$2,099
Contact: www.motioncomputing.com

Motion Computing is a new company formed by two former Dell executives specifically to build Tablet PCs. Both their original M1200 and the new M1300 are sleek, elegant slates that can also be used in the office via a cleverly designed docking station that allows using the Motion slate both in landscape and portrait mode. Perhaps the biggest attraction of the M1200/1300 is its 12.1-inch display that gives it an edge over competing slates that all use 10.4-inch screens. The difference between the M1200 and M1300 is that the latter uses Intel's Centrino technology, which means a bit more speed and battery life. The M1300 also comes with more base memory and USB 2.0. Even the US\$2,099 base model comes with wireless, a desktop stand, and a keyboard--great deal. Available from Motion, Gateway, and Dell.

SPECIFICATIONS

Form-factor	Slate
Processor/Speed	Intel Pentium M/1.0 GHz
Chipset	Intel 855
OS	Microsoft Windows XP Tablet PC Edition
Standard/Max RAM	512MB/1024MB
Disk	up to 40GB
Card slots	1 PC Card Type II
Display type	Transmissive TFT
Display size/res	12.1-inch/1024x768
Color depth	16.7 million
Digitizer/pens	Wacom/1
Keyboard/keys	Opt. external, 88 key, 100%
Ruggedness	standard
Housing	Magnesium-alloy
Dimensions and volume	11.7 x 9.4 x 0.9
Weight	3.3 lbs.
Power	11.1 V 3.6 AH Li-Ion
Interface	2 USB 2.0, RJ11, RJ45, IrDA
Interface	IEEE1394, video, audio, 802.11b
Options	Dock, desktop stand, carry cases
Options	CD-ROM, DVD/CD-RW, adapters



Pen Computing
EDITOR'S CHOICE

Toshiba Portege 3500

List price: starting at US\$2,199
Contact: global.acer.com

Anyone who wants Tablet PC functionality without giving up the comfort and familiarity of a conventional notebook should check out the Toshiba Portege 3500. The Portege looks and feels just like a standard ultra-light laptop. Its 12.1-inch display is larger and its 1.33GHz Pentium III processor faster than anything available from the competition. It has a full size keyboard, a tough magnesium housing, and even a SD/MMC card slot in addition to its PC Card adapter. A sturdy, well-engineered hinge lets you swivel the display and fold it flat onto the keyboard, turning the Portege into a slate. Among the drawbacks: significant heat build-up, screen flexing when you tap the display with the pen, and we'd like to see an internal optical drive in a device this size. Else, it is hard to beat Toshiba's excellent and versatile notebook convertible.

SPECIFICATIONS

Form-factor	Convertible notebook
Processor/Speed	Mobile Pentium III/1.33 GHz
Chipset	Trident Cyber Aladdin-T
OS	Microsoft Windows XP Tablet PC Edition
Standard/Max RAM	256MB/1024MB
Disk	20/30/40/60 GB
Card slots	1 PC Card Type II, 1 SD Card
Display type	Transmissive TFT
Display size/res	12.1-inch/1024x768
Color depth	16.7 million
Digitizer/pens	Wacom/1
Keyboard/keys	Integrated, 84 key, 100%
Ruggedness	standard
Housing	Magnesium outer/plastic inner
Dimensions and volume	11.5 x 9.25 x 1.3
Weight	4.1 lbs.
Power	10.8 V 3.6 AH Li-Ion ("3.5 hrs.")
Interface	2 USB 2.0, RJ11, RJ45, IrDA
Interface	audio, video, 802.11b
Options	CD-ROM, DVD, DVD/CD-RW
Options	Battery charger, extra pens



Itronix GoBook II

List price: US\$4,495
Contact: www.itronix.com

Itronix' GoBook II builds on the initial GoBook (still available) and the company's older line of rugged X-C "Cross Country" notebooks. The GoBook II is improved in many ways, and considerably more powerful with its 1.7GHz mobile Pentium 4. Its magnesium housing, tight seals, and generous use of shock mounting make the Go-Book II a rugged notebook suitable for almost any environment. An expansion bay can accommodate a number of drive options or a second battery. A phosphorescent keyboard glows white in the night without using power. The anti-glare coated 12.1-inch display provides a degree of outdoor readability, and there is a transreflective option. The GoBook is built for wireless communication and can accommodate a variety of radio modems. An excellent combination of ruggedness, expandability, and performance.

