

INTERNATIONAL STANDARD

NORME INTERNATIONALE



HORIZONTAL PUBLICATION
PUBLICATION HORIZONTALE

IEC standard voltages

Tensions normales de l'IEC



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FOREWORD

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This consolidated version of the official IEC Standard and its amendment has been prepared for user convenience.

IEC 60038 edition 7.0 contains the seventh edition (2009-06) [documents 8/1260/FDIS and 8/1264/VL] and its amendment 1 (2021-12) [documents 8/1600/FDIS and 8/1603/RVD].

In this headline version, a vertical line in the margin shows where the technical content is modified by amendment 1. Additions are in green text, deletions are in strikethrough red text. A separate Final version with all changes accepted is available in this publication.

International Standard IEC 60038 has been prepared by IEC technical committee 8: System aspects for electrical energy supply.

This seventh edition constitutes a technical revision. The significant technical changes are:

- a clarification of the scope;
- the addition of the values of 230 V (50 Hz) and 230/400 V (60 Hz) to Table 1;
- the update of Table 1 to take into account the end of the transition period for the values of 230/400 V and 400/690 V;
- the replacement of the utilization voltage range at LV by a reference to the relevant standard and an informative annex;
- the addition of the value of 30 kV to Table 3;
- the replacement of the value of 1 050 kV by 1 100 kV in Table 5.
- co-ordination of Table 1 of IEC 60850:2014 and Table 2 of IEC 60038;
- co-ordination of 60 Hz highest and lowest values with major national 60 Hz standards;
- co-ordination of Annex A with IEC 60364-5-52:2009;
- a new table covering single wire earth return systems for remote areas.

It has the status of a horizontal standard in accordance with IEC Guide 108.

This publication has been drafted in accordance with the ISO/IEC Directives, Part 2.

The committee has decided that the contents of the base publication and its amendment will remain unchanged until the stability date indicated on the IEC web site under webstore.iec.ch in the data related to the specific publication. At this date, the publication will be

- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

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INTRODUCTION

This publication has been prepared by TC 8, whose scope is to prepare and coordinate, in co-operation with other TC/SCs, the development of international standards and other deliverables with an emphasis on overall system aspects of electricity supply systems and an acceptable balance between the cost and quality for the users of electrical energy. The electricity supply system encompasses transmission and distribution networks and connected user installations (generators and loads including traction systems) with their network interfaces.

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IEC STANDARD VOLTAGES

1 Scope

This publication applies to

- ~~a.c.~~ AC transmission, distribution and utilization systems and equipment for use in such systems with standard frequencies 50 Hz and 60 Hz having a nominal voltage above 100 V;
- ~~a.c.~~ AC and ~~d.c.~~ DC traction systems;
- ~~a.c.~~ AC and ~~d.c.~~ DC equipment having nominal voltages below 120 V ~~a.c.~~ AC or below 750 V ~~d.c.~~ DC, the ~~a.c.~~ AC voltages being intended (but not exclusively) for 50 Hz and 60 Hz applications; such equipment covers batteries (from primary or secondary cells), other power supply devices (~~a.c.~~ AC or ~~d.c.~~ DC), electrical equipment (including industrial and communication), and appliances.

This publication does not apply to voltages representing or transmitting signals or measured values.

This publication does not apply to standard voltages of components and parts used within electrical devices or items of equipment.

This publication has the status of a horizontal standard in accordance with IEC Guide 108. As such, this publication specifies standard voltage values which are intended to serve

- as preferential values for the nominal voltage of electrical supply and utilization systems, and
- as maximum, nominal and minimum reference values for both equipment and ~~system design~~ power supply in both electrical supply and utilization systems so that product and power system committees can co-ordinate their documents.

NOTE 1 Two main reasons have led to the values specified in this standard:

The values of nominal voltage (or highest voltage for equipment) specified in this standard are mainly based on the historical development of electrical supply systems throughout the world, since these values turned out to be the most common ones, and have achieved worldwide recognition;

The voltage ranges mentioned in this standard have been recognized to be the most appropriate ones as a basis for design and testing of electrical equipment and systems.

NOTE 2 It is nevertheless the task of system and product standards to define appropriate testing values, testing conditions and acceptance criteria.

NOTE 3 National Committees and individual systems can set values that differ from, but still comply with, the reference values in this document provided the values they set lie between the highest voltage for equipment and the lowest supply or utilization voltages in this document. Such variations can be required due to legacy or rating issues.

NOTE 4 To comply with this document neither the lowest supply or utilization voltage can be lower than the lowest voltage for equipment.

NOTE 5 Some National committees set different nominal values for supply and utilization.

2 Normative references

The following referenced documents are indispensable for the application 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.