

CoyoteSP 6.0

*HunterPro GPS
System
Description*



Hunter Pro

HIGH-LEVEL SECURITY SOLUTIONS™

www.hunterpro.com

support@hunterpro.com

HUNTERPRO-GPS SYSTEM DESCRIPTION

-Primarily the system consists in two components:

i) Base Station or Monitoring Center including:

- One or more PCs in a network.
- CoyoteSP AVL Software for Windows 95/98.
- Modem and Interface.

ii) Mobile Units or individual GPS Modules

installed on each mobile or vehicle including:

- High sensitivity GPS Antenna.
- High reception GPS Board.
- Data Processor and Intelligent Engine (Microprocessor).
- Modem for data communication (Radio or Cellular).
- Non-volatile Memory for events and position storage.

System brief:

-HunterPro-GPS system is designed for allowing a realtime remote monitoring (without interrupting events storage or other tasks) and in this way you can find out position, status, speed, etc. from each of the vehicles with radio or cellular coverage. You can block the engine remotely, activate environmental hearing, and have a remote conversation with the vehicle's passengers. This is an optional accessory called VOX or VOX FULL in case of conversation.

CONTROLS DESCRIPTION

-In the following pages we will introduce a description of the functions that the user can perform with the Automatic Vehicle Location (AVL) Software «**HunterPro CoyoteSP**». This software is designed for operating systems Windows 95/98 or compatible.

-The user interface has three control areas:

- 1) Data Window.*
- 2) Command Window.*
- 3) Status Bar.*



USER INTERFACE DESCRIPTION

1) Data Window.

-In this window you can display, select and modify each customer's data in the Data Base
You can also Create, Delete or Modify the database directly.

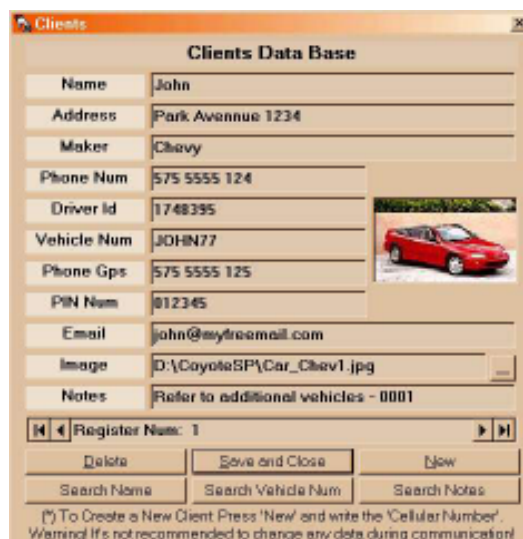
-This window has the ability of displaying a picture to identify each Mobile Unit correctly.

-There are many options widely programmable and configured by the user.

-Search for Vehicle Id option or search for part of an Id within the Data Base.

-Search for Comments or search for part of a Comment within the Data Base.

-Every search automatically returns to the beginning of the Data Base and return results with the entered word.



-Map position and scale control with several Zoom levels.

-Automatic Centering follows of the vehicle in the middle of the screen using all maps available for the active map seamless.

-Manual Centering of the vehicle in the middle of the screen easily commanded by intuitive cursors as show below.



2) *Command Window.*

-Fast visualization of status of communication between the Base Station and each Mobile Unit.

-Visualization and identification in a graphic and intuitive fashion of each satellite that is being tracked and the other satellites' status.

-One-click Connect and Disconnect button with the Mobile Unit.

-Wide commands and remote actions available, from enable / disable an output to configure the security system arming.



- Phone number modification: this is the phone that Mobile Unit will call in case of detecting an Event (example: Panic button is pressed, primary battery source disconnected, etc).
- Access code modification (PIN Number) stored in Mobile Unit's non-volatile memory.
- All system information is refreshed in a one-per-second basis.
- Remote command are sent with the press of a button and entering the Administrator Access Code (if programmed) to proceed.
- Realtime Security System visualization status with an alert sound.
- Fast mobile unit status visualization in every moment:

-Example: «Vox - ArmXYZ»

-This example show that the Mobile Unit is in VOX mode, and every Events are armed. This means that when the panic button is pressed or one of the sensors connected to the events are triggered, the unit will call to the phone number (stored in nonvolatile memory) and will report position and other relevant data for the user.

