

Application Note

Grounding of MICROSENS Switches

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Summary

This Application Note is an addition to the installation manual of MICROSENS G6 switches with 48/54 V DC supply and external power supply. It describes the measures that have to be taken to reference DC power supply, PoE switch and connected PD device to the same ground level.

Scope of Document

This Application Note applies to all MICROSENS Micro Switches and all MICROSENS Industrial Switches of the product families PL, PL+, PLM, PLR and PLR 10G.

Glossary

Terms, acronyms and abbreviations used in the document.

Term	Description
AC	Alternate Current
DC	Direct Current
PD Device	PoE Powered Device
PoE	Power over Ethernet
UTP	Unshielded Twisted Pair

Bibliography

- [1] ETSI EN 300 253: Environmental Engineering (EE); Earthing and bonding of ICT equipment powered by -48 VDC in telecom and data centres

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Information available from the MICROSENS Website

Registered users can find the latest firmware and MICROSENS Smart Director app versions as well as further information on our web site:

- Registration: www.microsens.de > Partner-Login > Follow the link 'Please register here' > Fill in the online registration form and submit it
 - You will receive an email from MICROSENS with a user name and a password
- Login: www.microsens.de > Partner-Login > Enter user name and password > Click the 'Login' button
 - Firmware images: Navigate to the device and select the tab 'Services'
 - For further information select one of the other tabs

Note:

Make sure the browser allows the execution of scripts.

Note:

After updating the firmware either by Web Manager or CLI be sure to clear the cache of the browser you are using to open the Web Manager of the respective device. This will force the browser to reload the device's updated web GUI data instead of using the outdated data from its cache.

1 Introduction

Because MICROSENS uses high efficiency switched power supplies, the secondary circuit is galvanically isolated to the ground level of the building's electrical system by design. Therefore all components connected to the secondary circuit of the switched power supply would share a "floating ground". Besides safety issues, a floating ground of the network can cause problems if only one component accidentally or on purpose is grounded.

So for the installation of PoE components in corporate networks it is necessary to reference the DC supply voltage of all devices to the same ground level. Normally this will be ground level of the building's electrical system (i.e. "earth").

The following descriptions specify the proper grounding actions when using centralised and local power supplies.

Note:

In cases where different grounds are used or distances between PD device and PoE sourcing switch are short it is recommended to use unshielded (UTP) cable to avoid any unwanted currents or ground loops via the shield of the network cable.

2 Important Note

Electrical connections should only be carried out by a fully qualified electrician according to the current rules of electrical engineering!

In addition, regional laws, regulations, and directives are applicable!

The following examples are meant as generic recommendations, based on experiences which have already been tested and have proven their effectiveness. Nevertheless, to realise a proper and safe grounding the qualified person has to judge the feasibility of any planned measure.

3 Grounding Actions

3.1 Grounding with Centralised Power Supply

When using a centralised DC power supply, grounding is typically done by connecting the "+" pole to earth potential as near and short as possible to the power supply output. Grounding of the switch is done via its chassis. [1]

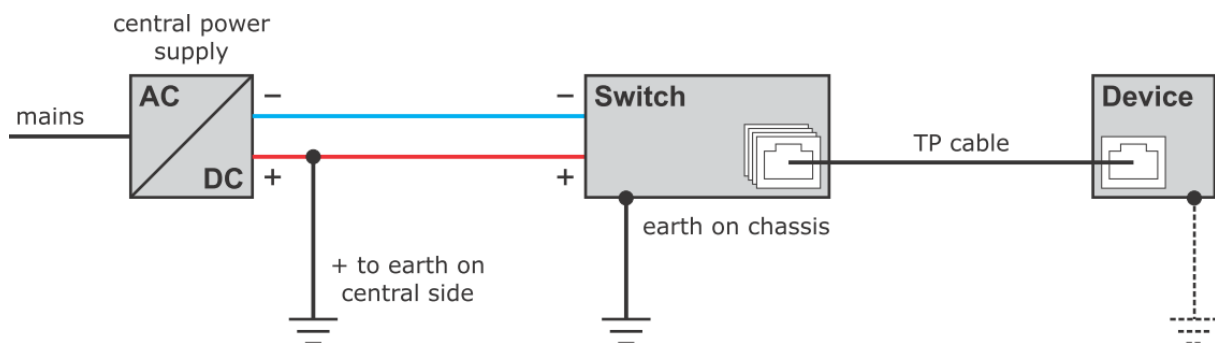


Figure 1: Grounding with Centralised Power Supply

3.2 Grounding with Local Power Supply

When a local power supply is used, there is only one grounding connection necessary between power supply and switch. The “+” pole of the switch has to be connected to the ground potential.

