

BC-GPS2CAN_V2-000**GPS/GNSS module (optional with integrated IMU)****Key Features**

- GPS/GNSS features
 - 10 Hz GNSS receiver (GPS, Galileo, GLONASS and BeiDou are received concurrently)
 - Via firmware update of **12.5 Hz GPS2CAN modules from 2019+** can receive signals from all GNSS instead of GPS only, which improves positional accuracy. Update reduces the rate from 12.5 to 10 Hz
 - SBAS and QZSS augmentation support
 - Typical accuracy of CEP 1.50 m (with GPS only → CEP 2.50 m)
 - Speed, Course and Position accuracy channels
 - Automatic GPS laptrigger detection for more than 330 racetracks worldwide
 - Additional user configurable GPS position for individual GPS lap time calculation
- Interface type: CAN Bus
- Optional with built-in 6DoF-IMU (*BC_GPS2CAN_3A3G-00x*)
 - Integrated 6 DoF (optional 9DoF)
 - IMU with range +/- 16 G (optional +/- 30 G)
 - Up to 1000 Hz IMU signal outputInternal calibration and temperature compensation
 - Built-in orientation correction to rotate mounting position of the module internally to the vehicles coordinate system
 - Additional first order IIR filter for individual filtering for all axes
- Speed pulse signal or lap trigger output
- Math (CALC) channels for online calculations
- Online roll angle calculation
- Module can work with GPS laptriggers as TransponderX2 simulator
- Mechanical features
 - Compact and light weight housing (Rugged and waterproof (IP67))
 - Integrated magnet allows simple assembly on all magnetic surfaces

Available options

- _3A3G-001 Integrated 6 DoF IMU with individual range selection for Acc ($\pm 2/4/8/16$ G) and Gyros ($\pm 250/500/1000/2000$ °/s)
- _3A3G-002 Integrated 6 DoF IMU with individual range selection for Acc ($\pm 4/8/16/30$ G) and Gyros ($\pm 500/1000/2000/4000$ °/s)

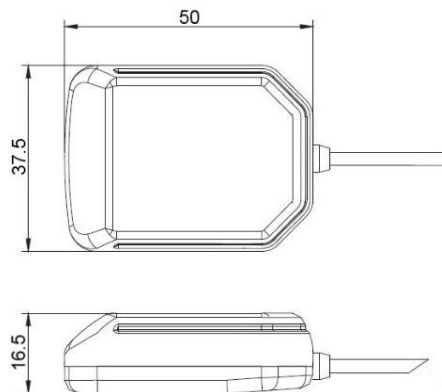


_3A3G-options are enabled/disabled via firmware update of the module!

Technical specifications

CAN characteristics			Mechanical		
CAN channels		32	Dimensions	mm	37.5x50x16.5
CAN lines		1	Weight Bike (cable included)	g	53
Baud rate	kBd	up to 1000	Weight Car (cable included)	g	75
Sampling rate CAN channels	Hz	200	Housing material		ABS-PC
Speed out			CAN Connection		Binder 712, 5PM
Pulse output via open collector	P/min	1000	Type		Raychem
Sink current	mA	20	Wire cross section		5x AWG26
Electrical			Length Bike	mm	400
Power supply	V	4 to 28	Length Car	mm	2000
Current consumption @5 V	mA	80 to 85	Environmental		
			Sealing class		IP67
			Operating temperature	°C	-40 to +85
			Humidity	%	
			Ordering information		
			BC-GPS2CAN_V2-000		Bike
			BC-GPS2CAN_V2-001		Car
			BC-GPS2CAN_V2-100		Bike with Mounting Plate
			BC-GPS2CAN_V2-101		Car with Mounting Plate

Dimensions

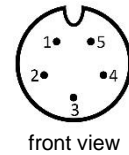


Connector layout

Connector type

CAN line, Binder 712 5PM

Pin	Name	Description	Color
1	CAN H	CAN high	white
2	CAN L	CAN low	green
3	GND	Ground	black
4	Button/Lap	Push-button input/speed output (open collector)	blue
5	Vext	Power supply (4-28V)	red



Connector and cable length can be modified on customer request

Default CAN identifiers

CAN-ID	Byte 0	Byte 1	Byte 2	Byte 3	Byte 4	Byte 5	Byte 6	Byte 7
0x790	V_Sat		ValidSat		SSH		Course	
0x791	Lat_dez		Lon_dez					
0x792	Altitude		MMDD		HHMM			
0x793	HorAccu		VerAccu		SpAccu		CourAccu	
	Speed_N		Speed_E		Speed_D		Speed_3D	
	HDOP		GDOP		PDOP		VDOP	
	Year	Month	Day	Hour	Min	Sec	hSec	
	Latitude				Longitude			
	A_Lat		A_Lon		Banking		Yawrate	

Mounting Instructions



Improper mounting of the GPS module can result in bad GPS accuracy!

- Mount the GNSS Receiver solid / rigid to the vehicle, avoid vibrations and do not use velcro or similar.
- Mount the GNSS Receiver to a stable and low or non-vibrating part of the vehicle
- The GNSS Receiver must be mounted on the top of the vehicle and be oriented parallel to the horizon.
- The optimum receiver location must have “unshaded” direct view to the sky.
- When mounting the receiver on non-metal surfaces, please use the self-adhesive ground plane - AC-GPS_ground_plane-000
- For fixed screw mounting, AC-GPS2CAN_Mountingplate-000 can be used

Documentation reference

For more information about *Mounting Instructions* please see manual

GPS – General description on our website:

<http://2d-datarecording.com/downloads/manuals/>



Downloads

- [GPS – General description](#)
- [Revision of GNSS](#)
- [Overview 2D GPS/GNSS modules](#)

IIR Filter Channel Group (xxx_IIR)

Each IIR channel is directly linked to the raw channel of the IMU (xxx_RAW). Using the parameter “filter” you can set the desired filter frequency as follows:

$$f_{IIR} = \frac{f_{sampling\ rate\ raw}}{2^{Filterstep}}$$

Example: Filterstep 4; sampling rate of raw channel = 200Hz
→ IIR filter frequency = 12.5Hz

Averaging

If the sampling rate of an IIR channel is set lower than the rate of the raw channel, an average is calculated by the ratio of raw channel to the IIR channel.

Example: If the raw channel is set to 1000Hz and the IIR channel is set to 100Hz, an additional average of 10 samples is calculated.

Rotation Channel Group (xxx_ROT)

The rotation channels are linked directly to the IIR channels, every change of standard and IIR channel will influence the rotation channel. The misalignment can be compensated by entering the mounting angles in comparison to the orthographic system to the rotation channels.

Example: If the sensor is tilted 10 degrees forward and mounted upright,
→ mounting angles to insert: x=90°; y=10°; z=10°



Maximum Sampling Rate

The sampling rate for the IIR / ROT channel can never exceed sampling rate of the raw channel