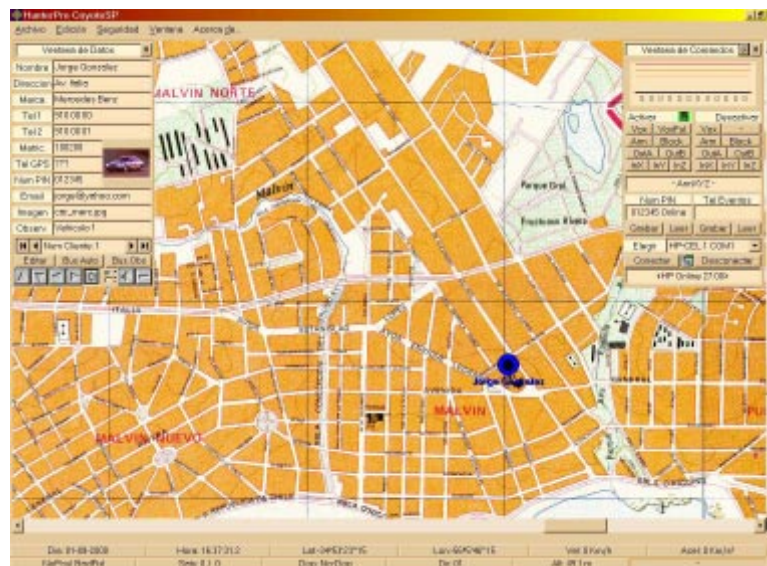
-Software Access Code with two-level access control: Operator Level (with restricted access: only can connect but cannot modify anything), and Administrator Level (with access to modify the Data Base, configure the system, activate remote commands, etc).

3) Status Bar.

Date: 03-09-2001	Time: 14:23:23	Lat: -34°52'34"04 S	Lon: -56°02'46"27 W	Vel: 90 Km/h	Accl: 0 Km/s²
2D: BestFix	Sats: 3 / 0	H-Dop: 2	Dir: 268.1°W	Alt: 59.8 m	www.hunterpro.com

-In the status bar the following realtime information is shown:

- 1) *Realtime Date and Time.*
- 2) *Realtime Latitude and Longitude.*
- 3) *Realtime Speed and Acceleration.*
- 4) *Realtime GPS Receiver Status (3D / 2D, etc).*
- 5) *Satellites Tracked / Visible.*
- 6) *Realtime DOP (Dilution of Precision).*
- 7) *Direction of Movement (Heading).*
- 8) *Realtime Height with ellipsoid reference.*
- 9) *Cursor Help: option where the cursor is.*



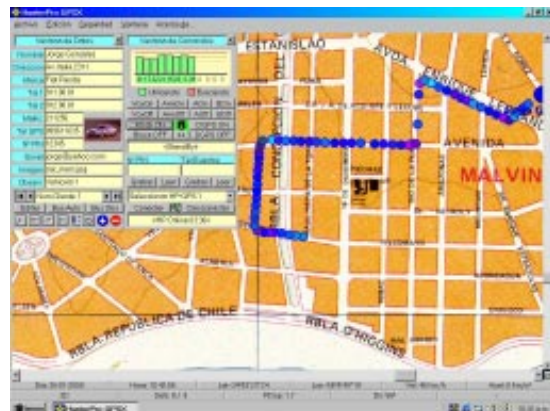
SOFTWARE FEATURES

-Each Mobile Unit is able to show a visible tracking on screen. On it you can see speed and acceleration of the mobile (one track per second is drawn on the map). This tracking disappears when the map is moved or the vehicle is centered on the map.



