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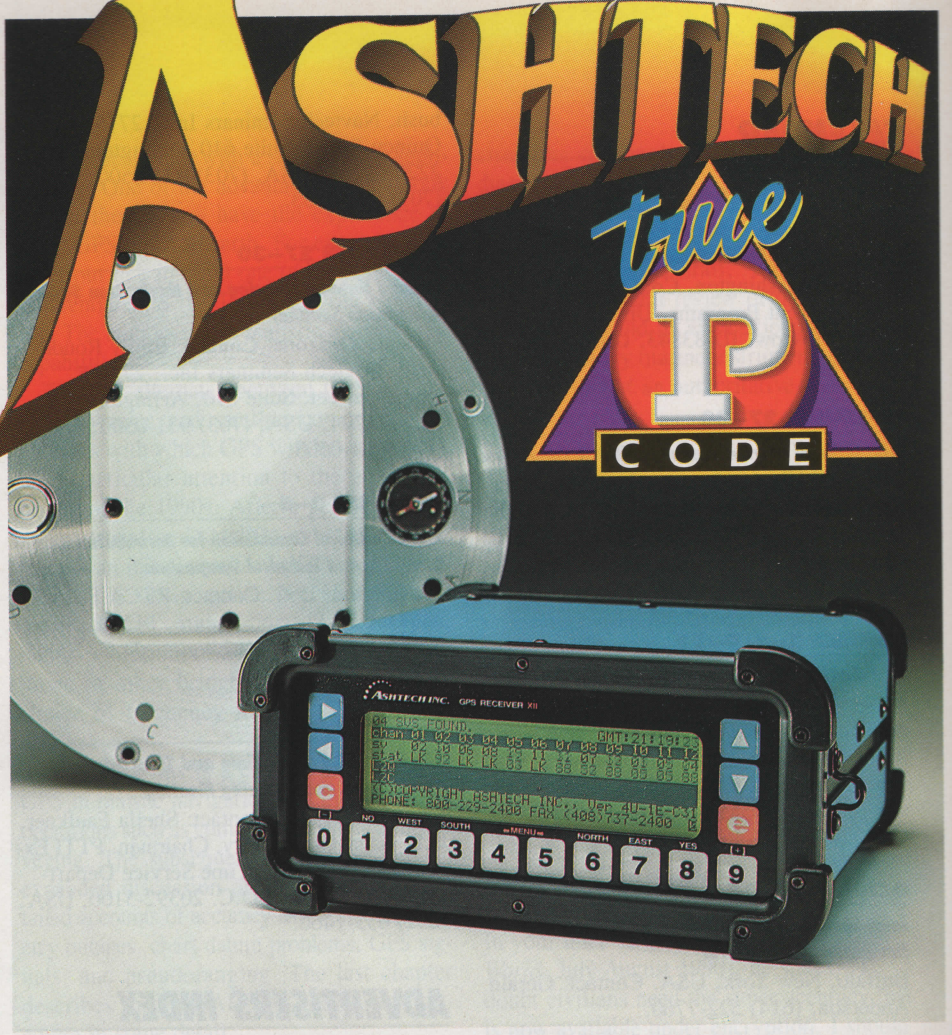
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Ashtech XII GPS . . . the world's most sophisticated GPS technology

ASHTECH true P CODE



Ashtech continues to add modular performance options to all versatile Ashtech XII GPS receivers:

☐ **New Enhanced Dual-Frequency**

Enhanced module extends 12 channel L2 tracking below 10° elevation in all dual-frequency receivers delivered after 1 Aug. 1990. It is available as an upgrade option for earlier receivers.

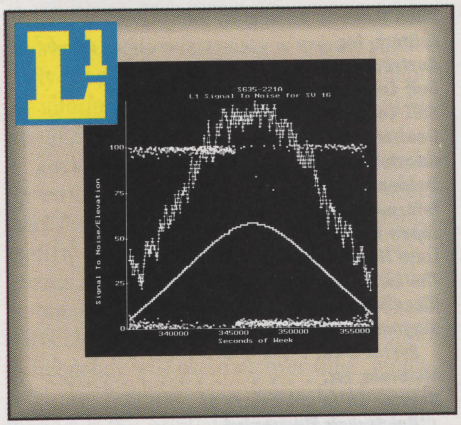
☐ **"True" P-Code Tracking Correlation**

