GPS-200 Automatic Vehicle Location

FEATURES

- Integrated GPS receiver & radio modem
- Quadtec™ digital signaling
- Proprietary transmission algorithms
- Complete turn key system solution
- Track on poll, timed or exception
- Vehicle alarm and sensor reporting
- Emergency tracking
- Log data to an external device
- 600, 1200, 2400, 3900, 4800 baud
- Intelligent RS-232/RS-485 ports
- Control vehicle mechanics, e.g. engine shut-off, lights
- Monitor vehicle cargo

BENEFITS

- Dispatch vehicles to precise location
- Reduce back-tracking across routes
- Cut costs and time dramatically
- Reduce overtime
- Reduce driver abuse
- Improve customer service
- Reduce fleet costs
- Increase response times
- Protect personnel
- Increase productivity and fleet use
- Improve driver responsibility
- Reduce air-time
- Reduce radio traffic congestion
- Improve management analysis

The GPS-200 is a full featured Automatic Vehicle Location module compatible with the Global Positioning System (GPS) and comes complete with an integrated wireless data modem to communicate through any popular wireless infrastructure.

Designed to easily mount on a vehicle, boat, train or any moving object that needs accurate and reliable location tracking, the device is ruggedized and splashproof. It is designed for demanding mobile environments where performance and reliability are essential.

Using pioneering techniques, the GPS-200 utilizes the most sophisticated form of Automatic Vehicle Location (AVL). This is called the Global Positioning System and is a constellation of 24 satellites developed by the U.S. Department of Defense, and made available without charge to commercial and civilian users.

Navigational data is sent from the satellites and collected by the vehicle mounted GPS-200. This information can be recorded throughout the day and downloaded when the vehicle returns to the office. Alternatively, the information can be transferred using mobile radio, cellular or any form of data link to provide a dispatcher with real time vehicle tracking.

The GPS-200 has a host of additional features, together with multiple input and output ports making it a highly flexible and configurable system component.

The CES POWER-trak™ Graphical Mapping system provides a dispatcher with a high resolution multiple screen mapping system, together with a set of easy to use tools to provide location information on the vehicle fleet.

CES WIRELESS TECHNOLOGIES CORP.
925-122 S. Semoran Blvd
Winter Park, FL 32792 USA

CES WIRELESS TECHNOLOGIES

Tel: 407-679-9440 (USA) 800-327-9956
Fax: 407-679-8110
e-mail: sales@cesusa.com
Web Site: http://www.ceswireless.com

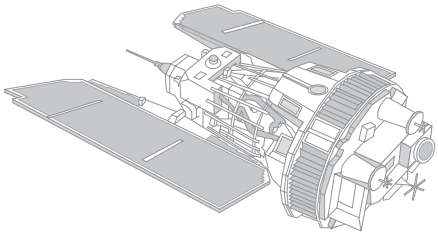
The GPS-200 is but one of a family of intelligent mobile wireless data products from CES. It is designed as a stand alone GPS receiver with integral modem for transmitting the GPS information to a dispatch or control station.

The GPS-200 can also store the geographical co-ordinates which are downloaded when the vehicle returns to the central location.

The unit is housed in a rugged aluminum extrusion, protected from harsh environmental conditions and comes complete with a radio interface cable and mounting bracket. The GPS antenna is a separate item, with many different variants depending on the application.

The GPS-200 is designed to provide advanced features with intelligent radio interfaces, multiple serial and digital I/O ports. It reports GPS position, speed, elevation and direction together with time.

In addition to its GPS reporting capability, the GPS-200 can be interfaced to numerous other peripheral devices to provide advanced fleet management features. For example, it can be interfaced to engine management systems, sensors and controls to provide real time status conditions or any form of analog information.