SPECIFICATIONS

Form-factor	Rugged notebook
Market(s)	Test and measurement markets
Processor/Speed	Intel Pentium 4M/1.7GHz
OS	Microsoft Windows XP Professional
RAM/Storage	128-1024MB/20-30 HD
Card slots	1 PC Card Type II/III
Display type	Color-vue transmissive TFT
Display size/res	12.1"/1024 x 768 XGA
Digitizer/pens	touch/1
Keyboard	87 key waterproof, full-scale
Housing	Magnesium die-cast
Operating temp.	-10 to 140 degree F
Sealing	IP54
Shock	26 x 3 feet to concrete
Dimensions	12.0 x 9.8 x 2.4
Weight	7.9 pounds
Power	67 Whr Li-Ion
Interface	RS232, IrDA, PS/2, USB, dock
Interface	audio in/out, RJ11, RJ45, media bay
Options	HD/FD/CD-ROM/DVD, Bluetooth
Options	12.1" transfect. display, various RF



Panasonic Toughbook CF-T1

List price: US\$2,355
Contact: www.panasonic.com/toughbook

The Toughbook T1 is a compact, ultra-light notebook computer that weighs just 2.4 pounds. That's significantly lighter than even Tablet PC slates. Handsomely designed, the T1 has the look and feel of Panasonic's full-size Toughbooks, only downsized. Its 866MHz Mobile Pentium III processor and its bright 12.1-inch display make it a tool for real work. Despite its light weight, the Toughbook T1 feels sturdy and very well made, and it should as Panasonic uses the same materials and design principles as in its big, rugged notebooks. We liked the T1's full-size keyboard, very responsive touchpad, and almost total lack of annoying heat build-up, but missed a touchscreen option. Another plus: a large power pack provides excellent battery life. We got up to four hours. And the SD Card lets you store lots of data on a tiny card.

SPECIFICATIONS

Form-factor	Durable ultralight notebook
Market(s)	Professionals and business
Processor/Speed	Mobile Pentium III/866MHz
OS	Microsoft Windows XP Professional
RAM/Storage	256-512MB/40 HD
Card slots	1 PC Card Type II, 1 CF Card, 1 SD Card
Display type	Anti-Glare transmissive TFT
Display size/res	12.1"/1024 x 768 XGA
Digitizer/pens	NA
Keyboard	85 key, full-scale
Housing	Magnesium alloy, stainless steel hinges
Operating temp.	NA
Sealing	NA
Shock	NA
Dimensions	10.6 x 8.3 x 1.0
Weight	2.4 pounds
Power	32.6 Whr (4.4AH/7.4V) Li-Ion (around 4 hrs)
Interface	RJ45, RJ11, 2 USB 2.0
Interface	audio in/out, video
Options	USB CD-RW/DVD drive, 802.11b
Options	External USB floppy



Panasonic Toughbook CF-28

List price: US\$4,610
Contact: www.panasonic.com/toughbook

The Toughbook CF-28 is Panasonic's most popular machine for field computing in harsh environments. With an all-magnesium housing, the CF-28 sports excellent industrial design and, after the latest electronics update, most of the computing power of a state-of-the-art notebook without the durability headaches that come with standard consumer products. Now also available with a 12.1-inch SVGA transreflective display for superior outdoor readability, the CF-28 is a very capable and flexible performer with a range of expansion options to suit any need. It can be ordered pre-configured for several wireless data networks including the CDPD, GSM, GPRS and WiFi standards. The multi-purpose media bay, port panel, and PC Card bay are all protected under sealed doors; this notebook does not need a case, it is one.