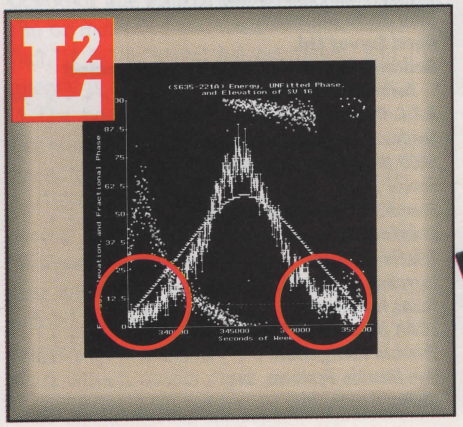
Factory option offers the complete processing gain, full carrier-phase wavelength and jamming immunity performance of "true" P-Code tracking. This module will be available in the 4th Quarter 1990 to fit all existing dual-frequency Ashtech XII receivers.

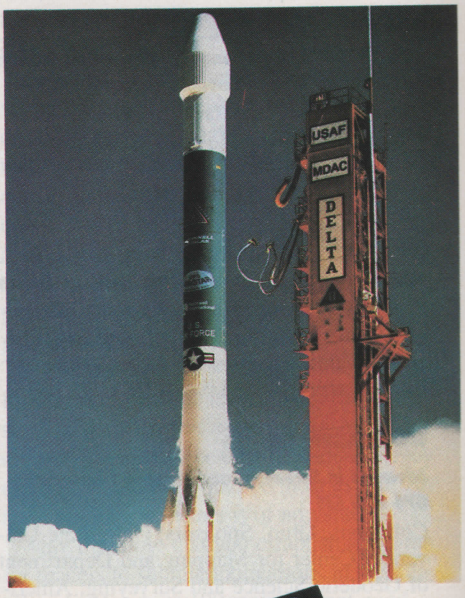
GPS TRACKING SIGNALS

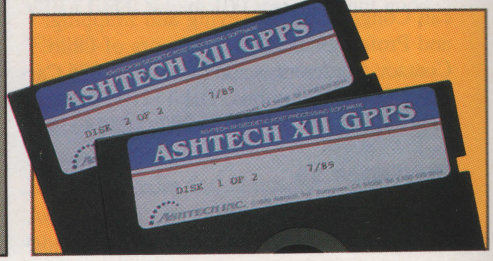
GPS receivers must generate matched codes in order to track the satellites. The L1 frequency includes both C/A and P-Code components while L2 includes only P-Code information.

Single-frequency GPS receivers track L1 signals via C/A codes; dual-frequency receivers require more sophistication in order to track the complex P-Code. Dual-frequency measurements permit removal of ionospheric refraction errors.









"TRUE" P-CODE TRACKING

Ashtech's P-Code module offers 12 independent "true P-Code" channels engineered to fully utilize the advantages of the P-Code component: complete processing gain, full-length (25cm) L2 carrier phase and inherent immunity from jamming.

Ashtech's P-Code tracking is based on correlating satellite information with a receiver-generated P-Code instead of a "pseudo-correlation" approach.

During those rare occasions when P-Codes may be scrambled (Anti-Spoof or Y-Code) by the GPS Control Segment, Ashtech XII receivers automatically switch to "codeless" L2 tracking.

The 12-channel P-Code module added to the enhanced Ashtech codeless L2 option provides the ultimate in GPS survey performance.

The Ashtech "true P-Code" tracking module will be available during 4th Quarter 1990 for all current Ashtech XII receivers equipped for dual-frequency operation.

NEW ENHANCED DUAL-FREQUENCY

Ashtech's new enhanced L2 codeless tracking provides substantial improvement in L2 signal reception, allowing satellite tracking down to 10° elevation.

Since the tracking geometry of GPS satellites improves at lower elevations, Ashtech's new dual-frequency enhancement will significantly improve results for static, kinematic and pseudo-kinematic surveys.