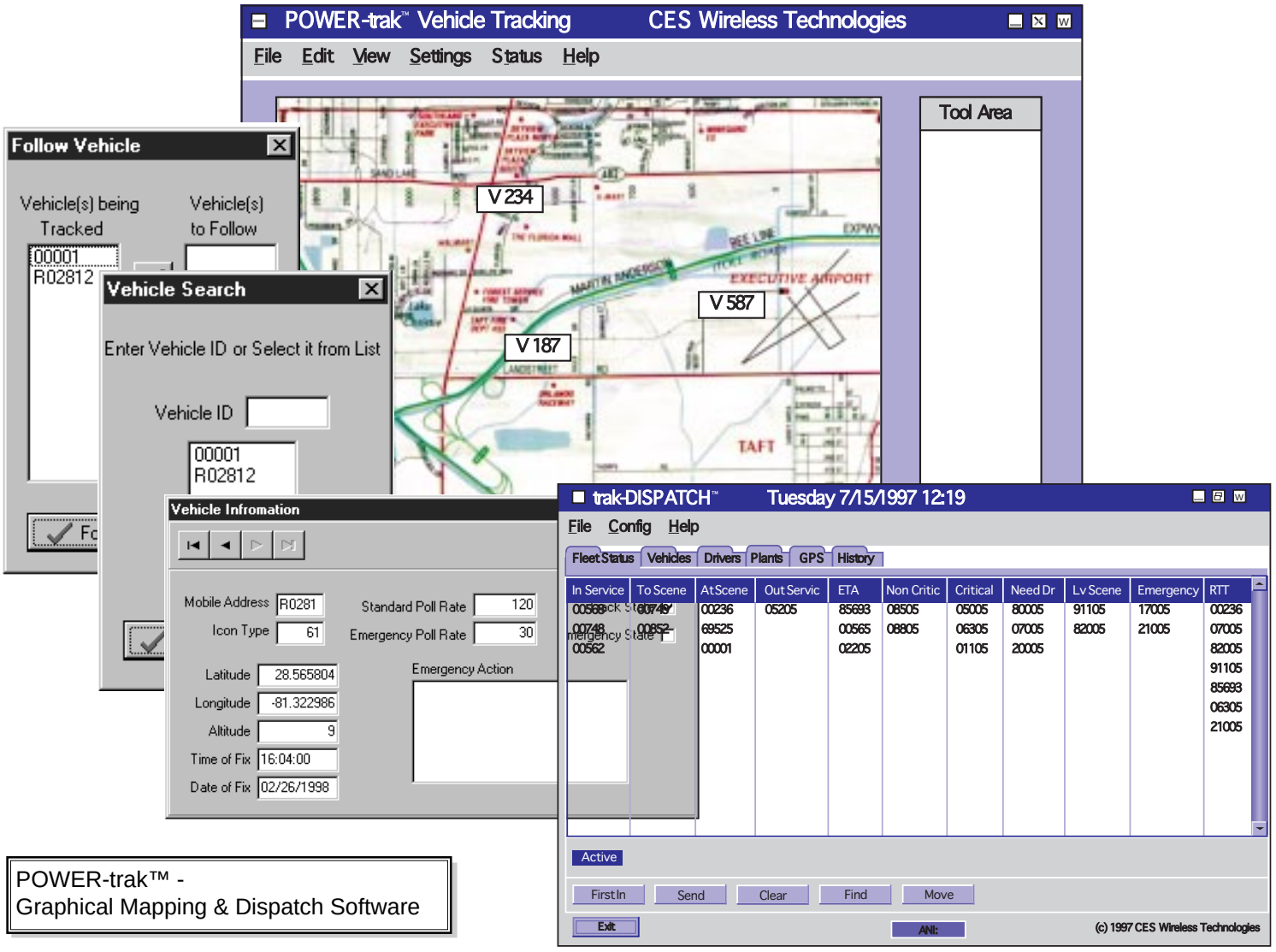


The unit will operate over any voice grade channel or dedicated data network and is compatible with virtually any radio transmission device. In addition to conventional and analog trunking radios, interfaces to CDPD cellular and selected digital trunking systems are also programmable. CES can create an interface for your selected network, subject to hardware, licensing and protocol issues.

For applications that require in vehicle text messaging together with GPS, the CES TRK-240 mobile display terminal has an optional GPS board. Please refer to a separate brochure on this product.

The CES base system platform provides a range of products to suit nearly any applications. trak-CONTROL software provides an intelligent utility to integrate non-CES software to CES systems. POWER-trak is a graphical mapping, status monitoring and dispatch software package. Many different map formats can be used, or CES can digitize paper maps. Please contact CES for further details.

CES base systems come complete with base controller in single or multiple channel form, monitor, keyboard, mouse and online support, accessible from any CES Software Support Center.



POWER-trak™ -
Graphical Mapping & Dispatch Software

FEATURES

General . . .

- Aluminum extrusion for rugged reliability
- “QUADTEC” digital signaling
- GPS Receiver with integral RF modem
- 3 level data “encryption”
- Solid, proven “over the air” protocols
- Compact size: 10 x 5.5 x 2 inches
- Radio interface cable with sealed connectors
- Compact, active micro antenna with magnetic, non-magnetic or bulkhead mount

Features . . .

- Report on poll, timed or exception
- Returns position, velocity, health, event log and time
- Data is available in selectable formats
- Advanced tracking algorithms
- Differential compatible
- Less than 2 seconds reacquisition
- Internal diagnostics capability
- Transmission “time out timer”
- Stun and Revive; activated by dispatcher
- “Poll” for traffic discipline and unattended interrogation
- Automatic Number Identification/selective vehicle calling
- “Stuck Mic” auto transmission
- autoCALL™ - “request to talk” by double clicking PTT
- Tone blanking to prevent driver distraction
- Full acknowledgments automatically processed
- Real Time Stamping of mobile transmission
- Message memory when vehicle is out of radio coverage
- Flash memory, extensive on board RAM
- Test tone generation for system setup
- ‘Smart’ trunking access protocol

Programming . . .

