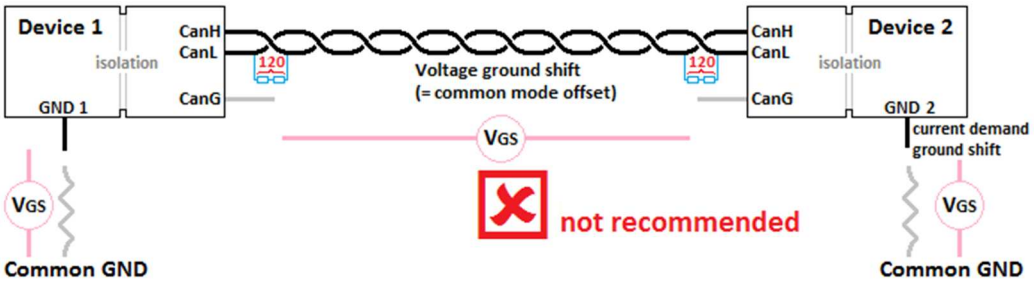
CAN Bus Ground

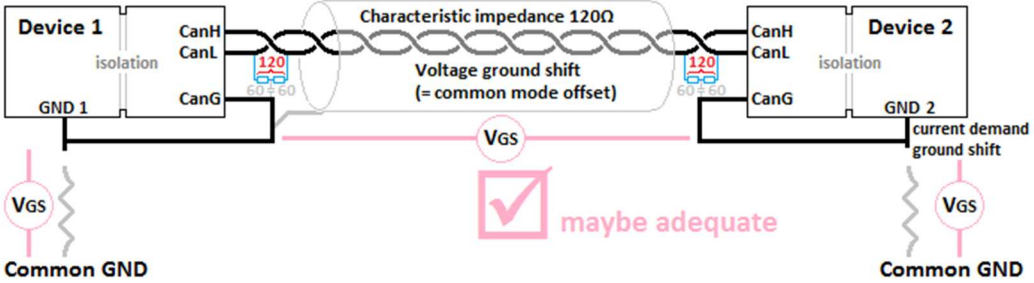


Induced individual and shared CAN level shifting due to:

- Individual current demand ground shifts;
- Individual capacitive coupling within devices (more prone);
- Cable noise pickup.

These random level shifts can exceed the isolation/transceiver breakdown levels.

As the CAN common-mode offset increases higher propagation delays occur, resulting in transmission errors



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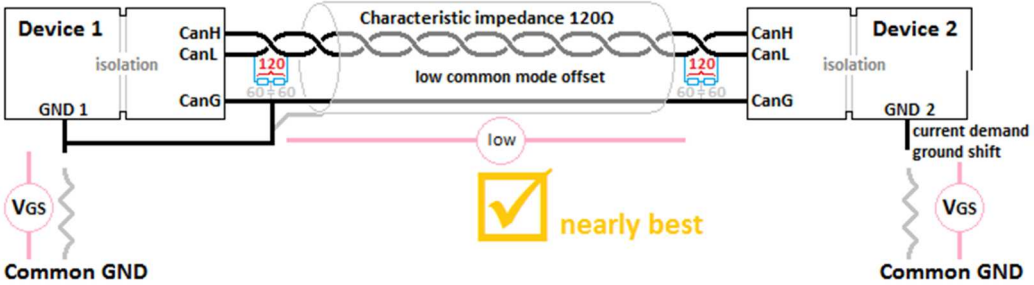
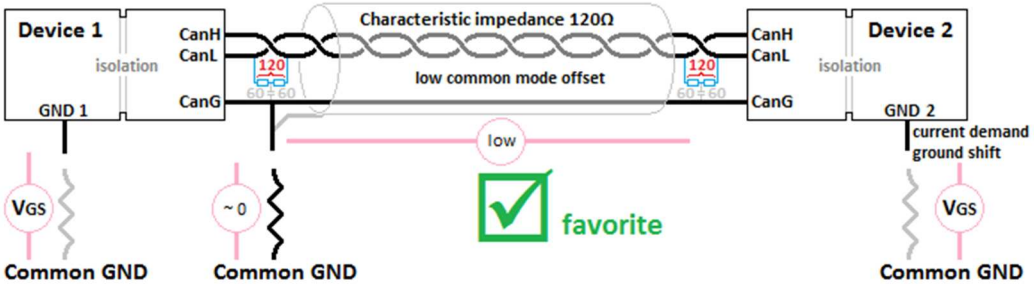


CAN communication problems may result if the CAN transceiver ground 'quality' is poor or the ground is missing. CAN ground problems can be the source of Error Frames, and in more severe cases may cause damage in the CAN interface circuitry, the transceiver, or sometimes the isolation IC(s).

High-speed CAN requires an 'adequate' ground connection to function properly.

Unwittingly, the automotive industry, with its metal chassis ground, seems to have propagated the idea that high-speed CAN is only a two wire interface when in fact it is really a three wire interface CAN_H, CAN_L and CAN_G.



And of course it is utterly pointless to bother with EMI filters, PCB design for EMC, cable shielding, etc. if you don't have a signal ground.

And just because it works under laboratory conditions without a signal ground, don't rely on it working in all conditions.