-Each vehicle is represented by a circular icon which indicates realtime Mobile Unit's state (if Panic status is triggered, etc) shown with an easy to identify color. Speed and acceleration are indicated in realtime with a tiny circle inside.

-When all events are off in the Mobile Unit the message «StandBy» will be shown in the «Command Window».



-A colorful icon in the «Command Window» shows realtime status of Block Engine feature in a simple and intuitive way, so the user is able to identify it quickly.

CONNECTING WITH THE MOBILE UNIT

-The user can call its Mobile Units every time and immediately get its geographic location and status, events and other data. In the same way, the Mobile can call the Base Station in case of detecting an event. The Base Station will answer automatically once a default number of “rings” occur.

-If any of the events have been triggered there will be a report on screen. Several number and type of peripherals can be connected serially to each event input, like a Sensor’s output, a Panic button, etc. This means that when the Panic button is pressed, or a Sensor is triggered, the user will find out immediately from his PC or notebook. The Mobile Unit icon’s color will indicate the Status and type of input which caused the alarm in the security system.

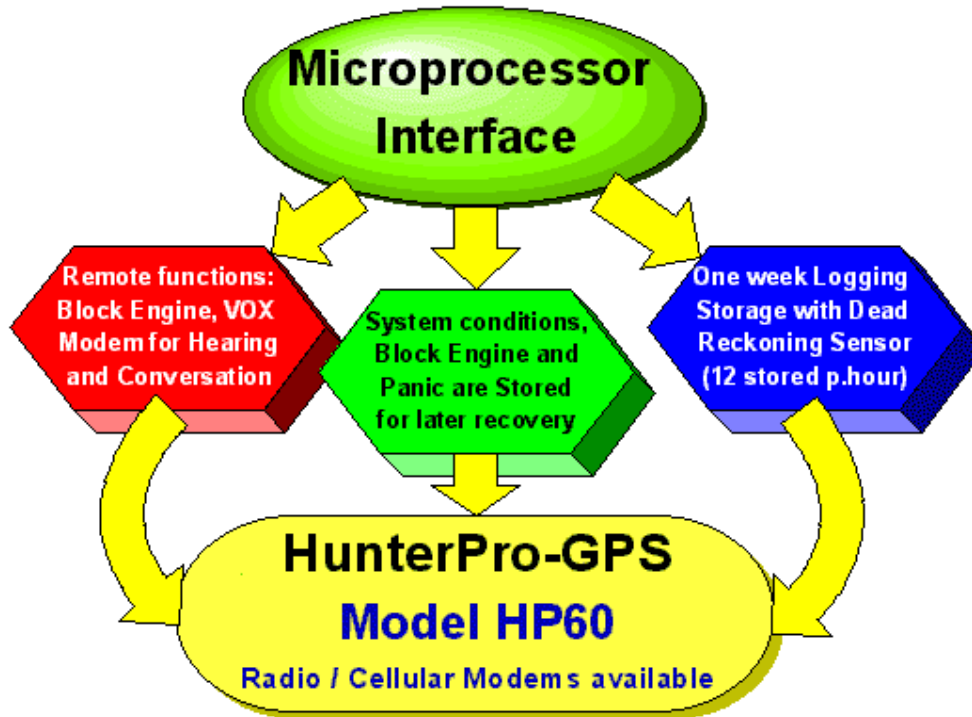
-To connect with a Mobile Unit you must:

1) Select the desired customer with the cursors in the database (each Base Station supports an unlimited number of customers).

2) Press the «Connect» button and the application will dial automatically and handshake with the vehicle unit.



HUNTERPRO-GPS HP-60 SPECS



HUNTERPRO CALL CENTER DRAWING

HunterPro-GPS's scalable Call Center with a wide range of possibilities:



Provides worldwide coverage:
-Radio (VHF, UHF, ISM)
-Cellular (AMPS, TDMA, GSM, SMS)
-Internet (Email, Webserver)

Offering a low-cost AVL solution with:
-High sensitivity 12-Channel receiver
-Block engine, environment hearing,
-VOX audio mode conversation.

