

TECHNCIAL NOTE no.: 52

Product:	GPS to CAN v2 module
Part number:	s/r
To:	Cupra Leon VZ TCR
Date:	23/05/2024

Dear customer,

The GPS module supplied with the 7" ADU display (currently only on CUPRA Leon VZ), needs a Firmware update to improve the accuracy of the internal accelerometers. Due to a hardware change of the internal components, there were too much noise on the accelerometer signals and the axis directions were opposite to the old GPS module making difficult the lap comparison.



To solve this issue, customers who has this GPS to CAN V2 module (Leon VZ) must upgrade the FW version using the Software **LightClientSetup_2_0.exe** and **gps2_fw4_0.bin** file. SW and FW files are available on the VW Group Motorsport online platform download area at the path "PROJECTS & SOFTWARE / SW_PROJECTS_2024 / GPS FW / CUPRA LEON VZ".

GPS module update process:

1. Install **LightClientSetup_2_0.exe** in your computer.
2. Connect the display CAN interface or the Peak Can Interface to the diagnostic connector and switch on Main Power supply.
3. Open the LightClient Software and choose "auto" as CAN bit rate.
4. In the Devices zone, choose the **gps2** module. Double click on it.
5. Click on the Upgrade button and select the file "**gps2_fw4_0.bin**"
6. Wait until the firmware update is done.
7. In the properties zone, activate the "High rate IMU output" square box. Then select the ID number **0x408 Standard** on the "Output CAN ID".
8. On the IMU config box, select the orientation "**Custom**" and change the orientation of the three axis X (**Back**), Y (**Left**) and Z (**Up**).

IMPORTANT: If a v1 GPS module (Audi or CUPRA Leon Competición with 5" ADU display) is updated with this FW, the GPS may not work properly.

Ecumaster Light Client: 1 Mbps

Type	Rev	Serial number	Firmware	Comment	Info
ADU	G	316-2404-00207	FW 78.0		Out: 400-404, 408-409
> gps2	E	534-2325-00258	FW 4.0		In: 000, 215, 315, 415, 595, 695 Out: 195, 715
keypad 6x2 RGB	V_03	N/A	FW 2.25		

Devices

Properties	
Ecumaster output	
Enable	<input checked="" type="checkbox"/>
Output CAN ID	0x400 Standard
High rate IMU output	
Enable	<input checked="" type="checkbox"/>
Output CAN ID	0x408 Standard
Format M output	
Enable	<input type="checkbox"/>
Format LR output	
Enable	<input type="checkbox"/>
Navigation config	
Navigation systems	GPS+Galileo+BeiDou+GLONASS
Static hold config	
Enable	<input checked="" type="checkbox"/>
Distance threshold	10 m
Speed threshold	3,60 km/h
IMU config	
Orientation	Custom
X direction	Back
Y direction	Left
Z direction	Up
Acceleration filter	46 Hz

Properties

Channels	
Ecumaster format	
Latitude	41,5059005 °
Longitude	1,8990732 °
Speed	0,11 km/h
Height	124 m
Satellites	6
GPS status	GPS-3D
Heading motion	60 °
X ang rate	0,29 °/s
Y ang rate	0,89 °/s
Z ang rate	-0,38 °/s
X acceleration	0,03 g
Y acceleration	0,02 g
Z acceleration	1,01 g
UTC year	2024
UTC month	5
UTC day	23
UTC hour	11
UTC minute	2
UTC second	44
UTC millisecond	920
GPS frame index	0
Empty frame index	0
High rate IMU	
HR X ang rate	0,25 °/s
HR Y ang rate	0,93 °/s
HR Z ang rate	-0,39 °/s
HR X accel	0,02 g
HR Y accel	0,02 g
HR Z accel	1,01 g

