

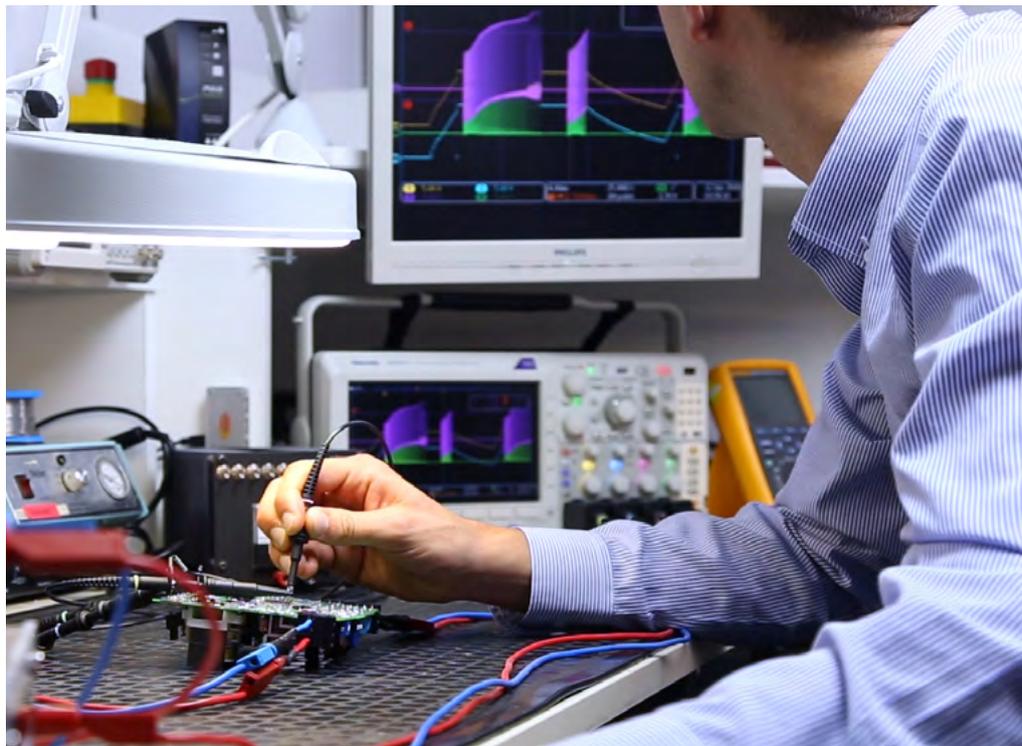
End of the legendary EN 60950-1

EN 61010 – New standard for power supplies in industrial applications



Michael Raspotnig | PULS GmbH

The end of the EN 60950-1 in the Official Journal of the European Union will require power supply manufacturers to take action. Although the Official Journal cites EN 62368-1 as the successor to EN 60950-1, the alternative applicable standards of the EN 61010 series have significant advantages in the safety evaluation of power supplies in the industrial sector.



Regulations in the European Union

The Official Journal of the European Union will no longer permit any presumption of conformity with the Directive 2014/35/EU (Low Voltage Directive) based on EN 60950-1 after December 20th 2020* and has cited EN 62368-1 as the replacement standard. This means that in countries within the European Union and in other countries following the CE system, EU Declarations of Conformity according to EN 60950-1 will no longer be valid from this date.

The Low Voltage Directive relates to electrical equipment for use with a rated voltage between 75 and 1500Vdc or 50 and

1000Vac. This relates primarily to power supplies and equipment that are supplied directly via the „power outlet“.

Why is there a need for a new standard?

The rapid change of products, especially in the consumer sector, has effects on the norms and approvals landscape. The differentiation that is typically found in the norms and standards for household equipment, toys, measurement equipment, laboratory equipment, information technology equipment, communication equipment, medical devices and others is no longer appropriate for the times since the introduction of smartphones. It

* On June 15th 2018 the date has changed from June 19th 2019 to December 20th 2020

is of common interest to consolidate the requirements as much as possible and to reduce the diversity of norms and standards. Unfortunately, these processes are very time-consuming and often associated with secondary side effects.

The development of the new EN 62368-1 is without doubt a trailblazing and innovative step in this direction. The standard combines the fields of information technology equipment (EN 60950-1) and audio/video equipment (EN 60065) and also introduces a new, hazardous-based safety approach. But this standard is not aimed at industrial applications, however.

Acceptance of the official successor EN 62368-1 outside the European Union

For EN 62368-1, just as with the EN 60950-1, an internationally harmonised IEC version is available, that is associated with a IECEE-CB-Scheme for transnational recognition of test reports. Currently, IEC 62368-1 is fully accepted in the USA and Canada in addition to Europe. Other countries, especially in Asia, are still at the evaluation stage and have not yet incorporated IEC 62368-1 into national standards. They are adhering to the old IEC 60950-1.

In the next few years, companies that want to market their products globally, will not be able to avoid continuing to provide valid certificates and test reports according to IEC 60950-1.

EN 61010 – An alternative for power supplies in the industrial environment

In the industrial environment, the IEC or EN 60950-1 have also been applied to power supplies in the absence of alternatives, even though this standard does not really take into account the requirements and installation conditions of industrial environments. Power supplies for the industrial environment, are typically DIN-rail mounted devices that are installed inside cabinets or machinery. Higher requirements are placed on the qualified personnel installing and operating these devices, than in traditional EN 62368-1 applications.