-One week logging with events,
speed, heading and height storage.
-Full remote programmable features.

Supports all map formats:
-Raster maps (JPG, BMP, GIF, TIF)
-Digital maps (TAB, SHP, MIF, CAD)

SATELLITE STATUS

-The status of the satellites are shown on screen in realtime. Some features of the satellite's indicators are:

-Without Bar: satellite not available / not visible.

-Transparent Bar: satellite will be acquired.

-Red Bar: satellite being acquired.

-Green Bar: satellite acquired and used to calculate.

-The height of the bars will reflect the strength of the signal in cases where this information is known. In any other case, the height will be the maximum possible.

-The numbers shown below the bars are real satellite id numbers. To acquire position at least 3 satellites are needed, but it's still recommended that 4 or more satellites are available. The obtained position will have an error frame between 5-15 meters typical.

-This is the best precision that any commercial GPS in the world will have and even better because our receivers are able to eliminate the ionospheric error and smooth the resulting position using proprietary filters.



VOX MODE - ENVIRONMENTAL HEARING

-The system has a special mode called VOX Mode. When VOX is enabled the user can hear what is happening into the vehicle for 60 seconds approximately. Once VOX is finished, position and data are received and it's possible to reactivate VOX Mode. It is also possible to interrupt it at any time by pressing the button «VOX OFF».

-Another accessory is available which enables a full duplex VOX Mode. This Mode is called VOX FULL and adds the possibility to talk and hear at the same time from the Base Station. And it is always possible to select any of both modes: VOX (to hear without being detected) or VOX FULL (to hear and talk with the vehicle's passengers).

-To enter VOX Mode:

Press the button «VoxOn». Then you'll be able to hear in the Base Station speakers what is happening inside the vehicle. You'll have approximately 60 sec. of VOX which can be extended by repeating this procedure.

-To leave VOX Mode before the 60 sec. period:

Press the button «VoxOff».

HUNTERPRO-GPS SPECIFICATIONS

Receiver Architecture	<ul style="list-style-type: none"> ✓ 12 parallel channel ✓ L1 1575.42 MHz ✓ C/A code (1.023 MHz chip rate) ✓ Code plus carrier tracking (carrier aided tracking)
Tracking Capability	<ul style="list-style-type: none"> ✓ 12 simultaneous satellite vehicles
Dynamics	<ul style="list-style-type: none"> ✓ Velocity: 1000 knots (515 m/s); > 1000 knots at altitudes < 60,000 ft. ✓ Acceleration: 4 g ✓ Jerk: 5 m/s³ ✓ Vibration: 7.7G per Military Standard 810E
Acquisition Time (Time To First Fix, TTFF)	<ul style="list-style-type: none"> ✓ < 15 s typical TTFF-hot (with current almanac, position, time and ephemeris) ✓ < 45 s typical TTFF-warm (with current almanac, position and time) ✓ < 90 s typical TTFF-cold ✓ < 1.0 s internal reacquisition (typical)
(Tested at -30 to +85°C)	
Positioning Accuracy	<ul style="list-style-type: none"> ✓ Less than 15 m SEP without SA 1-5 m typical in differential mode
Timing Accuracy (1 Pulse Per Second, 1 PPS)	<ul style="list-style-type: none"> ✓ UTC +/- 500 ns with SA
Antenna	<ul style="list-style-type: none"> ✓ Active micro strip patch antenna module ✓ Powered by receiver module (5-80 mA @ 5 Vdc)
Datum	<ul style="list-style-type: none"> ✓ WGS-84 ✓ Factory definable datum
I/O Messages	<ul style="list-style-type: none"> ✓ Latitude, longitude, height, velocity, heading, time ✓ HunterPro Binary protocol ✓ 1 PPS Output rate: latitude, longitude, height, velocity, heading, time, 6 I/O state, events data, vehicle conditions. ✓ Remote programmable features
Power Consumption	<ul style="list-style-type: none"> ✓ 200 mA / 12 Vdc
Dimensions	<ul style="list-style-type: none"> ✓ 165 x 65 x 60 mm
Weight	<ul style="list-style-type: none"> ✓ 450 g.
Connectors	<ul style="list-style-type: none"> ✓ Data/power: DB15 ✓ RF: straight OSX connector / BNC connector
Antenna to Receiver Interconnection	<ul style="list-style-type: none"> ✓ Single coaxial cable ✓ Antenna sense circuit
Operating Temperature	<ul style="list-style-type: none"> ✓ Receiver module: -30°C to +85°C
Humidity	<ul style="list-style-type: none"> ✓ 95% noncondensing +30°C to +60°C
Altitude	<ul style="list-style-type: none"> ✓ 60,000 ft. (18 km) (max.) ✓ > 60,000 ft. (18 km) for velocities < 1000 knots
Standard Features	<ul style="list-style-type: none"> ✓ Factory Velocity filtering
Optional Features	<ul style="list-style-type: none"> ✓ Optional power supply ✓ Optional VOX Environment Hearing module ✓ Optional VOX Full Duplex Conversation module

