



“Geospatial Tool Kit” Training System Specs

(last updated January 2007)

For our *training system*, we use:

HP/Compaq iPAQ hx2400 series Pocket PC, Garmin GPSmap 60 and HGIS Plus (as of October 2005)

NOTE: The system specified below was designed for *training* and may be different from what your organization uses – *this is only a guide to what we use in trainings, or what we will use in the near future*. This is NOT in any way an endorsement of any of these products or vendors. Prices listed change daily – the more you search on the Internet, the more likely you will find better prices. Product numbers and websites change frequently as well – this is ONLY a guide!

HANDHELD COMPUTER

HP Pocket PC http://welcome.hp.com/country/us/en/prodserv/handheld.html?jumpid=reg_R1002_USEN

HP iPAQ hx2495 Pocket PC (handheld computer) NOTE: model numbers change **frequently**
http://www.shopping.hp.com/store/product/product_detail/FA674B%2523ABA/1?jumpid=in_r329_personalization/browse1/PDP_PDP



Display: 3.5" viewable size, 16-bit color transfective

Processor: Intel PXA270 processor 520MHz

Operating System: Windows Mobile 5.0

Memory: 256 MB total memory (192 MB ROM 64 MB RAM)

Memory expansion: Integrated SD and CF slot

Wireless: Wi-Fi (802.11b) and Bluetooth wireless technology

Battery: Removable/rechargeable Lithium-Ion (1440 mAh)

Included accessories: USB desktop synchronization cradle, stylus, AC adapter, charger adapter

REVIEWS

Overview of the hx2400 series:

<http://h10010.www1.hp.com/wwpc/us/en/sm/WF05a/215348-64929-215381-314903-f67-421399.html>

Review of the hx2490 (a slightly earlier version): <http://www.mobiletechreview.com/ipaq-hx2490.htm>

Review of the hx2495 http://www.pricegrabber.com/rating_getprodrev.php/product_id=12871954/id_type=M/

VENDOR OPTIONS: Many! And prices vary frequently, so shop around!

First check HP websites, then explore web as prices vary widely.

Then check price comparison websites like Froogle:

<http://froogle.google.com/froogle?q=HP+iPAQ+hx2495&hl=en&lr=&safe=active&sa=X&oi=froogle&ct=title>

PRICE ≈ \$350 – \$400. Prices vary wildly, so be sure to search diligently! Also, if your organization is an educational institution, you may qualify for an educational discount if you purchase directly from HP.



GPS RECEIVER (two options listed, the second is more powerful but also more expensive)

Garmin GPSmap 60 GPS Receiver

<http://www.garmin.com/products/gpsmap60/>

With the GPSmap 60, Garmin has loaded a full basemap of North and South America into one small unit. This unit is also designed to provide precise GPS positioning using correction data obtained from the Wide Area Augmentation System (WAAS). This product will provide position accuracy to less than three meters when receiving WAAS corrections.

The basemap contains lakes, rivers, cities, interstates, national and state highways, railroads and coastlines. The GPSmap 60 is also equipped with additional memory totaling 24 megabytes. The added memory allows the GPS to accept downloaded map data from Garmin's entire line of MapSource® CD-ROMs. The GPSmap 60 can communicate with a laptop as well as a handheld computer. It has a feature that allows a user to calculate area without connecting to GIS software on a handheld.

Note: The GPSmap 60 is not to be confused with the less capable, less expensive GPS 60, which does not have the memory, extensibility or mapping capabilities that the GPSmap 60 does. Be sure to get the unit you intended! **Second Note:** For a bit more money, you can get more out of the new version of this unit--see below.

VENDOR OPTIONS: Many! And prices vary frequently, so shop around! Some Examples:

GPS City (<http://www.gpscicy.com/>)

6 Sunset Way, Suite 108

Henderson, NV 89014

Phone: 1-876-GPS-CITY OR 702-990-5600

product: <http://www.gpscicy.com/item-garmin-gpsmap-60/60map.htm>

SKU: 60MAP

GPSNow.com: <http://gpsnow.com/gmmap60.htm>

PRICE ≈ \$200 - \$250

An excellent alternative for a bit more money (\$350 to \$450)...

