RetroSign – GPS

GPS Implementation

The GPS function is activated when the GPS Option has been enabled in the menu. Due to the fact that the GPS receiver first has to receive signals from several satellites before it can calculate its position, it will take a short time before a “Good Fix” can be achieved. Typical this process will take only a few seconds but depends on how long the device has been out of use and also on how far it has been moved away from the last fix position.

When the GPS function is enabled but no fix has yet been calculated the icon row shows (strikeout)

When a position has been calculated, the Icon changes to and the position and status will be updated. The GPS position data and status can be displayed by selecting Info page: GPS. This is done by pressing two times from the main result display

Display example:

| Line 2: | UTC: 113758 | universal time code (London time) |
| Line 3: | Latitude: 5552.45837N | format ddm.mmmm |
| Line 4: | Longitude: 01229.75178E | format ddm.mmmm |
| Line 5: | Sat: 06 | Number of satellites used |
| Line 5: | Fix: D_GPS | Fix type |
| Line 6: | HDOP: 2.45 | Horizontal Dilution Of Precision |
| Line 6: | Datum: WGS84 | Map reference system |
| Line 7: | SBAS Test | Satellite Based Augmentation Systems |
| Line 7: | SyS: EGNOS | The position correction system in use |
| Line 8: | Service: 15 RCIT | system service status bitmap (4 bit) |

Fix: The Fix type can be:
- NoFix: Invalid position
- 2D/3D Standard GPS
- D_GPS: Differential GPS
- Estim: Estimated (Dead Reckoning) Fix

HDOP: The Horizontal Dilution Of Precision HDOP value in the range from 0.10 to 99.99, the lower the value the more accurate the position Fix.

Datum: The Map reference system can only be changed with the RSC2 software.

Sys: The DGPS mode received by the GPS unit, it can be:
- GPS when no correction data is received.
- WAAS when correction data from the WAAS satellites is used
- EGNOS when correction data from the EGNOS satellites is used
- Unknown when ambiguous correction data.

Service: R: Ranging, C: corrections, I: integrity, T: test mode
All GPS Position data and status are stored in the internal data log and will be retrieved with the normal Log Dump action.

**Controlling the GPS function from the menu system**

Use the edit keys to select the GPS menu.

**GPS State:** On  
The GPS unit is on, press `→` to turn it off.

**GPS State:** Off  
The GPS unit is off, press `→` to turn it on, position acquisition starts and a position fix should be ready in a few seconds.

Use the edit keys to select the DGPS menu.

The display can show

- **DGPS Mode: WAAS.** The DGPS mode is set to use the WAAS satellites for position corrections. Use in the North American region.
- **DGPS Mode: EGNOS.** The DGPS mode is set to use the EGNOS satellites for position corrections. Use in the European region.
- **DGPS Mode: Auto.** The DGPS mode is set to use the available satellites for position corrections.
- **DGPS Mode: Off.** If DGPS mode is turned off, the correction signals will be received but not used, this can be desirable in situations where the correction satellites is very low on the horizon, as would be the case at high latitudes. Also take note that using a correction signal from a Satellite designed to correct position data for a different region, can result in degraded precession, this would be the case when using WAAS in Europe.

Switch between the different modes with the `→` key.

Changing the DGPS mode is only possible when the GPS unit is on.

**GPS specifications**

- 16 channel Receiver
- DGPS for best position accuracy
- Earth Datum WGS84, can be changed from RSC2 program
- Fast Time-To-First-Fix (TTFF)
  - 34 s cold start
  - 5 s TTFF with assisted GPS
  - <3.5 s hot start
- Excellent navigation performance
  - 2.5 m CEP
  - 2.0 m CEP with DGPS / SBAS (depending on accuracy of correction data)