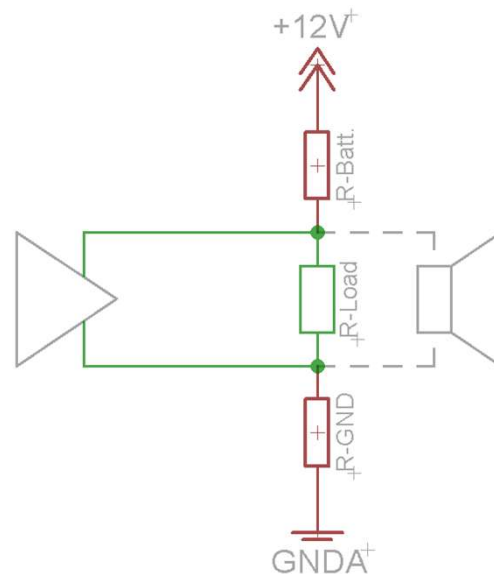


Loudspeaker diagnostics OEM - what is it about?

In many vehicles, when the factory system is switched on, the perfect condition of the loudspeakers with wiring is checked. If an error is detected, the amplifiers are not switched on, errors are reported in the vehicle diagnosis or functions are deactivated (e.g. the fader at Volkswagen).

What is checked?

First the resistance R-Load is used to measure whether a loudspeaker is connected. If a loudspeaker is detected, the resistance to vehicle ground and battery voltage is often measured (ground fault or insulation fault of the wiring). R-Load must be a few ohms (~4 to 50), R-GND and R-Batt. must be several kOhms or greater. Some vehicle manufacturers do not recognize resistances of > 10 Ohm as loudspeakers (e.g. Citroen / Peugeot), or consider resistances smaller than 50kOhm as ground fault (e.g. BMW).



Consequences for the installation of an audio system:

If the loudspeaker connection of a factory system is to serve as the signal source, the impedance check must be "outsmarted". The input of a connected amplifier/converter must have a low impedance and a high impedance to ground and battery voltage. Unfortunately, both are only possible to a limited extent, since a low impedance resistor converts the power into heat ($P=U^2/R$), and a completely decoupled electronics cannot function perfectly. **MOSCONI** amplifiers and high/low converters have a load resistance (dummy load) of 47 Ohm on the input side, the resistance to ground and battery voltage is > 100 kOhm.

What to do in case of an error?

If the impedance monitoring responds and does not switch on the outputs, the cause must first be determined. Three possibilities are possible:

1. The load resistance is too high. An additional load resistor, parallel to the input of the amplifier/converter, helps here. Ensure sufficient load capacity! For the resistor: As low as necessary, as high as possible to avoid unnecessary heating. In practice, resistors from 15 to 27 Ohm / 10W usually lead to success.
2. The ground coupling of the amplifier/converter is detected as an insulation fault. Use a high/low converter with galvanic isolation (transformer) for test. (e.g. Gladen HTL10, soon available)
3. A small DC offset at the input of the amplifier/converter is detected as an error. Exclusion by measurement (DC voltage to vehicle ground) or like (2) use of a galvanic isolation.