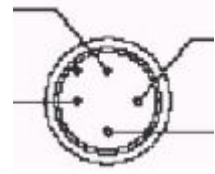
The **Garmin GPSmap 60cx** is a more recent model. It has a more sensitive chip (SiRFstar III™ high-sensitivity GPS receiver) which is reported to work better under tree canopy. This unit also features color display, expandable memory (a removable microSD card slot and (64 MB microSD included). For more information, check out this review:

<http://www.pocketgpsworld.com/garmin-60cx-review.php>GPS City: <http://www.gpscicy.com/item-garmin-gpsmap-60/60cx.htm>GPSNow.com: <http://gpsnow.com/gmmap60cx.htm>Amazon: <http://www.amazon.com/gp/product/B000CSWHCY/ref=nosim/102-0648242-7852963?n=172282>

GPS to iPAQ INTERFACE CABLE

NOTE: Even though you can use BlueTooth features with some GPS receivers, we HIGHLY recommend you obtain an interface cable to link your GPS to the handheld computer.

Garmin GPSmap 60 Interface Cable (“r” type – round plug) for Garmin r Series to iPaq. Transfer data between any of the Garmin GPS WITH a standard straight four pin R connector with most HP iPAQ Pocket PCs.



VENDOR OPTIONS: Hard to find!

These cables are not easy to find. Our current best recommendation is:
SupplyNet 800-826-0279 <http://www.supplynetwireless.com/>

PART NUMBER: 150074I-GPS

Data Cable with Auto Charger

Directly connect your **Garmin** 12XL, 48, **60c**, **60cs**, **60cx**, 76, 89, 90, 92, 176, 295, GPS II, II+, III, III+_/V, to **HP-iPAQ** hx2100, **hx2400**, hx2700, hx4700/ rx3100, rx3400, rx3700, rz1715 Series

Includes a cigarette lighter adapter cable that will charge and power the Compaq iPAQ, and simultaneously power the GPS device!

PRICE ≈ \$60.00



REVIEW: <http://www.supplynetwireless.com/review-gps-cables.cfm>

NOTE: Do you have a different PDA or a different GPS receiver?

Try: <http://www.supplynetwireless.com/Garmin-Cables.cfm>

Garmin cables and other GPS cables connect directly from the GPS data port to the PDA sync port and are available for all PDA's. In addition to handling data, these convenient cables power the GPS and the PDA simultaneously with a detachable auto charger cable. They are 4 feet in length and regulate voltage between PDA and GPS. Garmin cables can handle speeds of up to 115,200 bps. No drivers or software is required



Garmin MAP SOURCE (OPTIONAL – but very useful if you want detailed maps on your GPS receiver)

Garmin MapSource US Topo

<http://www.garmin.com/cartography/mapSource/topo.jsp>

<http://www.garmin.com/cartography/>

This CD contains digital topographic maps for the U.S., including Alaska and Hawaii that are comparable to the U.S. Geological Survey 1:100,000-scale paper maps. These maps can be downloaded onto the Garmin GPS receivers listed in this spec sheet. Please note that the software is proprietary and thus the maps cannot be transferred over to a GIS -- however the work well on the GPS receiver and the desktop software provides some basic functionality where you can view your waypoints and tracks against the Map Source maps.

VENDOR OPTIONS: Many! And prices vary frequently, so shop around!

One example:

Garmin (<http://www.garmin.com/cartography/mapSource/topo.jsp> or <http://www.garmin.com/cartography/>)

GPS Now (<http://gpsnow.com/gmms.htm>)

Price: ≈ \$90.00

GIS SOFTWARE

StarPal HGIS® PLUS (GPS Basic + Image, Edit, & Print)

VENDORS:

There are a number of GIS software packages that will work on a handheld computer. The one we currently use in our training events:

StarPal HGIS

2531 Wapiti Rd.

Ft. Collins, CO 80525 tel: 1-970-229-0560

NOTE: If you are connected to an educational institution, you MUST call StarPal owner Richard Harrington directly for the educational discount on HGIS. All others will be directed to a distributor, which can be found on the StarPal website: <http://www.starpal.com>

It is VERY important that you tell Richard the brand/model Pocket PC and GPS receiver you are planning to use, EVEN IF it is exactly the same as what is listed above.

Price ≈ \$250 with educational discount

NOTE: The big GIS software company is called ESRI and they sell most popular software: ArcPad (<http://www.esri.com/software/arcgis/arcpad/index.html>) – we do use this, however we found it to be challenging for first time users during training events. However, it is a very powerful software and used by many organizations. HGIS has less functionality, but what functions it does have are useful for agriculture and natural resource management. Moreover, it is accessible to first time users, thus it is what we use for training events.



