Internav®

for MS-Windows

Functional Specification

Windows platform compatibility

- Windows®95
- Windows®98
- Windows®NT

Tracking modes

- *Radio / Modem* - uses a radio/modem connected to the serial communications port.
- *Direct GPS Input* - accepts raw GPS data downloaded to the communications port (no radio/modem required).
- *Monitoring* - standby mode, acts upon receiving a low or high level alarm status message (no polling).

Polling List

- *Radio / modem polling* - request for positional information for up to 5000 mobile units (simultaneous display up to 500 requires min. 8MB RAM).
- Ability to attach a description for each mobile which can be displayed on the map instead of the mobile unit number.

Quick Polling

- Allows to poll a mobile upon operator request by entering the mobile ID number.

Polling Groups

- Mobile units can be assigned to 5 different polling groups. Each group has its own polling interval, polling delay, automatic start tracking time and automatic stop tracking time.

Automatic Polling

- *Polling start time* - allows to enter the time at which the system will automatically start polling all vehicles in the relevant polling group.
- *Polling stop time* - allows to enter the time when automatic polling is to be stopped.

Recording

- Saving of mobile unit(s) positional information to a selected playback file.
- Shortcut key access to previously used playback file.

Playback

- Replay of previously recorded tracking data stored in playback files (*.plb)

Tracking display

- *Location* - displays the locator icon (large, medium, small or dot) at the mobiles current position. An icon label or icon ID is displayed next to the icon.
- *Track* - displays a continuous coloured track for each mobile unit. Width of track is set by the 'Mobile Icon Size' option.
- *Point* - selects a point to be displayed at the current mobile location leaving a trail of points. Whilst in *point* display mode the mobile ID, date, time, latitude and longitude can be displayed by clicking with button 2 on the desired point.
- *Icon* - selects an icon to be displayed from the icon library for each mobile unit. There are 8 different shapes (car, van, truck, aeroplane, helicopter, train, boat, yacht) and 4 different colours (blue, green, yellow, red) giving a total of 32 icons
- Mobile identification options:

- display mobile ID number label;
- display mobile description label;
- show all labels simultaneously.

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Track Memory

• Selectable number of track points to be stored in memory for track refresh purposes eg. none, last 10, 100, 1000, 10000 or 32000.

Block-Shift Differential

• Option to perform *area dependant* differential corrections by using any GPS unit located at a known location without the need for an RTCM differential base unit. This option requires the Block Shift Server program running during a tracking session.
Supported GPS formats are:

• *$GPGGA, $GPGLL*
• *SONY* (IPS-3000)
• *TAIP - RPV, RCP, RLN*

Follow

• Polls a specific a mobile unit (as a green icon) to remain in constant view. Background maps are displayed automatically for the current mobile unit position.

Selectable follow options are:
- Follow when Requested;
- Follow when Polled;
- Follow All.

Collision Detection

• Definable proximity alarm distance (in metres) for each mobile. If any mobile position or safety circle touches or overlaps that of another mobile, an audible warning is activated.

Safety Zones

• Definable areas on the map which cause an audible alarm to sound when a mobile enters or exits the appropriate zone.

There area three types of zones:
- alarm - alarm within zone;
- blind - all alarms disabled;
- corridor - alarm outside zone.

Warnings are displayed in the Alarm window.

GPS formats (standard GPS output)

• *NMEA - $GPGGA, $GPGLL.*
• *SONY* (IPS-3000)
• *TAIP - RPV, RCP, RLN*

Background maps

• Geographically registered 8 and 24 bit raster image files(PCX,GIF,BMP,TIF,TGA,JPG).
• Grid display with selectable grid interval (from 1/10 second to 30 degrees).

