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GPS100

GPS100.SPEED

TECHNICAL SPECIFICATION

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The gps.100SPEED is the another forward thinking variant of the gps.100 product family which has proven itself in numerous high level development processes within the automotive industry.

Embedded within an ultra compact housing, the proven GPS-Performance of the gps.100-series is coupled with a 3-axle acceleration sensor and a 3-axle gyroscope. These may be combined with the in-house developed sensor-fusion-algorithm for GPS-data coupled to an air pressure sensor and a digital compass.
As with all products within the gps.100 range, also the SPEED variant keeps noise to extremely low levels within the speed signal. In addition to this, a permanent plausibility check of the signal is carried out via a second HighEnd LowSpeed GPS receiver. This leads to less false information and a more stable signal.

All sensor values are output with a measurement frequency of up to 400Hz.

The gps.100SPEED receiver supports all current GNSS systems (GPS, Glonass, Galileo, BeiDou). Of course, SBAS/EGNOS information is also received and included for correction. A sophisticated standstill detection "PSD" (Precise Stop Detection) lowers the trigger threshold to almost 0.00 km/h without additional filters and thus also the latencies during start-up.

With the optional IMU fitted, the roll/pitch as well as the yaw angle (dynamic / static) can be measured directly via the internal sensors. Additionally, side slip angle and other accelerations can also be measured and output directly, both with and without gravity correction.

Two analog and two digital inputs are available. The two analog outputs create the connection to existing hardware. In addition, data can be imported via OBD-II (incl. WWH support) and/or CAN (Classic 2.0B / FD). The speed signal can be output as an analog voltage or as a digital pulse sequence. Furthermore, all data can be output on the CAN bus or stored in the system (logging function).

All data is provided with a time stamp, which allows internal latencies and runtimes on the CAN bus to be compensated. The device software is optimised for processing with the lowest possible latency.

Internal apps can perform fully automatic measurements and tests such as braking distance measurement, lap time and driving performance. These results can be output on the CAN bus. The gps.100PRO internal apps have an intelligent test recognition and can thus, automatically record a driven test via previously defined trigger thresholds (braking distance measurement).

The device can be parameterised with an easy to use configuration software.

With the gps.100SPEED measurements according to ECE R13H are possible.

Applications:

- Driving performance measurement
- Brake tests
- Homologation
- Driving dynamics & Handling
- Consumption & exhaust gas measurement
- Real Driving Emission
- Driver Assistance Systems development
- High Performance GPS Measurements

Optional:

- Application specific configuration
- RS232 Data output
- High resolution IMU
- Dual GPS

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GENERAL

GPS system
up to 400Hz

50 channel GPS
L1, integrated IMU
for support

Slave GPS
up to 20Hz
GPS L1C
Glonass/Galileo/BeiDou

Optional: RTK / GPS L2C

CPU/MCU
High-Performance
ARM Cortex M7
216MHz

Display
4 status LEDs

Housing
anodized aluminium housing with
mounting plate

Dimensions
approx.
135x80x27mm
weight approx.
600g

Supply
9V to 70V, DC
max. 500mA
(Peak 1A) @ 12V

Temperature

Operating
-40 to 85°

Storage
-40 to 85°

**The IMU is calibrated over the
entire temperature range from
-40° to +85°C.**

INPUT

CAN
1 Channel
CAN 2.0 A/B, up to
1MBaud, adjustable
Supports CAN FD up
to 8MBaud

Terminating resistor can be
switched on in the software

Input of CAN signals via DBC
into the data pool

OBD-II*
ISO15765 configurable CAN
Various signals can be
retrieved by the vehicle

*Vehicle dependent, option

Digital-In
2 Digital trigger inputs
>5V High level
<1V low level
latency <1uS

Analog-In
3 Analog inputs
0-60V DC, 24Bit resolution
400Hz sampling rate
-3dB @ 55 Hz

OUTPUT

Digital-Out
1 Digital TTL output 0V /
5V level, max. 50mA 8Hz
Frequency per km/h

Refresh rate: max.
400Hz (speed only)

Analog-Out
1 Analog output
0 - 5V, 10mV per km/h

Refresh rate: max.
400Hz (speed only)

IMU - Standard

GYRO

Range
+/- 2000 °/sec

Nonlinearity
< 0.1% FS

3dB bandwidth
250 Hz

Stability
< 5°/hr

ACCELEROMETER

Range
+/- 16g

Nonlinearity
< 0.5% FS

3dB bandwidth
250Hz

Stability
<0.04mg

MAGNETOMETER

Resolution
0.25mG

Full range
5 G

Linearity
<0.1%

3dB bandwidth
200 Hz

OTHER

Warranty
1 year limited factory warranty

The system is ITAR free and is
not subject to export restrictions.
restrictions.