For this reason, in 2011 the process of searching for alternatives to IEC 60950-1 had begun. It was discovered that the IEC 61010-1 standard was an appropriate replacement to IEC 60950-1 with regards to safety of power supplies. The IEC 61010-1 was supplemented by part -2-201. The IEC 61010-1 (General safety requirements for electrical equipment for measurement, control, and laboratory use) in connection with IEC 61010-2-201 (Particular requirements for control, equipment) form a new basis for evaluating power supplies for the industrial environment in terms of safety.

IEC 61010-1 and IEC 61010-2-201 have now been harmonised with EN standards as well as ANSI/UL standards. The EN standards are listed in the Official Journal of the European Union and can be used as the basis for the EU Declaration of Conformity.

In addition, EN 61010-2-201 also covers

devices such as DC-UPSs and supplementary devices for power supplies that are explicitly excluded from the scope of the new EN 62368-1.

A standard becomes more significant, the more often it is cited in other standards

Several successes have been achieved with IEC 61010-2-201 in recent years. In the fourth edition of the IEC 61131-2 of August 2017 (standard for programmable controllers), the product safety requirements have been removed and are instead pointing to IEC 61010-2-201. This makes the approval of programmable controllers considerably easier if there is a safety approval conforming to IEC 61010-2-201 for the power supply already available.

A further reference can be found in the UL Guide Info for Industrial Control Equip-

Overview of Norms

UL 508

Industrial Control Equipment

IEC/EN 60065

Audio, video and similar electronic apparatus – Safety requirements

IEC/EN 60950-1

Information technology equipment – Safety – Part 1: General requirements
Also known as ITE norm (Information Technology Equipment)

IEC/EN 61010-1, ANSI/UL 61010-1

Safety requirements for electrical equipment for measurement, control and laboratory use – Part 1: General requirements

IEC/EN 61010-2-201, ANSI/UL 61010-2-201

Safety requirements for electrical equipment for measurement, control and laboratory use – Part 2-201: particular requirements for control equipment

IEC/EN 61131-2

Industrial-process measurement and control – Programmable controllers
Part 2: Equipment requirements and tests

IEC/EN 62368-1

Audio/video, information and communication technology equipment
Part 1: Safety requirements
Also known as ICT norm (Information Communication Technology)

2014/35/EU

Directive of the European Parliament and of the Council on the harmonisation of the laws of the Member States relating to the making available on the market of electrical equipment designed for use within certain voltage limits
Also known as Low Voltage Directive (LVD)

ment as described in the next chapter. Other product standards for industrial equipment will also refer to IEC 61010-1 and IEC 61010-2-201 for the safety evaluation in future editions.

Easier market launch in the USA and Canada

The efforts in the USA to adopt international standards instead of national norms, is a very positive move and was recently achieved for Industrial Control Equipment. The Guide Info of the UL category "NMTR" for Industrial Control Equipment changed in February 2016. The basic standards used to investigate power supplies for use as control equipment are the ANSI/UL 61010-1 together with ANSI/UL 61010-2-201 and no longer the old UL 508. An investigation and approval according to the former UL 508 will now no longer cover all areas of industrial application in the United States.

Assuming the national deviations of the ANSI/UL 61010-1 are taken into account in an approval process according to IEC 61010-1 and IEC 61010-2-201, it is possible to apply for a UL mark using the CB-Scheme test reports. The ANSI/UL 61010-2-201 was even adopted without any national deviations from the IEC version. ANSI/UL 61010-1 and ANSI/UL 61010-2-201 therefore replaces the now rather unpopular and outdated UL 508 for industrial power supplies.

As American and Canadian standards in the field of industrial applications have always been harmonised, it is not surprising that CAN/CSA-C22.2 No. 61010-1 and the CAN/CSA-C22.2 No. 61010-2-201 replace the old CAN/CSA-C22.2 No. 107 and No. 142 in Canada as well.

Required adaptations to devices in accordance with EN 61010 compared to EN 60950-1

Where devices were previously safety evaluated in line with the latest edition of the EN 60950-1 and its amendments, there are not normally any significant problems with the safety evaluation according to EN 61010-2-201. Primary installation manuals and product markings need to be adapted and supplemented with the warning notices currently required.

Summary

The general statement that EN 62368-1 is the successor to EN 60950-1 is misleading and suggests that simply only the successor standard should be applied. However, by understanding the overall picture and thereby choosing the correct standard, it is possible to achieve the regulatory compliance faster and cheaper. For industrial power supplies, the best scenario currently is EN/IEC/UL 61010 together with the IEC 60950-1.

The IEC 60950-1 is required since it is still the primary measure for many regions outside Europe and North America.

In comparison to the EN 62368-1, the EN 61010-2-201 has many advantages for industrial devices:

- The EN 61010-2-201 can also be applied to DC-UPSs and other industrial supplementary devices that are explicitly excluded in EN 62368-1.
- It simplifies the approval process for end products with regards to safety requirements for product standards. For example, in the fourth edition of IEC 61131-2 (PLC standard), the safety requirements have been removed and point to IEC 61010-2-201.
- Assuming the national deviations of the ANSI/UL 61010-1 are taken into account in an approval process according to IEC 61010-1 and IEC 61010-2-201, it is possible to apply for a UL mark using the CB-Scheme test reports. The ANSI/UL 61010-2-201 replaces the outdated UL 508 for industrial power supplies.