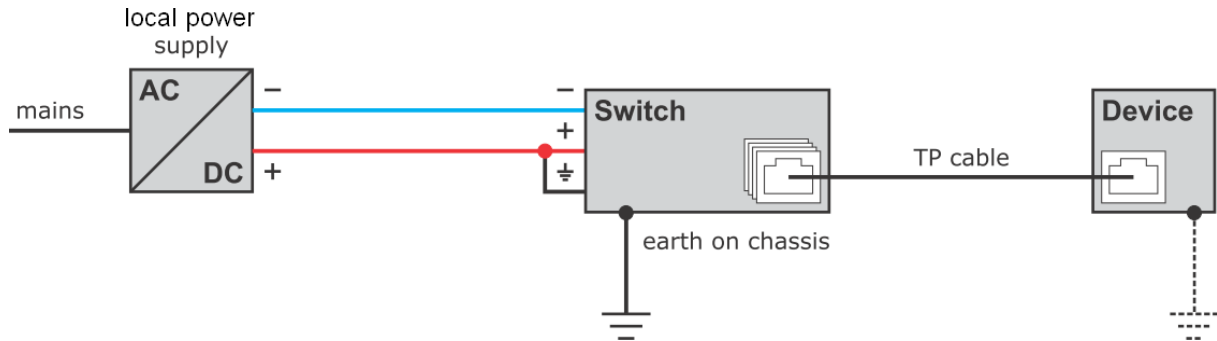


Figure 2: Grounding with Local Power Supply

3.3 Schematic Diagram

The following diagram shows the basic schematic of the 48/54 V DC power supply system.

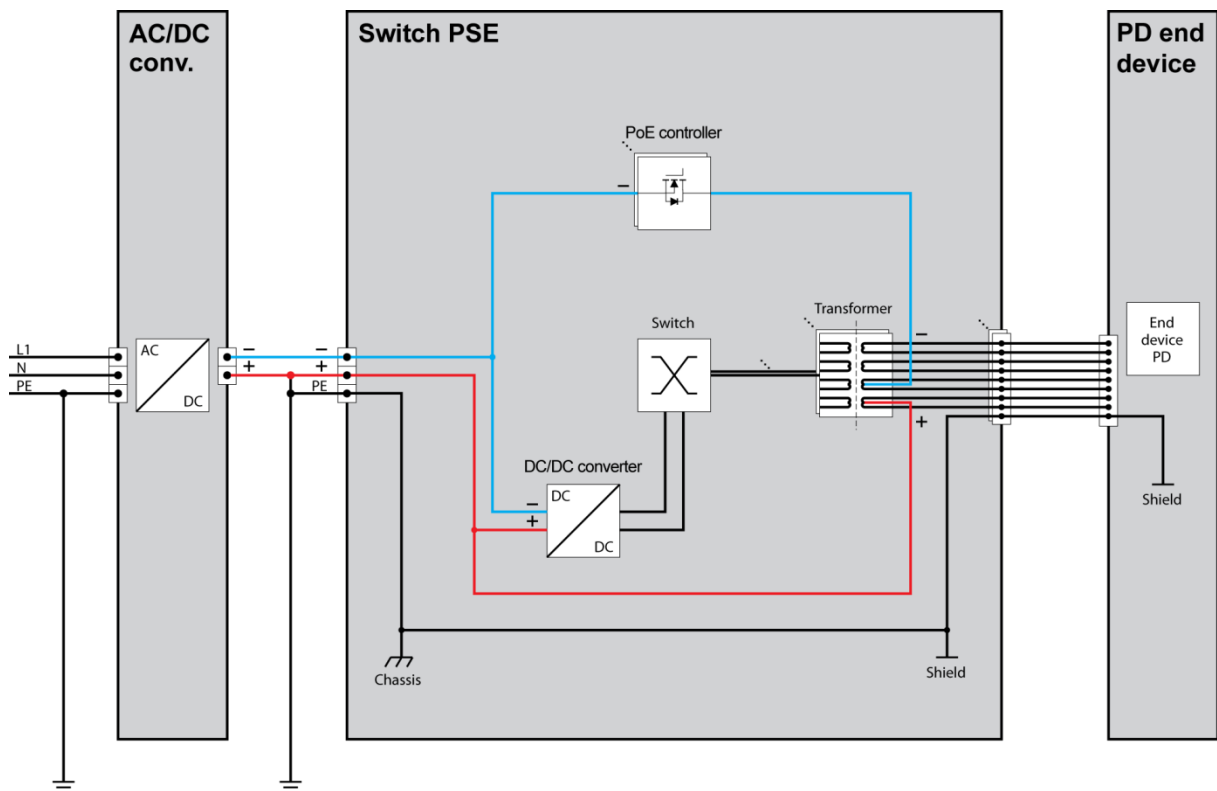


Figure 3: Basic schematic of the 48/54 V DC power supply system

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