BLOCK ENGINE FEATURE

-This security system has the ability to Block the Engine remotely. The software «**HunterPro CoyoteSP**» will show a visible warning to the user when trying to enable Block Engine. This is because this feature can be dangerous while travelling at high speed traffic. Once this warning is accepted (and the security access code entered) the software will proceed and Block the Engine.

-To enable Block Engine:

1) Press the button «BlkOn».



2) Wait until the icon in the «Command Window» becomes Red. The text «Blk» will appear in the «Command Window». Once this happens, the Block Engine has been enabled correctly.

-To disable Block Engine:

1) Press the button «BlkOff».



2) Wait until the icon in the «Command Window» becomes Green. The text «Blk» will disappear from the «Command Window». Once this happens, the Block Engine has been disabled correctly.

-The status of Block Engine can be stored in nonvolatile memory to be restored later automatically by the vehicle unit. This means that if Block Engine has been enabled and later the battery is disconnected, once the battery is reconnected the Block Engine will reestablish automatically so a potential robbery will be frustrated. This is a programmable feature.

TRACKING AND EVENTS STORAGE (MOBILE UNIT LOGGING)

-The Unit has a realtime storage feature (LOGGING) of location, speed, date, time, events, input / output states, etc. These are called logging points.

-The system has a «Dead Reckoning» sensor which is used for memory saving purposes. This means that the vehicle location is stored only when the mobile unit is moving. Also the stop point and restart point are stored for further study. With this feature, time and storage space can be saved safely.



-Total storage time:

-If 1 point is stored after 2 minutes:

32 hours minimum (moving all the time)

-If 1 point is stored after 4 minutes:

64 hours minimum (moving all the time)

-If 1 point is stored after 6 minutes:

96 hours minimum (moving all the time)

-If 1 point is stored after 8 minutes:

128 hours minimum (moving all the time)

-If the vehicle is moving 12 hours a day, the storage capacity is duplicated (because the rest of the time the vehicle will be in the same place).

-The whole logging memory download can be achieved in approximately 8 minutes and it's highly effective against noises (checksum protected) or communication problems. If an error occurs, the system will resume from the last point which was read correctly.

-The period of time involved in the storage can be factory programmable. The input / output states are also stored because this could be very useful if the user needs to know whether a remote door or sensor was open or not, when (date and time) and how much time was open, and where (vehicle location). The driver's door can also be watched and an almost unlimited state and events that you can add or configure with our company's assistance.



-The access to the stored data can be done by: cellular, radio or direct link. In this last case, the mobile unit must be removed from the vehicle, or carry a notebook with a stand alone base station to it.

-The PC software include a wide number of configuration and information post-processing methods. There is a possibility to export the logging data to Excel or similar and enable all kind of charts, post-processing, printing and embedding into other documents, etc.

