

DUAL SATELLITE NAVIGATION METHOD AND SYSTEM

ABSTRACT

A method and system for determining the position of an object using a fixed station and a plurality of earth orbit satellites whose positions are known. Separate periodic signals are transmitted from the fixed station via first and second satellites to the object whose position is to be determined. The phase offset in periodic characteristics of the periodic signals as received from the first and second satellites is measured at the object. The phase offset corresponds to a relative time difference in propagation of the signals traveling two different paths to the object. The object transmits via the first satellite a return signal indicative of the measured relative time difference. This return signal is activated some time in the future according to the object local time, which is slaved to receipt of the periodic signal sent through the first satellite. This future time is the start of the particular time period as decided by the fixed station's schedule. At the fixed station, an instantaneous round trip delay, determined by the time offset of the current transmission clock time relative to the receive clock time of reception of the return signal, along with the measured relative time difference sent back on the return signal, is used to calculate the distances between the first and second satellites to the object. From these distances the position of the object is calculated.

Figure 1

This Sheet Has Been Replaced

