

The GL3xx secured gear-selector lever adapter short operation and installation

The GL3xx secured gear-selector lever adapter, referenced hereafter as Adapter is designed to protect the driver from undesirable Mercedes-Benz GL3xx vehicle behavior. There are three cases of not secured behavior:

- 1) Vehicle is moving forward and a driver shifts the gear-selector lever to the reverse state.
- 2) Vehicle is moving backward and a driver shifts the gear-selector lever to the forward state.
- 3) Vehicle is in the 'Neutral' position and a driver shifts the gear-selector lever without applying the brake pedal to the reverse state.

The Adapter provides protection in all this unsecured situations by blocking the gear-selector lever commands. The blocking decision is made by analyzing the CAN messages from the vehicle. The CAN messages are: speed message, vehicle moving direction and brake pedal position. To implement all this features the Adapter had to be installed in between the gear-selector lever and vehicle high speed CAN network (see the Figure 1) .

The Adapter is designed to meet all automotive standards. The short technical specification:

- 1) Operation temperature range: -40 to +70 degrees of Celsius.
- 2) Input voltage range: 7-40 Volt.
- 3) Input current: in active mode 15-30 mA; in sleep mode < 1 mA
- 4) Over-current and Over-voltage protection: Yes
- 5) The Computer-Operating-Properly (COP) system: Yes
- 6) The CAN messages Integrity-Check-System (ICS) system: Yes
- 7) Sleep mode: Yes

The Adapter is equipped with LED that allows to verify the accuracy of installation and operation of the Adapter. The LED states are:

- 1) LED light is on and flashing - the Adapter is installed successfully and operates properly.
- 2) LED light is off - the Adapter power is off or the Adapter is in the sleep mode.
- 3) LED light is always on - the Adapter has an issue with the CAN communication. Probably the CAN lines were not connected properly.

The Adapter has male and female connectors that will allow easy removal it from vehicle in case the Adapter failure.

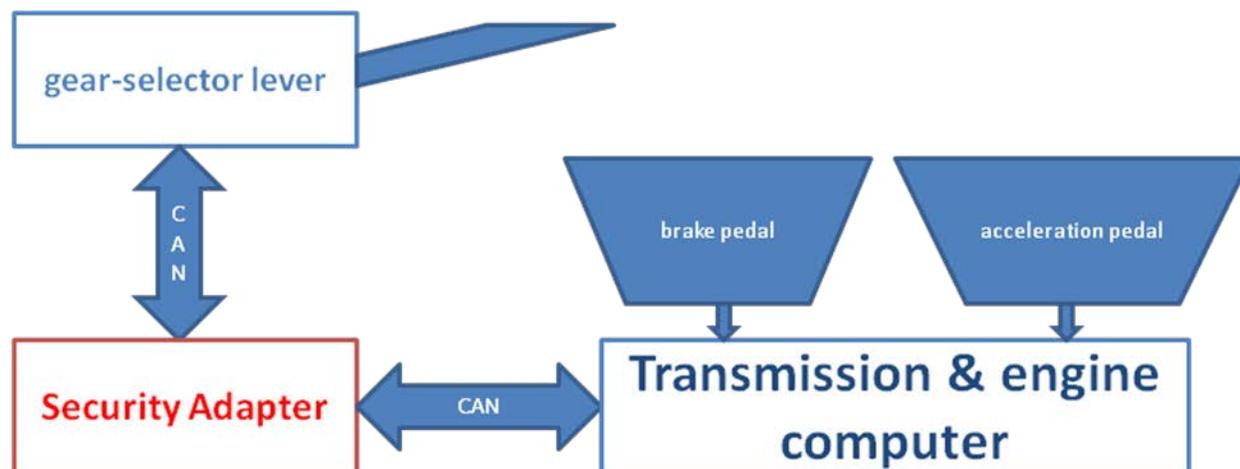


Figure 1. Connection of the Security Adapter in the vehicle simplified diagram