CAN *Newsletter Online*

GPS-TO-CAN MODULE

Delivering position data in any environment

CSS Electronics has introduced the standalone CANmod.gps, which provides GNSS and 3D IMU (inertial measurement unit) data via a CAN interface.

The GPS-to-CAN module provides GNSS (global navigation satellite system) position and 3D inertial data (via a gyroscope and accelerometer). The data is output via CAN frames with configurable bit-rates and CAN-IDs. This enables the integration with any CAN system, including any CAN data logger and CAN interface. The CAN-IDs, bit-rate, data frequency, etc. can be customized via USB using a GUI (graphical user interface). The module's possibilities can be seen in a Youtube video.

The device supports the Untethered Dead Reckoning also known as sensor fusion. Sensor fusion enables precise position/attitude data in GNSS hostile areas. This means that even if the GNSS signal is lost entirely (e.g. in a tunnel or mine), the module continues to deliver positioning through IMU-based estimates.

CANmod.gps is as GPS-to-CAN module with a 3D IMU (Source: CSS Electronics)
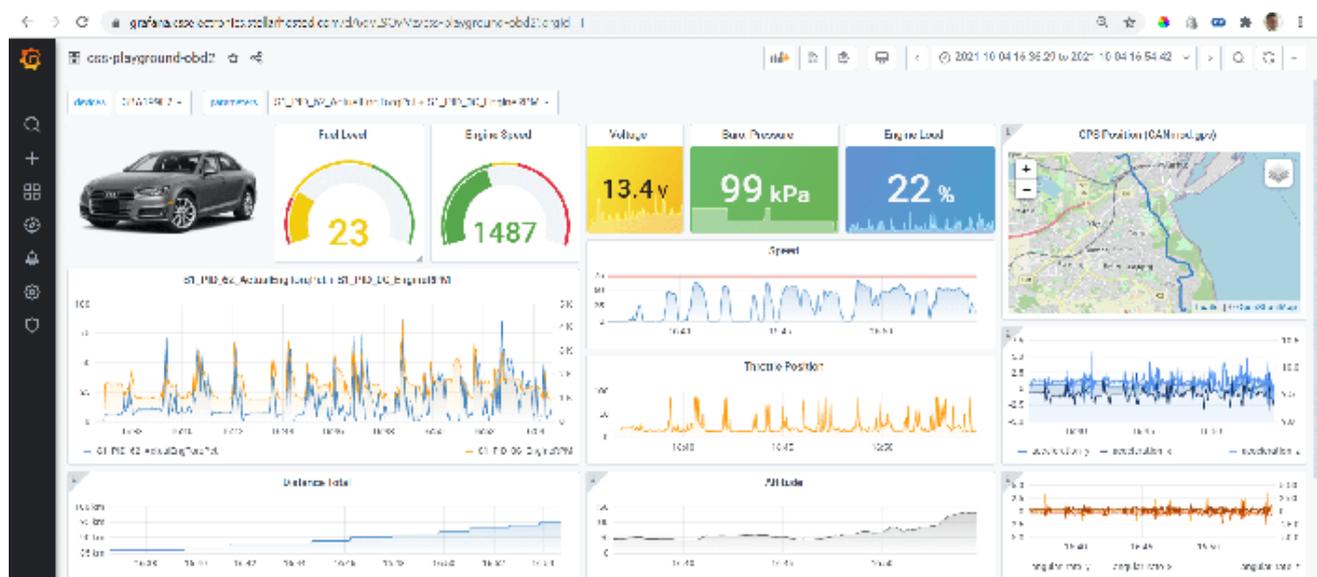
The CANedge and CANmod.gps can be combined - and the data can be visualized in dashboards (Source: CSS Electronics)