SPECIFICATIONS

Form-factor	Rugged notebook
Market(s)	Government, police, military, utilities
Processor/Speed	Pentium III-M/1.0 GHz
OS	Microsoft Windows 2000/XP
RAM/Storage	256-512MB/30GB HD
Card slots	2 Type II PC Card
Display type	Transflective or transmissive TFT
Display size/res	13.3"/1024 x 768 XGA
Digitizer/pens	touch/1*
Keyboard	Backlit* 87-key, 100%-scale
Housing	Magnesium alloy
Operating temp.	-20 to 140 degree F
Sealing	IP54
Shock	26 x 3 feet drop to concrete
Dimensions	11.9 x 10.8 x 2.5
Weight	9.3 pounds
Power	60 Whr (5.4, 11.1V) Li-Ion ("4 hours")
Interface	RS232, Parallel, USB, PS/2, RJ45
Interface	IrDA, audio in/out, RJ11, power
Options	Docks, 12.1" transflective SVGA, RF
Options	Carry bag, 2nd battery, CD/DVD/CD-RW



Pen Computing
EDITOR'S CHOICE

Innovative technology

Panasonic Toughbook 07

List price: inquire
Contact: www.panasonic.com/toughbook

When evaluating the Panasonic 07 you need to forget everything you know about mobile computers because this one is different. The 07 consists of a "computer" that's about the size and weight of a standard brick, a dock that offers just about any port and interface you can think off, and a wirelessly connected 8.4-inch transfective TFT display. The idea is that you mount the dock with the computer in a car or a warehouse and then roam around with just the 1.5 pound tablet to carry. The tablet remains connected to the computer via an 802.11b wireless link and acts just as if it had the computer built in. If you need to roam further from the base, you can simply stick the PC "brick" into a holster-vest that also has a pocket for the display, and the whole system becomes a wearable computer. Excellent idea, and it works great.

SPECIFICATIONS

Form-factor	Slate
Market(s)	Safety, warehouse, hospitality
Processor/Speed	Intel Pentium M/900 MHz
OS	Microsoft Windows 2000
RAM/ROM	128 to 256 MB/ 5 GB HD
Card slots	1 PC Card Type II
Display type	Transfective TFT
Display size/res	8.4-inch/800 x 600 SVGA
Digitizer/pens	touch/1
Keyboard/keys	Opt. external
Housing	Magnesium-alloy
Operating temp.	14 to 140 F
Sealing	IP67
Shock	26 x 4 feet to concrete
Dimensions and volume	7.9 x 3.6 x 2.1
Weight	2.1 lbs. (display 1.5 lbs.)
Power	13.3 WH (1.8 AH/7.4V) Li-Ion ("up to 4 hrs.")
Interface	Dock, RF
Interface	RS232, USB, 802.11b
Options	Port replicator, wireless, dock
Options	CD-ROM, vehicle mount



Pen Computing
EDITOR'S CHOICE

Rugged pen tablet

Xplore Technologies GeneSys Maximus/Pro

List price: inquire
Contact: www.xplorettech.com

The Maximus is the flagship of Xplore Technologies' GeneSys line. Despite a larger 12.1-inch display compared to the GeneSys II, the Maximus has the same proportions and weighs just five pounds. Overall design and construction is trust-inspiring, and downright tanklike. The magnesium case has absolutely no flex and combined with massive rubber bumpers, protects the large XGA color display. A transfective SVGA 12.1-inch display is also available. Onboard connectivity is limited to IR and USB, but the Maximus offers excellent I/O via some of the best (and most secure) docking systems in the business. While the resistive passive digitizer precludes the use of the XP Tablet PC Edition, this is not a big issue (yet) in the Maximus' target markets where a touch screen and the rock-solid Windows 2000 may actually be preferred.

SPECIFICATIONS

Form-factor	Rugged Slate
Market(s)	Utilities, government, military
Processor/Speed	Intel Pentium III/700 MHz
OS	Microsoft Windows 2000 or XP
RAM/ROM	128 to 512MB/up to 40GB HD
Card slots	2 Type II PC Card internal
Display type	Transmissive or transfective* TFT
Display size/res	12.1-inch/1024 x 768 XGA
Digitizer/pens	touch/1
Keyboard/keys	Optional external
Housing	Magnesium alloy with bumpers
Operating temp.	-4 to 140 F
Sealing	IP54
Shock	20g, 11ms, sawtooth wave
Dimensions and volume	12.0 x 9.0 x 1.5
Weight	5.0 lbs.
Power	Li-Ion ("up to 6 hrs.")
Interface	IrDA, 2 USB
Interface	XPander, 802.11b*
Options	XPander and Quick Release docks
Options	FDD, CD-ROM, GPS, RF, lock