

# INTERNATIONAL STANDARD

# NORME INTERNATIONALE



**Power installations exceeding 1 kV AC and 1,5 kV DC –  
Part 2: DC**

**Installations électriques de puissance de tension supérieure à 1 kV en courant  
alternatif et 1,5 kV en courant continu –  
Partie 2: Courant continu**



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# INTERNATIONAL ELECTROTECHNICAL COMMISSION

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## POWER INSTALLATIONS EXCEEDING 1 kV AC AND 1,5 kV DC –

### Part 2: DC

#### FOREWORD

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IEC 61936-2 has been prepared by IEC technical committee 99: Insulation co-ordination and system engineering and erection of electrical power installations above 1 kV AC and 1,5 kV DC. It is an International Standard.

This first edition cancels and replaces the IEC TS 61936-2 published in 2015. This edition constitutes a technical revision.

This edition includes the following significant technical changes with respect to the previous edition:

- a) references to IEC 61936-1 updated to IEC 61936-1:2021;
- b) alignment with IEC 61936-1:2021 where required;

- c) the scope has been improved to clarify the application of this document, including an improved definition of a DC installation;
- d) missing and obsolete terms and definitions have been updated including improvement of existing terms;
- e) added new definitions of DC system and converter unit;
- f) added symbols and abbreviated terms;
- g) expansion and improvement of the general requirements, including addition of simplified diagrams showing examples of VSC and LCC DC systems (Figure 1 and Figure 2);
- h) addition of Table 1 which shows where agreements between supplier and user are needed;
- i) clause on electrical requirements has been restructured and improved;
- j) schematic diagrams for various DC system configurations and neutral point locations added (Figure 3);
- k) addition of new content for harmonics and new clauses for electromagnetic compatibility and radio interference;
- l) addition of content specific to DC installations for normal and special conditions;
- m) clause on insulation (Clause 5) has been significantly restructured and rewritten with a change in approach in the clauses on minimum clearances that references relevant parts of IEC 60071;
- n) clause on electrical equipment has been restructured and improved;
- o) clause on DC installations has been restructured and improved;
- p) clause on protection, control and auxiliary systems has been restructured and improved, with content added to the clause on protection systems that is specific to DC installations;
- q) clause on earthing has been restructured and improved;
- r) clause on inspection and testing has been restructured and improved, including addition of references specific to DC installations;
- s) Annex A has been replaced with a new Annex A (informative), where the table of rated insulation levels and minimum clearances in air have been replaced with a table of typical DC voltages and presumed switching and lightning impulse withstand voltages;
- t) tables added to Annex A showing the correlation between presumed switching and lightning impulse withstand voltages and minimum phase-to-earth air clearances;
- u) Annex B has been improved and references updated.

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

Draft	Report on voting
99/413/FDIS	99/436/RVD

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](http://www.iec.ch/members_experts/refdocs). The main document types developed by IEC are described in greater detail at [www.iec.ch/publications](http://www.iec.ch/publications).

A list of all parts in the IEC 61936 series, published under the general title *Power installations exceeding 1 kV AC and 1,5 kV DC*, can be found on the IEC website.

Notes concerning particular conditions in certain countries are provided in Annex G of IEC 61936-1: 2021.

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## INTRODUCTION

There are few national laws, standards and internal rules dealing with the matter coming within the scope of this standard, and these practices have been taken as a basis for this work.

This part of IEC 61936 contains the minimum requirements and some additional information which ensures an acceptable reliability of a DC installation with nominal voltages above 1,5 kV DC and its safe operation.

The publication of this document is believed to be a decisive step towards the gradual alignment all over the world of the practices concerning the design and erection of high voltage power installations.

Particular requirements for transmission and distribution installations as well as particular requirements for power generation and industrial installations are included in this document.

The relevant laws or regulations of an authority having jurisdiction take precedence.