GPS Performance / Accuracies

|	
Speed	Accuracy: +/- 0.03 m/s (1σ RMS) Resolution: up to 0.01 km/h Latency: <2ms (without timestamp) Latency: 0ms (with timestamp) max. 500 km/h Refresh rate: max. 400Hz
Position accuracy	Horizontal (SBAS): 1.5 m (1σ STD) RMS Vertical (SBAS / Barometer): 2.5 m (1σ STD) RMS Refresh rate: max. 400Hz
Heading	Accuracy: 0.1° Resolution: 0.05 Repeatability: <0.1°
Roll / Pitch	Accuracy: 0.5° RMS / Static 0.1° RMS / Dynamic
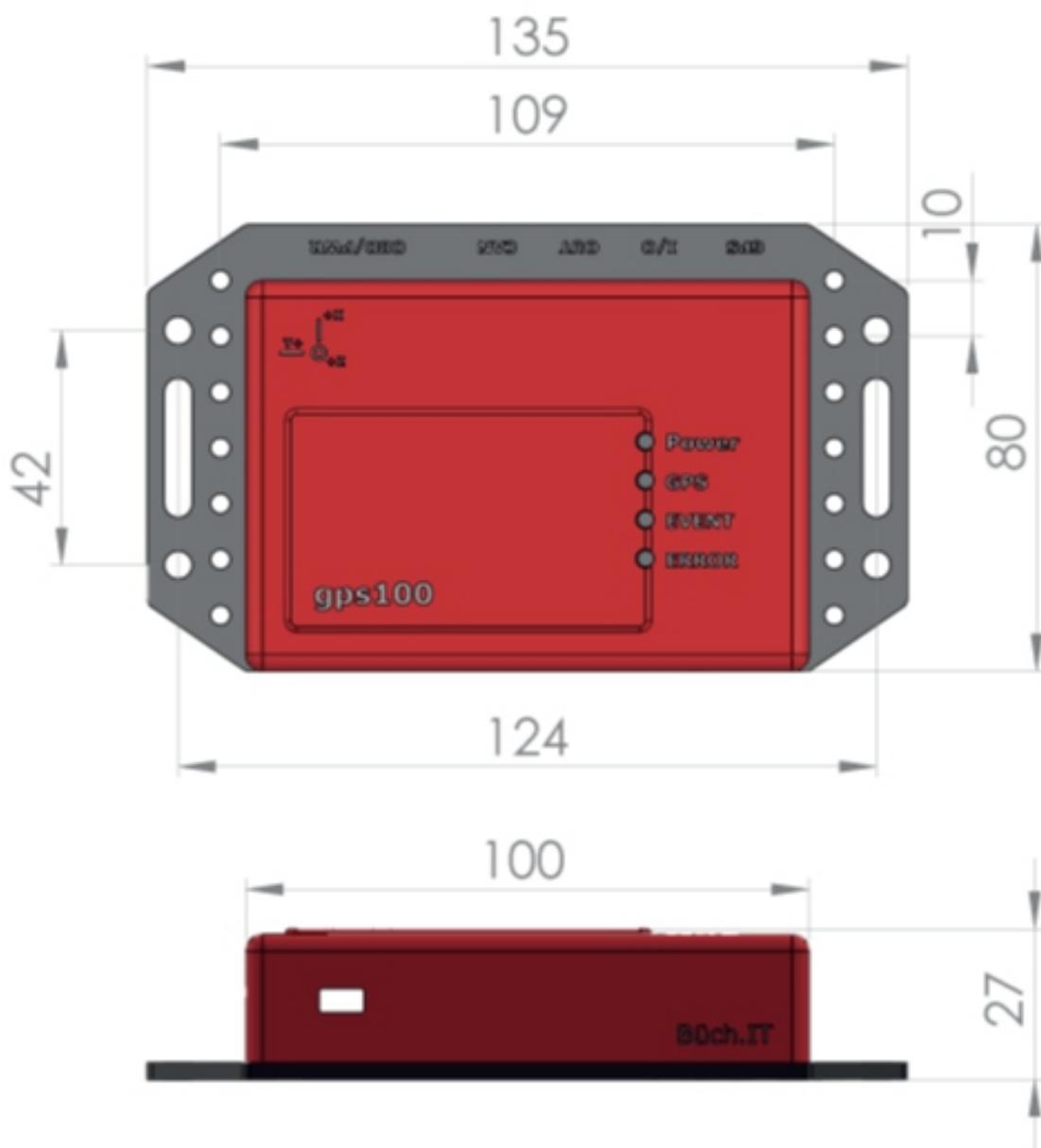
OBD-II / Power # D-Sub 9 Pin # Female
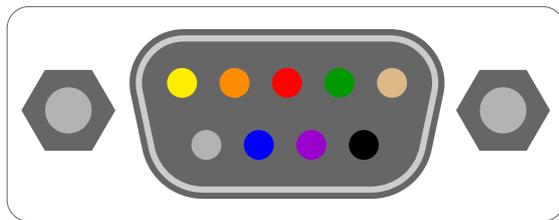
| Pin		Signal
1	●	CAN-L
2	●	-
3	●	CAN-H
4	●	GND
5	●	GND
6	●	VCC
7	●	-
8	●	-
9	●	-

CAN # Lemo EGG.0B.303 # 3 Pin Jack
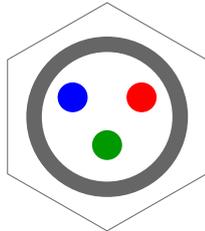
1 ● CAN-H
2 ● CAN-L
3 ● CAN-GND

OUT # Lemo EGG.0B.304 # 4 Pin Jack
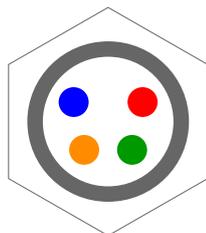
1 ● TTL-Signal
2 ● TTL-GND
3 ● Analog Signal
4 ● Analog GND

IN # Lemo EGG.0B.306 # 6 Pin Jack
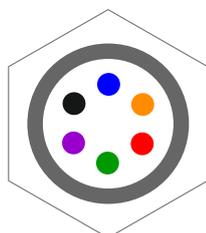
1 ● Analog In 1
2 ● Analog In 2
3 ● Analog GND
4 ● Digital In 1
3 ● Digital In 2
4 ● Digital GND

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