



ARTICLE: DRIFTING PHENOMENON

1. GPS positioning principle

To understand this problem, first of all, we should understand the GPS positioning principle. From a mathematical point of view, it is the space known three positions, and you go to the relative distance of these three, find your location, which is three-dimensional geometry in a very simple question, it is the mathematical principles of GPS.

Correspond to the actual application, the known three position, the heavenly three satellites, since the satellite is in accordance with "Ephemeris" precision operation, so it is the position at a time we can know, which meets the mathematical principles problem solving in the first condition; the second condition is that you need to know to three satellites relative distance, the satellite launch specific radio signal, your GPS receiver signals received later than this time difference, because the radio propagation speed is known, so by this time difference can be calculated relative to the distance you satellites. Both conditions are met; your position will come out. More than just a simple description for GPS principles, practical application is much more complicated, in fact achieve the 3D positioning requires at least four satellites, the extra one is used to the timing. Friends who are interested can access relevant information to satisfy your curiosity.

2. Drift Caused Reason

Understand the principle of GPS positioning, we find that although the mathematical principle is very simple, but to achieve two known conditions through physical means, is a very complicated matter. First, the satellite in the sky, who can not guarantee that it is in their own orbit without any little mistake, there will always be more or less deviation. Secondly, your GPS receiver can not install a cesium atomic clock, the propagation velocity of radio waves is about 300,000 kilometers per second, a simple calculation if the time error of .00001 seconds, you will find that how much the distance difference is? Even if there is no time error, the propagation of radio waves in the air is affected by many factors, such as weather. The impact of the above is not the most important issue, more important reason is how much satellite signals influence you can receive. GPS signals are very weak, and the receiver is so small a ceramic antenna, you expect to have any good effect? So, if there's something blocking it, you will not receive the signal, even if you received a eight or ten strong satellite signal, will it be very accurate yet? Definitely, if you happen to catch the ten satellites are tied into a bunch of meetings or arranged in a neat team came home from school, you miserable.

The position of the satellite is also a very important factor for positioning accurate. Good condition is a strong signal of the satellite equilateral triangle state distribution in the three-sky corner, the relative distance is as large as possible, is not in approximate a straight line, this is the mathematical principles GPS decision. The above-mentioned, also only uncontrollable technical error, a "disaster" category, since ancient times, "Act of God" is never inseparable from the "man-made", when the level of technological development has been enough of these errors are reduced low, you will find another very embarrassing question is: somebody simply do not want you to get such a high accuracy. As you know, civilian and military GPS receiver frequency is not the same, there are scrambling civilian, is dedicated to give you trouble with!

Too many factors influence the positioning accuracy of GPS, it leads calculating per second coordinate position are different when you stand stationary. When these points together into line, you see no longer smooth-running track. Since the GPS device is configured to get the periodic position, it will try again and will produce the correct position.