Image registration

• 2 or 4 point geo-referencing of raster images to a known location using lat/long or AMG co-ordinates
• Display, add and remove images from the image register.
• Linear adjustment of registered images (set and clear XY-shift)

Map level

• A thematical layer used to store images with similar characteristics (state maps, district maps, street maps, etc.).
• The default Maplevel _DEFAULT contains a registered index map of the world. This should be used for general orientation purposes only.

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Vehicle Database

- *mobile unit icons* - image (BMP) and textual information attached to a mobile.
- *waypoints* - image (BMP) and textual information attached to a fixed location on the map.
- *waypoints* - textual attributes and image attached to a location on the map taken from the current vehicle location. Waypoint display depends on the selected map level.

Status Messaging

- radio channel busy, no response from unit, no data available, GPS has lost fix, unit alarm condition, unit calling base, signal OK, signal OK (DGPS).

Message Window

A message window is displayed upon detection of the following conditions:

- *Page Call* - message displays the date, time and unit number sending the Page Call. This message is displayed in black.

- *Alarm condition* - message displays the date, time and unit number generating the alarm condition. This message is displayed in red.
In both cases an audible warning will sound.

GPS co-ordinate conversion

- Converts WGS-84 location data for maps registered using ANS.

Graphic viewing tools

- Refresh, zoom in, zoom out, pan, area (combined options Register, Load, Save, Change and Delete).

Panning

- Keyboard driven panning across all registered images.

- Point-and-click on map(default)
- Pan to the current Telemetry Destination;
- map location;
- other mobile location.

- Pan to the last known Mobile Location.

Measure tool

- Displays a window showing a dynamic display of bearing and distance in metres, kilometres and nautical miles.

Position display

- Dynamic display on the status bar of latitude and longitude for the current mouse pointer location.

UTC Offset

- A positive or negative time offset used to convert the GPS UTC time to local time.

Dynamic Data Exchange (DDE)

- A Dynamic Data Exchange gateway is provided for other MS Windows applications allowing to access mobile ID no., UTC time, latitude and longitude.

Event Log

- During live tracking sessions safety and emergency events are recorded into a log file. These can be later analysed and printed.

The following events are logged:
- entering an alarm zone;
- leaving a corridor zone;
- collision detection for 2 or more mobiles;
- waypoint proximity warning;
- emergency warnings.

Waypoint Proximity

- Notifies the tracking station operator when nominated vehicles approach waypoints (checkpoints) which are situated at key locations along designated travel routes.

Telemetry

Data

ID - displays the mobile ID number of the currently monitored vehicle.

Descr. - displays the mobile label of the currently monitored vehicle.

Speed - calculates and displays the speed of the monitored mobile in the currently selected units. The speed is calculated based using position change and UTC Time.

Distance - calculates and displays the distance from the monitored mobile to a nominated location, shown in the currently selected units

Time - UTC offset plus UTC time (from GPS)

Bearing - calculates and displays the bearing to a nominated destination, shown in degrees.

Arrival - calculates and displays the estimated arrival time based on the current speed and distance.

Location - displays the currently selected location

Search

Nearest - allows to find a mobile which is located nearest to the destination, currently followed by the system or currently polled by the system.

Next - allows to find the next mobile which is located nearest to the destination, currently followed by the system or currently polled by the system.

Furthest - allows to find a mobile which is located furthest from the destination, currently followed by the system or currently polled by the system.

As Polled - displays the currently polled (or followed) mobile by the system.

Options

Units - Speed can be displayed in kilometres per hour, miles per hour or knots. Distance can be displayed in metres, kilometres or nautical miles.

Table - displays the Mobile ID number, Speed, Distance, Bearing, Destination and Arrival Time for all polled vehicles.

Location - a target location (a yellow filled circle with a red border) which can be:

a). fixed location:
- digitised on the map;
- selected from a location database;
- selected from a waypoint database;
- nearest waypoint.

b). floating location - other mobile vehicle.

Reports - allows to create reports at user defined intervals. To create reports at even clock intervals then the Clock Sync option must be selected and interval specified.