General Guidance

Power over Ethernet device

STANDING COMMITTEE OF OFFICIALS (SCO)
Secretariat: c/o Electrical Safety Office Queensland
GPO Box 69, Brisbane QLD 4001
eess.secretariat@qld.oir.gov.au

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General

This guidance material intends to clarify if Power over Ethernet devices (PoE devices) are classified as Level 1, Level 2 or Level 3 in-scope electrical equipment.

Question

I. Are PoE devices in-scope electrical equipment and what risk level classification do they fall under?
II. Do they fit within the definition of “Power supply or charger” as listed in AS/NZS 4417.2 Appendix B?

Examples of such PoE devices

EESS Electrical Equipment Safety System

Those are mains connected PoE devices that encompass the function of a Power Sourcing Equipment (PSE) as their primary function. They use the Ethernet cable to provide power to other connected devices on the network, referred to as Powered Devices (PDs). Such PDs include IP cameras and wireless access points among others. The power is carried on the Ethernet CAT-5 cabling, either over the same data conductors (Figure 1) or on separate spare conductors (Figure 2).

This general guidance notice concerns PoE devices that fulfil such function of a PSE.

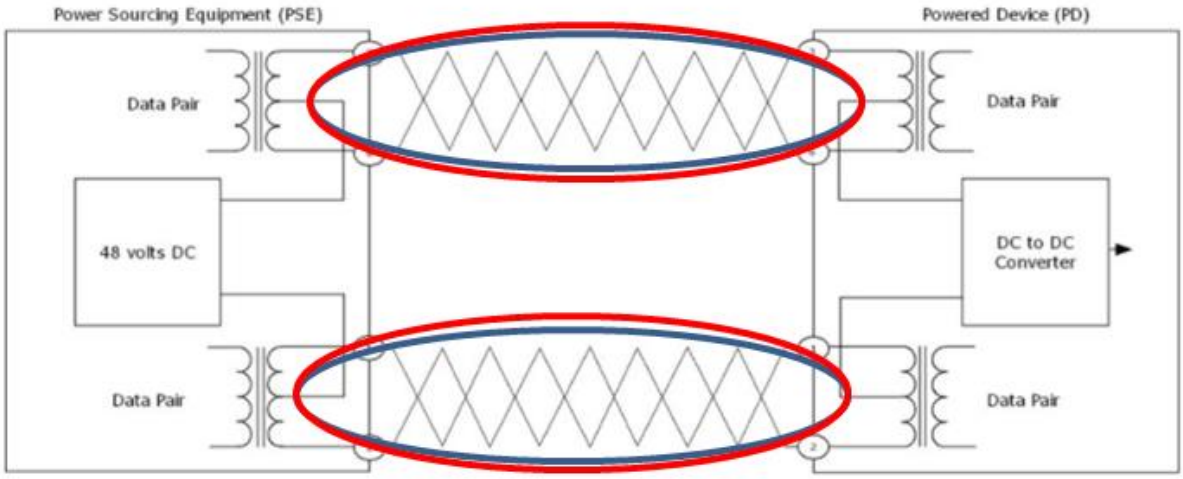

Figure 1. The power is carried on the same data conductors[1]

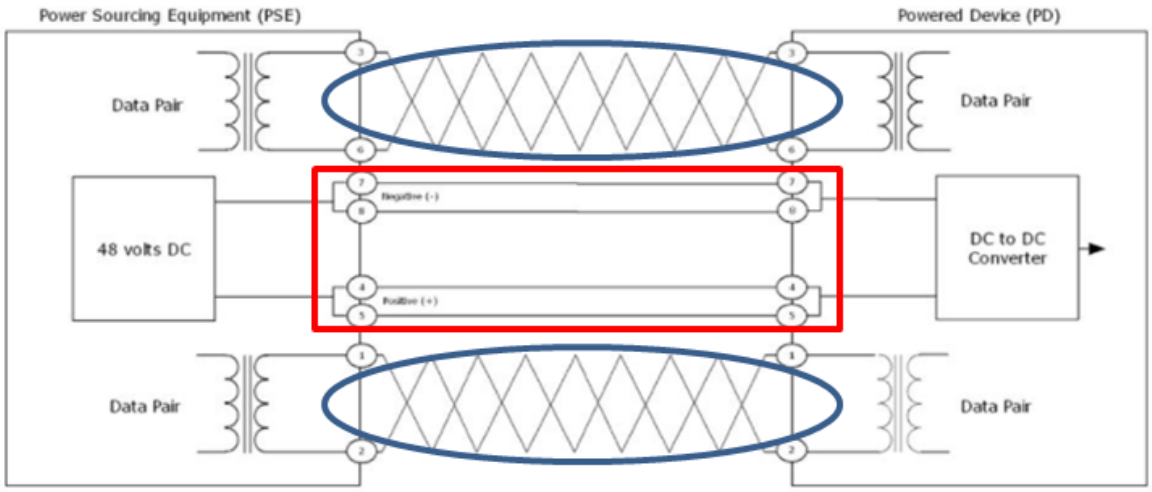

Figure 2. The power is carried on separate spare conductors[1]

Answer

Such PoE devices differ from the Power line communication device defined as level 2 equipment in AS/NZS 4417.2 from the fact that those PoE devices provide elv power to the IT equipment via the cat 5 cable along with comms signal, rather than being a device that send the comms signal along 230V power cable.

As the primary function of a PoE device is providing power supply to the powered device, they consequently have the same risk level classification as the power supply or charger.

Mains powered PoE devices with an output voltage of up to 120Vdc will therefore be classified as level 3 in-scope electrical equipment under the definition of “power supply or charger”.

PoE devices with input voltage not greater than 50 V AC RMS or 120V ripple-free DC are “Not in-scope” electrical equipment, however they still need to comply with the relevant safety standard.

The relevant standard is AS/NZS 62368.1.

1 https://www.advantech.eu/resources/white-papers/1bb45e35-50ee-42c2-871f-c9ab11bf55f0

Note: *Blue and red shapes have been added on the figures for the purpose of highlighting the difference between the two alternative methods of delivering power to connected devices.*