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Low-voltage auxiliary power systems -
Part 2-3: Design criteria - Low-voltage AC auxiliary power systems for substations

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Low-voltage auxiliary power systems - Part 2-3: Design criteria - Low-voltage AC auxiliary power systems for substations

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IEC TS 63346-2-3 has been prepared by IEC project committee 127: Low-voltage auxiliary power systems for electric power stations and substations. It is a Technical Specification.

The text of this International Standard is based on the following documents:

Draft	Report on voting
127/74/DTS	127/81/RVDTS

Full information on the voting for its approval can be found in the report on voting indicated in the above table.

The language used for the development of this International Standard is English.

This document was drafted in accordance with ISO/IEC Directives, Part 2, and developed in accordance with ISO/IEC Directives, Part 1 and ISO/IEC Directives, IEC Supplement, available at www.iec.ch/members_experts/refdocs. The main document types developed by IEC are described in greater detail at www.iec.ch/publications.

A list of all parts in the IEC 63346 series, published under the general title *Low-voltage auxiliary power systems*, can be found on the IEC website.

The committee has decided that the contents of this document will remain unchanged until the stability date indicated on the IEC website under webstore.iec.ch in the data related to the specific document. At this date, the document will be

– reconfirmed,

– withdrawn, or

– revised.

1 Scope

This part of IEC 63346 specifies common rules and requirements for the design of low voltage (LV) AC auxiliary power systems (APSs) intended to be installed in substations, mainly covering the configuration of AC power sources, system wiring, protection, electric equipment selection and physical layout.

For the purpose of interpreting this document, an AC APS in this document is considered as follows:

– with a nominal voltage up to and including 1 kV AC;

– providing LV AC power to substation AC loads.

Though it is discussed where necessary, AC loads as well as high voltage (HV) part is beyond the scope of this document.

Substations in this document refer to those which are part of an electrical system and contain equipment that either receives and distributes electrical energy or transforms voltages to the levels required by the loads they supply, or both.

This document does not apply to the design of any of the following:

– traction substation, which have different power supply requirements, such as unbalanced load power supply;

– offshore substations, as factors such as waves, typhoons, salt spray, etc. need to be taken into account, which have different requirements for power supply and equipment selection;

– the substation connecting a nuclear power plant to the grid and its associated LV APS integrated with the nuclear power plant.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

IEC 60038, *IEC standard voltages*

IEC 60076 (all parts), *Power transformers*

IEC 60076-3, *Power transformers - Part 3: Insulation levels, dielectric tests and external clearances in air*

IEC 60364-1, *Low-voltage electrical installations - Part 1: Fundamental principles, assessment of general characteristics, definitions*

IEC 60364-4-41, *Low-voltage electrical installations - Part 4-41: Protection for safety - Protection against electric shock*

IEC 60364-4-43, *Low-voltage electrical installations - Part 4-43: Protection for safety - Protection against overcurrent*

IEC 60364-4-44, *Low-voltage electrical installations - Part 4-44: Protection for safety - Protection against voltage disturbances and electromagnetic disturbances*

IEC 60364-5-51, *Electrical installations of buildings - Part 5-51: Selection and erection of electrical equipment - Common rules*

IEC 60364-5-53, *Low-voltage electrical installations - Part 5-53: Selection and erection of electrical equipment - Devices for protection for safety, isolation, switching and control and monitoring*

IEC TS 60815-1, *Selection and dimensioning of high-voltage insulators intended for use in polluted conditions - Part 1: Definitions, information and general principles*

IEC 60909 (all parts), *Short-circuit currents in three-phase AC systems*

IEC 60947-2, *Low-voltage switchgear and controlgear - Part 2: Circuit-breakers*

IEC 60947-3, *Low-voltage switchgear and controlgear - Part 3: Switches, disconnectors, switch-disconnectors and fuse-combination units*

IEC 61439 (all parts), *Low-voltage switchgear and controlgear assemblies*

IEC 61936 (all parts), *Power installations exceeding 1 kV AC and 1,5 kV DC*

IEC 61936-1, *Power installations exceeding 1 kV AC and 1,5 kV DC - Part 1: AC*

IEC 62040 (all parts), *Uninterruptible power systems (UPS)*

IEC 62271-202, *High-voltage switchgear and controlgear - Part 202: AC prefabricated substations for rated voltages above 1 kV and up to and including 52 kV*

IEC TS 63346-1-1, *Low-voltage auxiliary power systems - Part 1-1: Terminology*

ISO 8528 (all parts), *Reciprocating internal combustion engine driven alternating current generating sets*

ISO 8528-1, *Reciprocating internal combustion engine driven alternating current generating sets - Part 1: Application, ratings and performance*