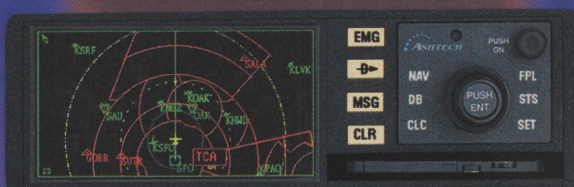


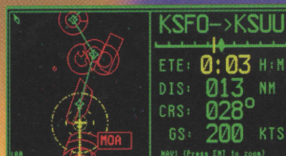
# GPS

Unique color moving map displays aircraft position, plus aircraft warning flags (TCA, ARSA, MOA, Prohibited and Restricted Areas).



**Ashtech  
ALTAIR™ AV-12**  
GPS Receiver

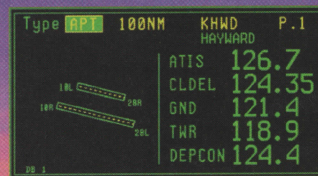
User-friendly interface simplifies flight planning; receiver stores up to 100 flight plans and up to 1000 user-defined waypoints.



Navigation information -- range, bearing, course over ground, speed over ground, ETE and course deviation as graphics and as text.



The bright CRT display replaces LEDs for easy-to-read graphics using symbology common to NOAA sectionals & WAC charts.



Comprehensive airport, NAVAID and communications frequency information plus Emergency Airport Search, "Nearest" (airport, VOR, NDB, waypoint) and "Direct To" functions.



## Ashtech... Technology Leader in GPS and Moving Map Avionics

- Fully integrated, high-resolution color moving map display with common NOAA symbology
- Split Screen Mode -- CRT simultaneously displays moving map along with navigation information (XTE, course, speed, distance to go, ETE)
- Dedicated 12 Channel GPS Receiver with one-second update rate and low-drag, high-precision GPS antenna for high accuracy 3-D positioning
- Jeppesen NAVDATA with domestic and international database information
- Satellite Status/RAIM
- Course deviation indicator
- Offset range and bearing from reference waypoint
- Stores up to 100 flight plans and up to 1000 user-defined waypoints
- Airspace Warning Flags-- TCA, ARSA, MOA, SUA
- Comprehensive NAVAID, Airport and Communications Frequency displays
- Optional PC-based route creation/edit capability
- Optional Differential GPS for meter-level navigation accuracy
- TSO Certification pending



1170 Kifer Road, Sunnyvale, CA 94086  
(408)524-1400 Fax(408)524-1500



## What comes after Y?

Ashtech's "Dual-Line Digital" Z-Tracking GPS Receiver permits uninterrupted use, even when Anti-Spoofing (AS) is activated. Our patented Z-Tracking technique interprets the P-Code signal when encrypted by breaking the encrypted Y-Code into its two components; the original P-Code and the code used to encrypt the P-Code. (When AS is off, the Z-12 auto-

matically reverts to P-Code tracking, providing geodetic positioning better than 5mm, plus 1ppm).

What does this mean to you? First, Ashtech Z-12 technology provides true "mile-a-minute," centimeter-level surveying (survey baselines of 1 mile using only 1 minute of station occupation time.) Second, you get ten-times better jam immunity because of our dual-bit signal processing capability. Third, using the full capabilities of GPS dual-frequency reception,

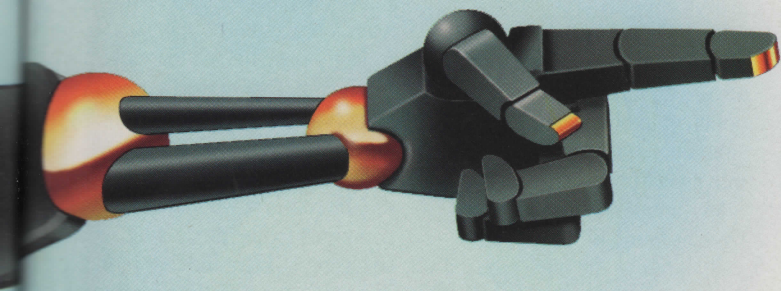
adverse ionospheric refraction effects are virtually eliminated when measuring medium-to-long base lines. Using high-quality measurements on both L1 and L2 bands in Z-Tracking or P-Code modes permit significantly shorter station occupation time -- and this means improved productivity from your survey crews.

Working with the Z-12, you can stop worrying about losing lock when working near transmitters or high-voltage power lines. With virtually no

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restrict  
signal  
nearly  
phase  
for k  
and p  
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warm  
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your Z  
(Preci  
Resolu

# Now, kiss AS goodbye!



restrictions due to encrypted satellite signals, you can take advantage of nearly instantaneous integer-cycle phase ambiguity resolution for kinematic surveying and precision navigation in the time it takes for most other GPS receivers just to warm up!

And that's not all. Equip your Z-12 with Ashtech's new PNAV (Precision Navigation Ambiguity Resolution) software, a precision post-

processing package which provides centimeter-level accuracy "on-the-fly," and you'll experience the full power of the Global Positioning System.

While Ashtech's Z-12 Receiver sets new standards in GPS technology for precision surveying applications and global navigation, it does not conflict with DoD objectives to protect against fake signals, nor does the use of the

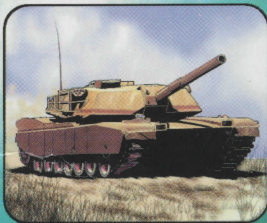
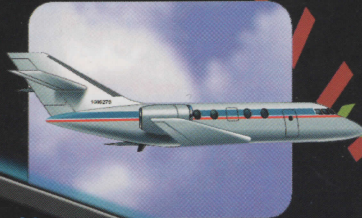
Z-12 GPS receiver system jeopardize national security in any way.

Call us today. We've got the last word in precision GPS operation — Z-12 Automatic Tracking!



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ADVANCED GPS TECHNOLOGY



## Ashtech 3DF™ Dynamic Platform Attitude & Positioning

*Attitude (heading, pitch, roll and yaw angles), position, velocity and time in a simple to use compact instrument.*

The Ashtech 3DF (Three-dimensional Direction Finding) system determines platform attitude, position and velocity using GPS satellites. Heading, pitch, roll and yaw angles are provided in real-time for both static or dynamic platforms. Real-time differential GPS is available to provide position accuracy of 1-3 meters.

The 24 independent channels, which are used for GPS satellite tracking, are configured as four 6-channel banks with each bank receiving L1 GPS signals from a separate antenna. Small antenna size and flexible antenna array geometry permit easy installation on a variety of land, sea or air platforms.

3DF displays platform attitude, position and velocity while storing these measurements internally at a 2Hz update rate; two high-speed RS-232 serial ports provide for simplified interface with other onboard systems.

Applications include INS integration, vehicle heading and attitude, photogrammetry and artillery pointing. The 3DF is an excellent real-time heading and attitude sensor for oceanographic and seismic exploration activities and for gyro calibration at sea.

Unlike INS, the Ashtech 3DF system is not affected by magnetic fields or Schuler effects. It operates anywhere in the world, including the polar regions, with an accuracy of about one milliradian or 0.057°. It can be used stand-alone or in an INS aiding role. In the latter, INS calibration and periodic gyro drift corrections can be performed continuously and automatically, dramatically reducing these labor-intensive tasks and effectively eliminating the associated platform down-time.

The Ashtech 3DF is available configured with graphic display, keypad and internal memory or in a sensor version (3DF ADU).



**ASHTECH**

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