GPS Navigation

While not a substitute for map reading, navigation computers, handheld GPS units and PDA's can give the pilot a vast array of information about many aspects of the flight. Distance/bearing to a waypoint, current wind bearing /strength, estimated time of arrival to a waypoint and height required to get home are just some of the features on most navigation units.

While all this information is of great benefit to an experienced pilot, it is important to remember that any navigation device is subject to the forces of nature. There is always the possibility of a software or hardware crash in the unit itself, the unit could be incorrectly setup and the unit could lose satellite reception. The other problem with these units is that they can only tell the pilot what is happening right there at that moment. For example the unit may say that the pilot has enough height to get home but the pilot finds a lot of sink on the way home. Maybe the wind is a different direction or speed at a lower altitude on the way home. Experienced pilots face these problems all the time but they have enough experience to recognise this early and do something about it. Even if they don't recognise it early they have enough experience deal with a low level final glide.

It is easy to see why instructors recommend that early cross country pilots do not use these devices as it is far more important to concentrate on flying the aircraft than to be fiddling with an optional device, especially when they may be in an unfamiliar and possibly stressful situation.

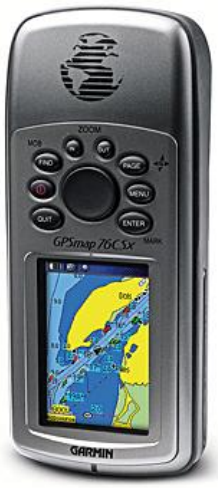
Navigation device types

Once a pilot gains some experience and confidence with cross country flying and has had practice reading maps then a GPS navigation device can come in handy. There are three main types of navigation devices.

Handheld GPS

These are your off the shelf units such as Garmin or TomTom. They come in various sizes and have various features. A recommended unit would be the Garmin Map76CX. The older Gramin Map76S also works well. These units are compatible with SeeYou for downloading waypoints and viewing flight traces. The unit also incorporates a barometer which helps to accurately record height in flight traces.

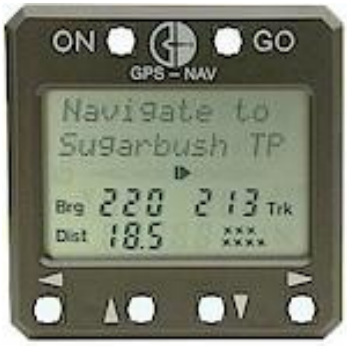
Before buying a handheld GPS unit talk to others around the club for advice on what types work best.



Garmin Map 76CX

In Glider Navigation Computers

These units are permanently mounted in the glider and usually are a combination Nav/Vario/Final Glide Computer. They sometimes incorporate a flight logger as well. Some allow memory sticks to be used to upload/download flight info or waypoints/tasks to or from the instrument. Some require a laptop to be plugged directly to the unit. Each brand is different in the way they operate so the pilot should get familiar with its operation before using it in the air.



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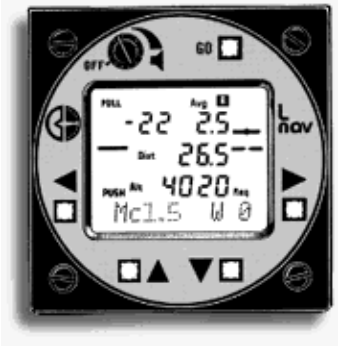


L-Nav

Borgelt

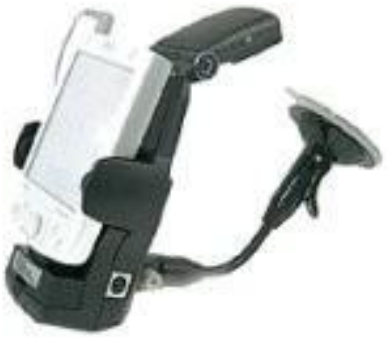
PDA's

These devices were never designed for this purpose so selecting the correct one is essential for fault free operation. There are literally hundreds of different types available and not all work. The only models that have been proven to work are the following:
IPAQ 4150, 5150 and 5550 series.
Do not use the IPAQ 4700 series as it overheats in the glider.

There are a number of navigation programs available for use on a PDA. Mobile SeeYou, Winpilot and XCsoar are just a few. XCsoar is different from the others as it is a free program where the others are up to a couple of hundred of dollars each. Each has its own features and program choice comes down to budget and personal preference.

IPAQ 4150

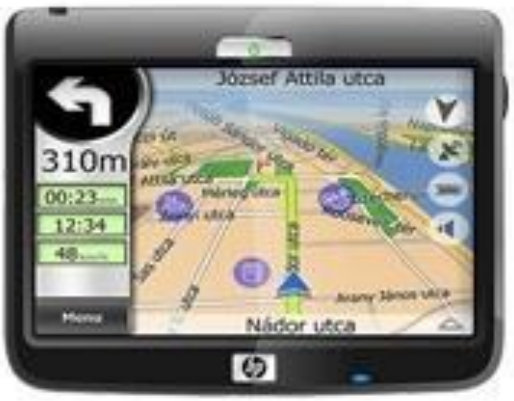
The PDA's battery power alone will not last a whole flight so the gliders mains power will need to be used. On top of that a GPS receiver will need to be plugged into the PDA. There are a number of ways to do both of these things. A FLARM can be used for GPS reception and the PDA can be hard wired to the glider but the voltage must be dropped to that of the PDA's voltage. Some in glider navigation devices have the ability to power and give GPS data to a PDA. Another way is to buy a PDA mount like the one pictured. The mount powers the PDA via a cable made to piggyback power from the glider bettery and also has an inbuilt GPS receiver. This makes the whole PDA unit easily removable from the glider.



PDA Mount/Power/GPS Reciever

PNA's

PNA's are basically navigational devices that, like PDA's, can be reprogrammed to run gliding navigational software instead. At the moment only versions of "Mobile SeeYou" and "XCsoar" are available for this type of device. The advantage of PNA's are that they have an inbuilt GPS receiver, a larger touch screen and are designed to handle hot environments. As with PDA's not all types work, so care is needed on which type to purchase. Consult someone with experience with these devices to answer any questions. Battery life can be a problem depending on flight length but larger external batteries can be made up or the device can piggyback power from the glider battery. Be sure the voltage is the same .



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