Use cases

The standalone module requires no PC for operation and includes a DBC (data base CAN) for decoding of CAN messages. The device comes in a robust aluminum enclosure that measures 70 mm x 20 mm x 50 mm and weighs 70 g. It produces a 1-Hz precise GNSS position with a hot start possible via a battery backup. The built-in gyroscope and accelerometer produce 3D IMU data at 100 Hz.
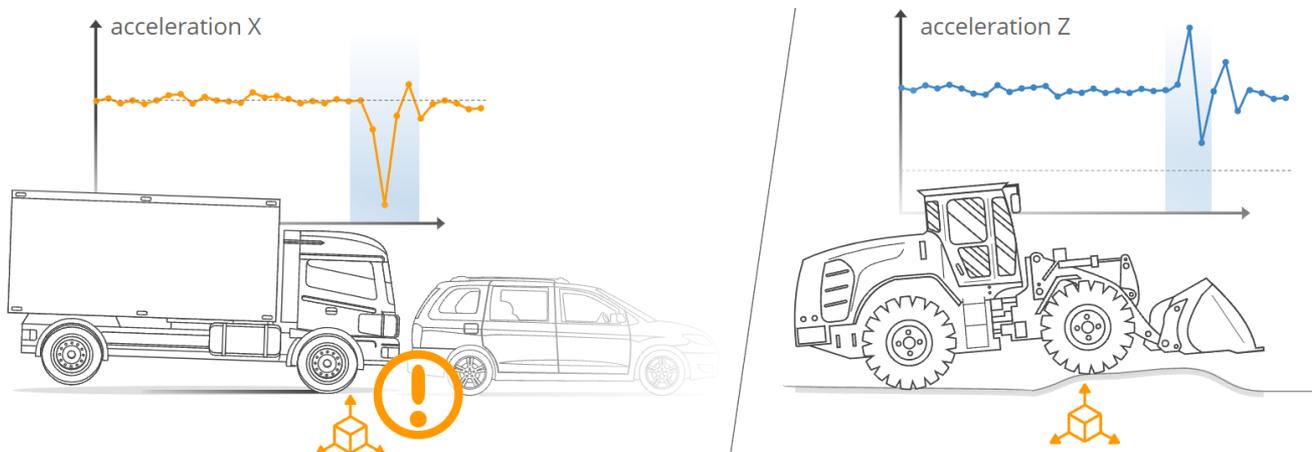

The device provides many signals beyond GPS position - e.g. attitude and acceleration rates (Source: CSS Electronics)

The device can be used to inject GNSS/IMU data via CAN frames directly into e.g. an in-vehicle/-machine CAN network, so that other CAN nodes can react based on the data. Alternatively, it can be used as an add-on for any CAN data recording hardware. For example, the module can be used as a plug-and-play add-on for the CANedge data logger series. In this setup, the CANedge can record e.g. in-vehicle CAN data via Channel 1 and GNSS/IMU data from the CANmod.gps via Channel 2. This makes it easy to e.g. set up telematics dashboards as seen in an example dashboard playground combining OBD2 data from a car with GNSS/IMU data.

The device instructs and logs a range of useful signals including GNSS position, speed, attitude (roll, pitch, yaw), altitude, odometer, 3D angular rates, 3D acceleration rates, geofences, and time.

A [case study from Gustave Eiffel University](#) shows how the CANedge2 data logger and CANmod.gps are used to construct databases with information on icy roads for optimizing salting in France.
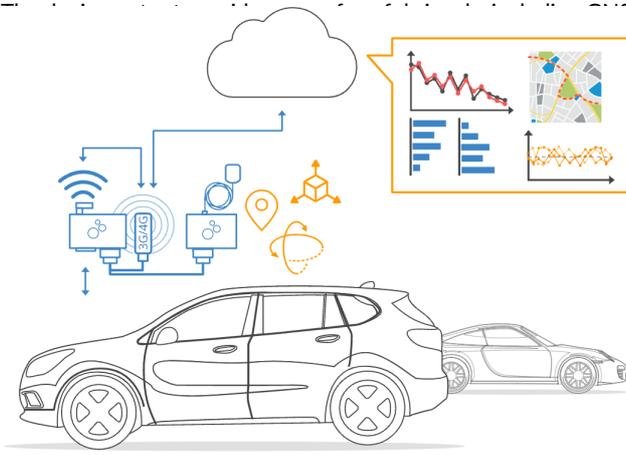
Case study: CANedge2 and CANmod.gps are used for analyzing icy roads
(Source: CSS Electronics)