




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

```
Info Page: GPS
UTC: 113758
Latitude: 5552.45837N
Longitude: 01229.75178E
Sat: 06 Fix: D_GPS
HDOP: 2.45 Datum: WGS84
SBAS: Test Sys: EGNOS
Service: 15 RCIT
```

Display example:

Line 2:	UTC:	113758		universal time code (London time)
Line 3:	Latitude:		5552.45837N	format ddmm.mmmm
Line 4:	Longitude:	01229.75178E		format dddmm.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 (TTF)

 - 34 s cold start
 - 5 s TTF 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)