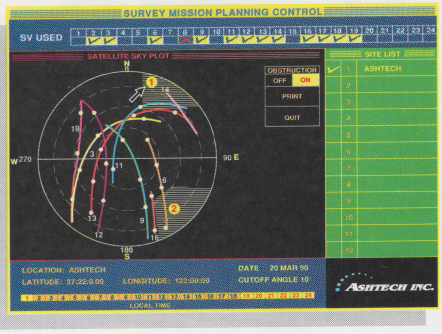
The two graphs on the opposite page illustrate the tracking signal strength and elevation angle of a satellite for both L1 and L2. In both cases, the closeness of the dots to 0 and 1 level indicate confidence in determining the whole number of carrier cycles between carrier phase measurements.

Notice the tight tracking of the L2 carrier below 10°; the dots contain the effect of the ionosphere.

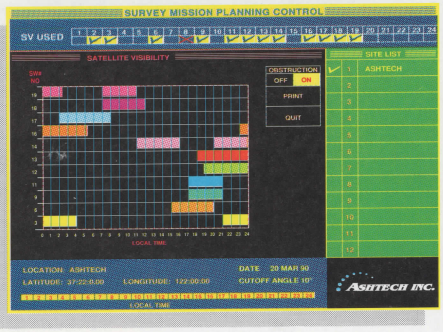
A single antenna cable is now required for both L1 and L2 signals. The enhanced dual-frequency module is available now for all Ashtech XII GPS receivers, including the smaller M-XII.

ASHTECH GPPS DATA PROCESSING

The most recent Ashtech GPPS-2 software expands the flexibility and reliability of any GPS survey employing static, pseudo-kinematic and kinematic techniques. The menu-driven software offers fully automatic batch processing plus complete operator control over processing parameters.



Mouse-driven graphics add new dimensions to GPS survey planning and post processing. Satellite SkyPlot shows elevation and azimuth as well as site obstructions; Visibility Chart identifies local rise and set times.



Easy-to-use graphics and menu-driven user interface simplifies data processing and creation of survey reports and network adjustment files.

NEW DIMENSIONS TO GPS SURVEY PLANNING

Survey mission planning is "fun;" the flexible mouse-driven software sets new standards in operational ease, versatility and access to comprehensive site data. Sites can be selected from a world map display, pre-stored lists or by coordinates. Each site has its own, readily modifiable, obstruction plot. The visibility plots combine the effect of all obstructions at all sites.

QUARTER-SECOND RECORDING INTERVAL

Ashtech XII receivers provide very fast measurement and recording rates; the receiver can collect data from 12 satellites, compute positions and record data as fast as FOUR TIMES EVERY SECOND . . . a rate ideal for fast kinematic and photogrammetry applications. The recording interval can be set from .25 to 999 seconds.

EXPANDED DATA LOGGING

The optional expanded data logging capabilities can store more than 200 hours of 6-satellite data at a 20-second recording interval. At 1-second intervals, in aerial photogrammetry for example, 10 hours of 6-satellite data can be recorded (2½ hours at a quarter-second interval).

Ashtech is committed to GPS and continues to add new levels of accuracy, portability and operational simplicity to the art and science of the geodetic survey.



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Circle 33



ASHTECH GPS

3DF

THREE DIMENSIONAL DIRECTION FINDING

A revolutionary new capability! The Ashtech 3DF Three-Dimensional Direction Finding receiver system determines attitude angles using GPS satellites. Combinations of azimuth and elevation, or pitch, roll and yaw angles are provided in real-time along with three-dimensional position and velocity for static or dynamic platforms.

The 24 channels of the ruggedized Ashtech 3DF are configured as four 6-channel groups with each group receiving GPS signals from seperate antenna. The small antenna size and flexible geometry permit installation on a variety of platforms. (A 3 X 8 configuration is also available for users who require only azimuth and elevation.)

The Ashtech 3DF displays attitude angles, position and velocity--recording data, along with carrier phase measurements in internal memory. Two high speed RS-232 ports provide easy interface with other systems.

The 3DF system is ideal for many "pointing" applications. In aerial photogrammetry, where aircraft heading, attitude and GPS data are required, the Ashtech 3DF removes the need for INS.

The Ashtech 3DF is not affected by magnetic fields or Schuller effects; it operates anywhere in the world, including the polar regions, with an accuracy of about 1 milliradian (3.5 arc-seconds).

Please turn to previous page for other Ashtech news.

ASHTECH

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