ID	DLC	Bytes	Freq	Count	Tx
000h	2	01 15	58,4 Hz	7162	
018h	8	00 00 00 00 00 00 00 00	100,2 Hz	14323	
020h	3	00 00 00	10,0 Hz	1430	
040h	8	00 04 03 02 00 08 00 00	200,3 Hz	28647	
045h	8	00 00 00 00 00 00 00 00	10,3 Hz	1432	
110h	8	12 00 00 00 00 00 00 00	99,7 Hz	14282	
111h	8	00 00 00 00 00 00 00 00	100,6 Hz	14284	
112h	8	00 00 00 00 00 00 00 00	20,0 Hz	2858	
113h	8	00 00 00 00 00 00 00 00	19,9 Hz	2857	
114h	8	F3 FF F6 FF 00 00 00 00	99,3 Hz	14283	
117h	8	F2 00 D5 FF 8A FC 00 00	99,3 Hz	11426	
196h	8	99 06 00 00 00 00 00 00	19,6 Hz	2865	
197h	8	00 00 00 00 00 00 00 00	111,1 Hz	16659	
1F0h	8	00 01 01 01 01 01 00 00	111,6 Hz	14316	
215h	8	40 00 04 40 00 00 00 00	10,3 Hz	1432	
222h	8	36 32 64 FA 4C 64 64 00	123,4 Hz	14317	
24Ch	8	0B 00 00 00 00 00 00 00	111,1 Hz	14316	
400h	8	18 BD 4C 3D 01 21 C6 8C	25,6 Hz	3578	
401h	8	00 03 00 7C 00 06 00 1C	25,6 Hz	3578	
402h	8	00 3C 00 00 00 1D 00 59	25,6 Hz	3578	
403h	8	FF DA 00 03 00 02 00 65	25,8 Hz	3578	
404h	8	18 05 17 0B 02 2C EB 85	25,6 Hz	3578	
408h	8	00 19 00 5D FF D9 00 00	202,1 Hz	28629	
409h	8	00 02 00 02 00 65 00 00	202,1 Hz	28629	
410h	8	00 00 00 00 00 00 00 00	58,3 Hz	7162	

Wintax properties:

After doing the GPS module FW update, a new **FFT Low pass** filter at **20Hz** on the **G_X**, **G_Y** and **G_Z** channels must be activated on Wintax, as shown below on the Graph Properties window:

Graph Configuration: P_Oil

File Edit View Graph Help

Options Event Sections Report Script

Window Options

Custom Color	Window	Graph	Border	Grid	Cursor Styles	Layout	Y Scales Text mode	X Axis Mode	Double X Axis	Time Scale	Real Time Settings	Cursor Value mode
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Custom	Vertical	Manual	Auto	Time	<input type="checkbox"/>	Relative	Default	Right

Graphs Options

Label	Display						Scale						Comparison Mode	Reference Line	Alarm	Condition	Filter	Show	
	Color	Style	Unit	Format	Grid	Dataset	Show	Local	Min	Max	Bottom (%)	Top (%)							Group
G_X_ADU	█	Default	<input checked="" type="checkbox"/>	Auto	Off	All	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	-1.8	1.8	50	100	-	Auto	Off	Default	-	Off	<input type="checkbox"/>
G_X	█	Default	<input checked="" type="checkbox"/>	Auto	Off	All	<input type="checkbox"/>	<input checked="" type="checkbox"/>	-1.8	1.8	50	100	-	Auto	Off	Default	-	FFT Low Pass	<input type="checkbox"/>
G_X_Bosch	█	Default	<input checked="" type="checkbox"/>	Auto	Off	All	<input type="checkbox"/>	<input checked="" type="checkbox"/>	-1.8	1.8	50	100	-	Auto	Off	Default	-	Off	<input type="checkbox"/>
bSteering	█	Default	<input checked="" type="checkbox"/>	Auto	Off	All	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	-200	200	0	100	-	Auto	Off	Default	-	Off	<input type="checkbox"/>
G_Y_ADU	█	Default	<input checked="" type="checkbox"/>	Auto	Off	All	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	-1.8	1.8	0	50	-	Auto	Off	Default	-	Off	<input type="checkbox"/>
G_Y	█	Default	<input checked="" type="checkbox"/>	Auto	Off	All	<input type="checkbox"/>	<input checked="" type="checkbox"/>	-1.8	1.8	0	50	-	Auto	Off	Default	-	FFT Low Pass	<input type="checkbox"/>
G_Y_Bosch	█	Default	<input checked="" type="checkbox"/>	Auto	Off	All	<input type="checkbox"/>	<input checked="" type="checkbox"/>	-1.8	1.8	0	50	-	Auto	Off	Default	-	Off	<input type="checkbox"/>

Type	Length (ms)	Freq1 (Hz)	Freq2 (Hz)
FFT Low Pass	0	20	0