

# GPS TECHNOLOGY

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GPS

## Abstract

*GPS, formally known as the Navstar Global Positioning System, is operated and maintained by the United States Department of Defense. The National Space-Based Position, Navigation, and Timing Executive Committee manages GPS. The deputy secretaries of the Departments of Defense and Transportation lead the committee, which has a permanent staff that is responsible for the development of GPS. GPS was initiated in 1973 to reduce the proliferation of navigation aids. By overcoming the limitations of many existing navigation systems, GPS became attractive to a broad spectrum of users. It was initially used as a navigational aid by military ground, sea, and air forces. In more recent years, GPS has been used by civilians in many new ways, such as in automobile and boat navigation, hiking, emergency rescue, and precision agriculture and mining. Precise satellite-based navigation and location system originally developed for U.S. military use. GPS is a fleet of more than 24 communications satellites that transmit signals globally around the clock. With a GPS receiver, one can quickly and accurately determine the latitude, the longitude, and in most cases the altitude of a point on or above Earth's surface. A single GPS receiver can find its own position in seconds from GPS satellite signals to an accuracy of one meter; accuracy within one centimeter can be achieved with sophisticated military-specification receivers. This capability has reduced the cost of acquiring spatial data for making maps while increasing cartographic accuracy. Other applications include measuring the movement of polar ice sheets or even finding the best automobile route between given points.*

## 1. Introduction

The GPS (Global Positioning System) is a constellation of 24 well-spaced satellites that orbit the Earth and make it possible for people with ground receivers to pinpoint their geographic location. The location accuracy is anywhere from 100 to 10 meters for most equipment. Accuracy can be pinpointed to within one (1) meter with special military-approved equipment. GPS equipment is widely used in

science and has now become sufficiently low-cost so that almost anyone can own a GPS receiver. The GPS is owned and operated by the U.S. Department of Defense but is available for general use around the world. Briefly, here's how it works: 21 GPS satellites and three spare satellites are in orbit at 10,600 miles above the Earth. The satellites are spaced so that from any point on Earth, four satellites will be above the horizon. Each satellite contains a computer, an atomic clock, and a radio. With an understanding of its own orbit and the clock, it continually broadcasts its changing position and time. (Once a day, each satellite checks its own sense of time and position with a ground station and makes any minor correction.) On the ground, any GPS receiver contains a computer that triangulates its own position by getting bearings from three of the four satellites. The result is provided in the form of a geographic position - longitude and latitude - to, for most receivers, within 100 meters. If the receiver is also equipped with a display screen that shows a map, the position can be shown on the map. If a fourth satellite can be received, the receiver/computer can figure out the altitude as well as the geographic position. If you are moving, your receiver may also be able to calculate your speed and direction of travel and give you estimated times of arrival to specified destinations.

I wish you the best of success.

mds  
August 10, 2009

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## 2. Conclusion

In conclusion, the purpose of this article has been to introduce you to the GPS and its use as a tool for dual sport riding and touring. The description of how it works was kept simple and to the point. A number of terms; waypoints, routes, trackback, and goto were explained to help you understand GPS operation

## Acknowledgment

I'd like to thank who helped me to do this project

## References

- [1] *A Guide to L<sup>A</sup>T<sub>E</sub>X*, Garmin Website.