ACCESSORIES THAT YOU REALLY NEED – MEMORY CARD READER

Flash Memory and Memory Card Reader

In order to move data from a workstation to an iPaq, and vice versa, you may want to use a form of "flash memory" card and a "card reader/writer". The iPaq Pocket PC should have **SD (Secure Digital)** capability built in, and some units have **CF (Compact Flash)** style ports built-in, in the cradle or in an expansion pack. In order to read this memory on your laptop or desktop computer, you'll want a memory card reader. Pretty much any one which supports SD and CF will do. Some cutting-edge desktop and laptop computers are coming with card readers built-in, as well.

Example memory card reader/writer:

LINKSKEY LKA-CR84B 19-in-1 USB 2.0 External USB Card Reader/Writer

This is a memory card reader which supports 19 different styles of flash memory (including both SD and CF), and is a good buy because it may be used for other types of memory in the future or for other projects.

Model #: LKA-CR84B Item #: N82E16820300903

Price: \$11.00

Example vendor: newegg.com (<http://www.newegg.com>)

Product: <http://www.newegg.com/Product/Product.asp?Item=N82E16820300903>



They have customer reviews and feedback infrastructure, so you may read what users have to say before you buy it.

You can also pick up **SD and/or CF memory cards** at newegg (<http://www.newegg.com/>) (we recommend you buy 2 or 3 for flexibility, but you will only need one to get rolling). They have a flash memory "store", where you can refine searches by type of memory and compare features (for example, there are many sizes depending on your data needs) and prices:

<http://www.newegg.com/ProductSort/SubCategory.asp?SubCategory=68&DEPA=1>



<<<Secure Digital (SD)

Compact Flash (CF) >>>>



Optional Accessories: Battery Solutions

How to Provide Back-up Battery Power for Extended (> 6 hours) Field Work

“Do It Yourself” Camcorder Lead Acid Battery Assembly

Sealed Lead Acid Camcorder Battery,

HS-C130C Sealed Lead Acid Camcorder

Product code: 253268,

Price: \$26.99

Example vendor: Batteries.com <http://www.batteries.com>

Part: <http://www.batteries.com/productprofile.asp?appid=253268>

Charger for above battery

Sealed Lead Acid Camcorder Battery Charger (specifically for the battery above)

Product code 314222

Price: \$11.99

Example Vendor: Batteries.com <http://www.batteries.com>

Part: <http://www.batteries.com/productprofile.asp?appid=314222>

Socket (cigarette lighter assembly)

Product code: za2010-nd, (made by MPD -- Memory Protection Devices)

Plastic, Inline, Cigarette Socket (cigarette lighter assembly)

Price: \$1.13 ea

Example vendor : Digi-key.com <http://www.digikey.com/>

Part: type in “za2010-nd” <http://www.digikey.com/scripts/DkSearch/dksus.dll?KeywordSearch>

Clip cords

8" Cord, Lead Acid Clip, DC Plug (made by MPD -- Memory Protection Devices)

The clip cords from digikey are the adapters that clip into the batteries. NOTE: Once you have assembled these parts, **you will need to solder the clip cord to a female cigarette lighter adapter.**

Product code: za5350-nd

Price: \$2.91 each

Example vendor : Digi-key.com <http://www.digikey.com/>

Part: type in “za5350-nd” <http://www.digikey.com/scripts/DkSearch/dksus.dll?KeywordSearch>

12 VDC Y-Adapter, part # 270-1535

Example vendor: Radio Shack <http://www.radioshack.com/>

Part : <http://www.radioshack.com/product.asp?catalog%5Fname=CTLG&product%5Fid=270-1535>

Something to carry the battery, etc. – many use a camera belt pack

Vendors and options: many! Find one that suits you.

ALL the above parts, assembled (left) and disconnected and labeled (right):



Photos courtesy of Extension Agent Jeff Schalau, Yavapai County, Arizona

Not depicted above, but still need: the link to your GPS and the link to your iPAQ:

12 Volt Adapter for the iPAQ

There are many vendors for this! Example Vendor: Amazon.com

Price: \$14.95

<http://www.amazon.com/exec/obidos/tg/detail/-/B00004TB3R/102-8728662-7961720?v=glance>



12 Volt Adapter for the GPS receiver

You will find this in the box with your GPS receiver. If not, you can purchase one for \$15 or \$20 by searching the web. Be sure to search with the name of your GPS receiver so the connector is correct!