- Sequential programming of devices
- Windows 95/98 programming software

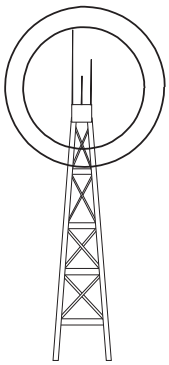
In/Out Controls . . .

- 3 auxiliary inputs, 3 auxiliary outputs
- Serial Ports: - TTL/RS-485/RS232
- Emergency input control and separate operating protocol
- Ignition sense, horn honk output and relay
- Horn relay output to attract driver attention
- Automatic channel change for dual channel data/voice

Peripheral Items Supported . . .

- CRD-500 Credit Card Reader
- CES PNT-97 Mobile Printer
- Bar Code Scanner
- Engine Management interface

Wireless Compatibility



- Conventional Radio Systems
- Multi Channel Radio Systems
- Remote Base Stations
- Community Repeaters/Base Stations
- 220MHZ Networks
- Analog trunking —
  - EFJohnson LTR™
  - Motorola Smartnet™
  - Motorola Privacy Plus™
  - GE Trunking
- Digital Trunking - Select Motorola iDEN™ Networks
- CDPD - Standard Interface
- Others - Any serial or data ready radio

Applications, here are a few . . .

Ambulance, Readymix,
Concrete, Mobile Service,
Parts delivery, Fire,
Police, Couriers, Security
Transportation, Taxi, Buses
Food delivery, Mining
Domestic repair services
Limousines, Barges, Tug boats...

Base Software . . .

POWER-trak™
Integrated Mapping, Dispatch
and Status Monitoring

trak-CONTROL™
Gateway software for integration of
non-CES software systems

MULTI-trak™
Multiple dispatcher, Windows NT™

SPECIFICATIONS

Mechanical

- Dimensions: 10 x 5.5 x 2 inch (25.4 x 14.0 x 5.1cm)
- Weight: 11.4 oz (0.32kg)
- Cabinet: Aluminum Extrusion
- Interface Cable: 3 or 10 ft shielded / factory sealed connector
- Hardware: Interface cable/screws

Electrical

- Voltage: 7-16 V DC
- Current: <200mA
- Microphone Muting: Open Collector
- PTT Output: Open Collector
- Speaker Mute Output: Open Collector
- Horn Alert Output: Open Collector
- Auxiliary Inputs: Z=100K -35 to +35V
- Auxiliary Outputs: Open Collector
- Emergency input: 0-5V connect to ground via switch
- Ignition Sense: Z=100K -35 to +35V
- Encode Tone Out Imp.: Z=47K or 10K cap coupled
- Encode Tone Out Level: 1 Volt RMS (variable)
- Signal Input Sensitivity: 100-1000mv RMS (variable)
- Signal Input Impedance: Z=67K or 20K cap coupled
- Alert Tone Out Impedance: Z=67K or 20K cap coupled
- Alert Tone Output Level: 1.5V RMS (variable)

Signaling

- Format: MSK 600/1200/2400/3900/4800 baud

Programming

- Software: MDT-100S Windows 95 Software
- Hardware: ARi-199P/240 Adapter

Environmental

- Operating temperature: -10 to + 60 deg. C
- Storage temperature: -55 to + 100 deg.

GPS Receiver

See separate data sheet

Ordering

- GPS-200 GPS Receiver/Modem
- TRK-240/01 Radio Interface harness
- TRK-240/01 Auxiliary Interface harness
- ANT-01 GPS Antenna
- CRD-500 Credit Card Reader
- PNT-97 Mobile Printer
- MDT-100S Programming Software Windows 95 English
- ARi-199P/240 Programming Interface Adapter
- TRAN19 110V AC Adapter (for ARi-199P/240)
- CONV01 DB-9 to DB25 Adapter (for ARi-199P/240)
- MANUAL99 Programming & Installation Manual
- CABLE26 DB-9 to DB-25 null modem cable

Radio Interface

- Power 7-16v
- Ground
- Receive audio
- Transmit audio
- Ground
- Speaker enable
- Microphone mute
- Ch. Change out
- PTT in
- Ch. Change in
- Busy/Trunk
- Alert
- PTT out
- Speaker mute
- Power 7-16v

Auxiliary Interface

- Serial 1 RS485 Peripheral Expansion
- Serial 2 TTL GPS Receiver
- Serial 3 RS485 Peripheral Expansion
- Serial 4 RS232 Engine Sense/Taxi Meter/Data Ready Radio
- Serial 5 TTL Printer/Data Ready Radio
- Auxiliary in A Sensor In
- Auxiliary out B Control Out
- Auxiliary out 1 Control
- Auxiliary out 2 Control
- Auxiliary out 3 Control
- Auxiliary in 1 Sensor In
- Auxiliary in 2 Sensor In
- Auxiliary in 3 Sensor In
- Horn Honk Relay Honk Horn
- Emergency Alarm input
- Ignition Ignition Active Sense