-Regarding tracking, raster mapping (JPG, BMP, etc) or digital mapping engines (MapInfo, ESRI, Autocad, etc) can be used with the software. (some formats may require a special adaptation). And with an add-on the driver's endurance can be studied, find out if it went out of the route, show a speed vs. time graphic, and advance step by step while studying the driver's behavior in the «critical points».

-There are a high number of functions which allows automation and customizing of the software to adapt it to any particular needs, because it was developed entirely by our company (as the Mobile Units) to satisfy the highest security or logistic standards in transportation, for individuals or fleets.

-Therefore the compatibility is maximum, flexibility is the highest possible. All this means the system can be adapted to your needs accurately.



And you will have permanent support from our technical department for installations, and from our software department for upgrades or changes in order to adapt the system, etc.

ENABLING / DISABLING REMOTE PERIPHERALS

-This security system has the capacity to connect up to five (5) peripherals that can be activated / deactivated (ON / OFF) remotely.

Once the button «AOn» or «BOn» (and the correct access code entered if the password protection is enabled) you proceed to activate the peripheral connected to Output “A or B”.

In the same way, by pressing the Button “AOff” or “BOff” you proceed to deactivate the peripheral connected to Output “A or B”.

The text “A” and/or “B” will appear in the text box under the communication window whenever one of these outputs are enabled.

If they were disabled they won't appear in the text box at all.

-The peripheral's output state can be stored in nonvolatile memory for an automatic recovery (in case of power source disconnection) later when reconnecting power source.

ARMING THE SECURITY SYSTEM

- The security system once armed is able to call the user programmable phone number and report vehicle's position, data and inform the user about the condition encountered which caused the call (battery cutted, alarm triggered, etc).
- The security system can be disabled and in this way it won't call the user even if it encounter one or more intrusion conditions.
- The phone number that the Mobile Unit will call once the intrusion condition is detected is fully programmable from the communication window and it's password protected (if a password were entered by the user).
- The security system has three trigger zones (X, Y and Z). Each one of them can be separately armed or disarmed, and the state of each zone can be stored in nonvolatile memory so it can be recovered later automatically (in case of power source disconnection) when the power source is restored.

GENERAL NOTES

-Each Mobile Unit has a unique identification code to connect with the Base Station. This offers a secure connection so the system won't be exposed to external security treats.

-All commands involved on communication and remote actions were developed entirely by the company and are part of HunterPro's intellectual property. This boosts the security system because the language used isn't available on any Internet site or document.

-Each time the user is trying to make an action by pressing a button which means it's going to interact with the Mobile Unit remotely, the software HunterPro Coyote AVL will ask for an access code or password (if the user has programmed it).

GENERAL NOTES

- All communication ports are fully programmable which are commonly automatically detected. Password access code is also programmable and can be disabled by entering a null password.
- The differential correction is an optional accessory which reduces the error involved in positioning to 1-5 meters. This correction is very precise and is sent every 8 seconds automatically by the software HunterPro Coyote AVL.
- So with differential GPS (DGPS) a very precise position is obtained while being in communication.
- All interactions or remote commands are produced within 1 second or less, so the users command are executed almost immediately at the moment that the user request them (e.g. block engine).
- If there is an error in the communication, the software will detect it and retry the user's petition until the command is executed by the Vehicle Units.

GLOSSARY

-2D.

In 2D mode, the GPS receiver calculates position while it fixes the altitude with the last known height. Using this technique it is able to acquire a two dimensional position and with good results depending on the DOP.

-3D.

In 3D mode, the GPS receiver calculates the position while it also calculates the altitude in each second. In this mode, the GPS is able to calculate Longitude, Latitude and also the height of the Mobile Unit.

-AVL.

(Automatic Vehicle Location)

Automatic Vehicle Location is a term that relates to the tracking of one or more vehicle with the aid of a PC or laptop, a Geographic Information System (GIS), and a converter between geographic coordinates into X and Y coordinates.

