

## Channels

# GPS channels

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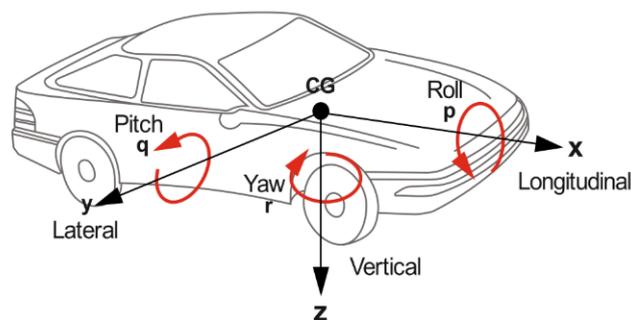
### Question:

How can I interpret the data sampled with an AiM GPS receiver?

### Answer:

Thanks to AiM GPS receiver it is possible to have specific useful channels for data analysis:

- **GPS\_Speed:** this channel represents the vehicle absolute speed calculated by the receiver (km/h or mph). It is ideal as reference speed to calculate the distance since it is not affected by locking, slips and lean angles.
- **GPS\_Nsat:** this channel indicates the number of satellites the receiver can see (num). Place the antenna in an upper position. The higher this number is the better is the calculation. The calculation is performed when the satellites number is equal or higher than 4.
- **GPS\_LatAcc/GPS\_LonAcc:** this channel represents the vehicle accelerations (X and Y axis) in all the points of its driven trajectory (G-force). They are useful to analyse lateral grip, accelerations and brakings.
- **GPS\_Gyro:** channel this channel represents the angular speed referred to the Z axis (yaw rate – degrees/sec).





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A practical application of the GPS\_LatAcc, GPS\_LonAcc e GPS\_Gyro channels is explained in the document "Engine Analysis – Adria track" you find in Documentation Area -> On-Track sessions of our website [www.aim-sportline.com](http://www.aim-sportline.com) at this link: [www.aim-sportline.com/en/documentation-on-track-sessions.htm](http://www.aim-sportline.com/en/documentation-on-track-sessions.htm).

- **GPS\_Slope:** channel that represents the road surface slope; the GPS receiver can supply this information considering the different track points altitudes, this way detecting if the vehicle is climbing or driving downhill.
- **GPS\_Heading:** channel that shows the vehicle position compared to the North (degrees).
- **GPS\_Altitude:** parameter determined considering each track point height above sea level (m).
- **GPS\_PosAccuracy:** channel that indicates the position exactitude: the accuracy of the position (#) can be determinate according to the value recorded by the GPS:
  - < **1**: excellent
  - < **2**: good
  - ≤ **3**: weak
  - > **3**: low precision
- **GPS\_Latitude:** channel that reports the value of geographical coordinates (degrees) to identify the position point.
- **GPS\_Longitude:** channel that reports the value of geographical coordinates (degrees) to identify the position point.
- **GPS\_Radius:** channel that reports the value of the radius of curvature of a trajectory (meters). For AiM convection, the maximum value represented is 10000m.
- **GPS\_SpdAccuracy:** channel that represents the GPS receiver accuracy in measuring the speed (cm/s):
  - < **0,3**: excellent
  - ≤ **0,5**: good
  - > **0,5**: weak

It is important to remember that the higher is the GPS signal exactitude, the greater is the recorded values and resulting GPS track accuracy: the GPS receiver must be placed in the point of the vehicle that allows full visibility to the sky.



## Channels

In addition, the GPS09 Open and GPS09 Open Pro modules also provide the following channels:

### GPS Channel

<b>GPS_Hour:</b>	Hour
<b>GPS_Minute:</b>	Minutes
<b>GPS_Second:</b>	Seconds
<b>GPS_ccSecond:</b>	Hundredths of a second
<b>GPS_Year:</b>	Year
<b>GPS_Month:</b>	Month
<b>GPS_Day:</b>	Day
<b>WeekNum:</b>	Number of week since 1980
<b>ITOW:</b>	time calculated in (ms) from Sunday to Saturday
<b>UNIX Time:</b>	Time calculated in (s) from January 1 <sup>st</sup> 1970

### Inertial platform channels (transmitted only by PRO version)

<b>InlineAcc</b>	Longitudinal acceleration
<b>LateralAcc</b>	Lateral acceleration
<b>VerticalAcc</b>	Vertical acceleration
<b>RollRate</b>	Roll rate
<b>PitchRate</b>	Pitch rate
<b>YawRate</b>	Yaw rate