Grounding

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Grounding provides a safe way for currents to return to and this comes with numerous benefits like safety for the user and the electrical components from faults. There are different grounding types such as:

1. Single point

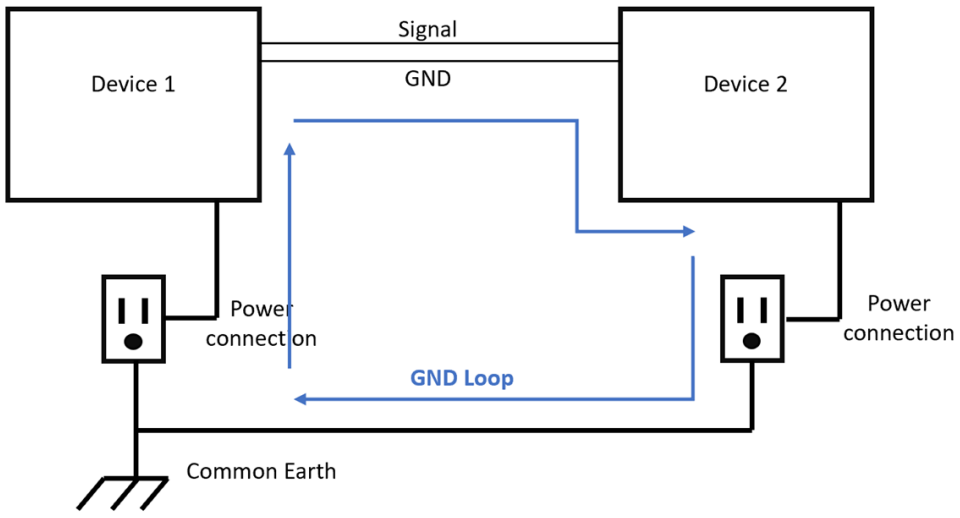
When connection between ground plane and power supply is only at one point, the ground plane will be held at the same potential and this is used in low frequency circuits.

2. Multiple points

Differences in voltage levels may occur leading to ground loops as a result of connecting at several points. Mostly, it is used in high frequency circuits.

3. Star topology

Connections are established directly between all the planes and the power supply and this helps to avoid ground loops.



Ground loops happen when there are more than one conductive path placed between the ground and the components. This leads to current flow in unwanted directions such as current moving to the other components instead of to the ground. However, it could easily be prevented by various methods like:

1. Using ground planes

This allows a return path to always be available for current to pass through.

2. Audio isolation

This could be done by transformers isolating the signal and the audio ground from its source all the way to the output preventing loops from forming.

3. Cable shielding

Shielding cables stops ground loop currents to flow through it and is used in longer and larger scale connections.