GLOSSARY

-DOP.

(Dilution of Precision)

Dilution of Precision is related to the precision of the latitude/longitude coordinates given by the GPS receiver. This value is higher as the number of satellites which are used in the geographic coordinates calculation diminishes. There are also factors which will affect, for example when two or more satellites are very close together in the sky the error in the calculation will raise considerably. A DOP of 2.5 for a 2D positioning or of 3.0 for a 3D positioning are known to be good positions. But with a DOP higher than 4.0 or 5.0 we can consider that the precision is affected. While with a DOP higher than 12.0 some GPS receivers (depends on the manufacturer) will not calculate any position at all.

-Base Station.

It is the call center or the center where each Mobile Unit are controlled, tracked and supervised. It consist of three parts, briefly: PC, Modem / Interface, and AVL Software.

GLOSSARY

-GPS.

(Global Positioning System)

The Global Positioning System can be applied to any object or mobile which has a good sky visibility. HunterPro-GPS offers a maximum of error <15m and a typical error of 5 m. The high sensibility of the unit makes it ideal for any kind of installation, being able to hide the unit and the GPS antenna itself inside the vehicle.

-SA.

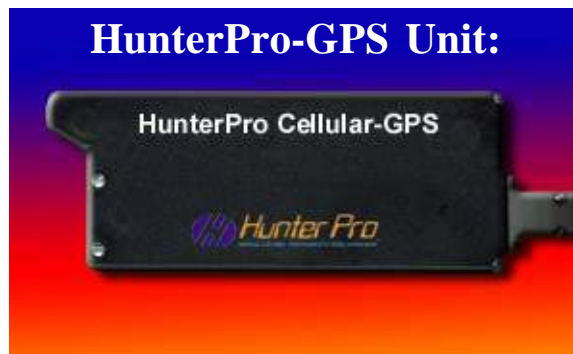
(Selective Availability)

Selective Availability is now obsolete, but it was originally created by the Department of Defense to prevent a destructive use of the GPS. The precision was unpredictable (<100 m) and the SA was frequently seen as if the vehicle was moving, it stopped itself from time to time, took curves, etc. At last, the SA was eliminated so GPS users obtained the best results in positioning (refer to the **GPS** description for more information).

GLOSSARY

-Mobile Unit.

It is the unit installed within a vehicle or moving object. It consists of three parts or components: GPS, Modem / Interface, and Cellular or Radio depending on the configuration of the unit. HunterPro-GPS system is very easy to install (similar to the installation of a car alarm), and both the integration of reduced state-of-the-art technology and latest features in AVL enables it for use in any kind of vehicle or commercial application.

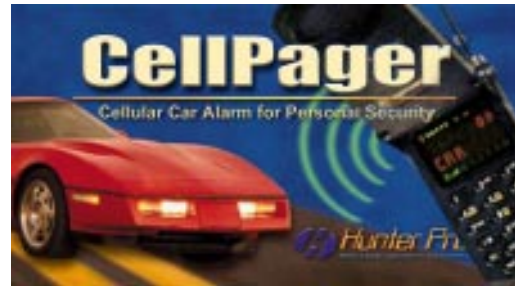


- Compact, solid, lightweight.
- Includes Radio / Cellular inside, intelligent interface, y GPS board.
- The GPS can be plugged as the power source, inputs and outputs.

OTHER PRODUCTS FROM HUNTERPRO



Simtel 2000: Cellular line backup for home alarms or other systems. Provides a 100 % phone line simulation while is able to activate itself automatically as a backup for home alarm reporting.



CellPager: The car alarm calls the owner to his cellular phone with the option of blocking the engine remotely, remote panic, disable calls, etc.



Hunter Pro Alarm: Car security system that can be configured, has many features and possibilities, auto-code remote control, with trigger memory and is able to store the last 3 triggered zones.



Milux: Compact solid fluorescent device for 220V / 110V / 12V for illumination of building, office, or outdoor operated with 12 V battery.