



CAN Data

CAN Data receiving – SmartyCam GP HD 2.2

Question:

How can I make SmartyCam GP HD 2.2 receive data provided through a CAN communication protocol (i.e Lap Time, GPS coordinates) and represent them on the overlay?

Answer:

Dependently from the transmitted information via CAN, it is necessary to follow different criteria to be able to represent each channel in the overlays.

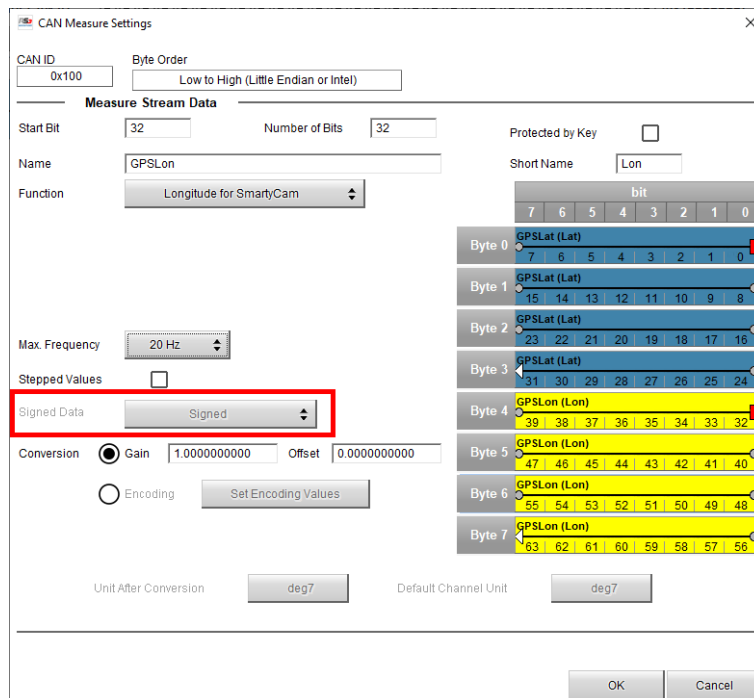
- **GPS coordinates:** to allow SmartyCam GP HD 2.2 to show GPS coordinates received via CAN, it is necessary to send this information following the criteria listed below:
 - The information must be transmitted as **DWORD (32bit)**
 - This data must be expressed as **10e-7 degrees**, that means degrees up to the seventh decimal place (es.: 120.5984799° -> 1205984799)
 - West and South coordinates, that means with negative values, must be expressed as **two's complement**.
 - "Latitude for SmartyCam" or "Longitude for SmartyCam" function must be set, according to the transmitted information
 - Endianess, arbitration ID and byte positioning are free.

To give a practical example, a sexagesimal degrees coordinate (i.e.: 120° 35' 91") must be converted in decimal degrees (120.5984779) and then multiplied by 10.000.000 (1205984779), to be able to send it via CAN as 0x47E1D1E1F.

In case of negative coordinates, since the two's complement sign must be expressed, a coordinate of -120.5984799 deg must be sent as 0xB81E21E1, that it the two's complement of the expressed above value (0x47E1D1E1F).

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From the CAN settings window, check that the Signed Data option is set as "Signed" (following image; red box). If this should not happen, it is recommended to update your Race Studio 3 version to 3.30.12 or newer.





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- **Lap Times:** to correctly show the information received via CAN by an ECU or from a third-party system, it must be sent following the criteria listed below:
 - Time must be expressed in **hundredth of a second (cs)**
 - It is suggested to place this data on a **WORD (16bit)**
 - "Laptime for SmartyCam" or "Best time for SmartyCam" function must be set, according to the transmitted information
 - Endianess, arbitration ID e byte positioning are free

To give a practical example, a time of 6'11"13 must be converted into seconds (317,13 s), then in hundredth of seconds (31713 cs) to be transmitted via CAN as 0x7BE1.

- **Master Clock:** in general, SmartyCam internal date and hour are updated connecting an AiM GPS receiver. If this module is missing, this sync can be managed through a specific channel received via CAN, that must be built following the criteria below:
 - Master Clock must be expressed in **UNIX Time** (passed seconds from 1/1/1970)
 - The information must be expressed as **DWORD (32bit)**
 - "Unix System Time for SmartyCam" function must be selected
 - Endianess, arbitration ID e byte positioning are free