

Global Positioning Systems (GPS):

GPS is funded by and controlled by the U. S. Department of Defense (DOD). While there are many thousands of civil users of GPS world-wide, the system was designed for and is operated/owned by the U. S. military.

The nominal GPS Operational Constellation consists of 24 satellites that orbit the earth in 12 hours. There are often more than 24 operational satellites as new ones are launched to replace older satellites. The satellite orbits repeat almost the same ground track (as the earth turns beneath them) once each day.

The orbit altitude is such that the satellites repeat the same track and configuration over any point approximately each 24 hours (4 minutes earlier each day).

There are six orbital planes (with nominally four space vehicles “SVs” in each), equally spaced (60 degrees apart), and inclined at about fifty-five degrees with respect to the equatorial plane. This constellation provides the user with between five and eight SVs visible from any point on the earth.

GPS uses these satellites to triangulate your position. The GPS unit simply measures the travel time of the signals transmitted from the satellites, then multiplies them by the speed of light to determine exactly how far the unit is from every satellite it's sampling.



By locking onto the signals of 3 satellites the receiver calculate a 3 dimensional position fix, consisting of your latitude and longitude. Then by locking onto a fourth satellite it computes a 3 dimensional fix calculating you altitude, latitude and longitude position.

With the advent of the digital age GPS units are now available in any format you like:

- Vehicle mounted; i.e. plane, train, boat and automobile.
- Hand held
- Laptop
- Palm Pilot