Irish Standard
I.S. EN 50160:2022

Version 1.00

Voltage characteristics of electricity supplied by public electricity networks

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I.S. xxx: Irish Standard — national specification based on the consensus of an expert panel and subject to public consultation.

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Údarás um Chaighdeáin Náisiúnta na hÉireann

National Foreword

I.S. EN 50160:2022 V1.00 is the version of the NSAI adopted European document EN 50160:2022, *Voltage characteristics of electricity supplied by public electricity networks,* including any Corrections, Amendments etc. to EN 50160:2022.

This normative document by CEN/CENELEC the elaboration of which includes a public enquiry, followed by a Formal Vote of CEN/CENELEC national members and final ratification. This European Standard is published as an identical national standard and every conflicting national standard will be withdrawn. The content of a European Standard does not conflict with the content of any other EN (and HD for CENELEC).

This document does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

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Compliance with this document does not of its self confer immunity from legal obligations.

In line with international standards practice the decimal point is shown as a comma (,) throughout this document.

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EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 50160

December 2022

ICS 29.020

Supersedes EN 50160:2010;
EN 50160:2010/corrigendum Dec. 2010;
EN 50160:2010/AC:2012; EN 50160:2010/A1:2015;
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English Version

Voltage characteristics of electricity supplied by public electricity networks

Caractéristiques de la tension fournie par les réseaux publics d´electricité

Merkmale der Spannung in öffentlichen Energieversorgungsnetzen

This European Standard was approved by CENELEC on 2022-11-07. CENELEC members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN-CENELEC Management Centre or to any CENELEC member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CENELEC member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

CENELEC members are the national electrotechnical committees of Austria, Belgium, Bulgaria, Croatia, Cyprus, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Türkiye and the United Kingdom.

European Committee for Electrotechnical Standardization
Comité Européen de Normalisation Electrotechnique
Europäisches Komitee für Elektrotechnische Normung

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Ref. No. EN 50160:2022 E

Contents

European foreword

This document (EN 50160:2022) has been prepared by CLC TC8X “System aspects of electrical energy supply”.

The following dates are fixed:

• latest date by which this document has to be implemented at national level by publication of an identical national standard or by endorsement	(dop)	2023-11-07
• latest date by which the national standards conflicting with this document have to be withdrawn	(dow)	2025-11-07

This document supersedes EN 50160:2010 and all of its amendments and corrigenda (if any).

EN 50160:2022 includes the following significant technical changes with respect to EN 50160:2010:

— implementation of amendments A2 (new frequency range 2-150 kHz, amendment on power frequency) and A3 (changed value on 15th and 21st harmonic in LV);

— The Norway A-deviation (amendment A1) was slightly modified;

— slight clarifications in the scope;

— integration of a new clause “extra high voltage”;

— clarification to dips and swells;

— new Annex D: PQ versus EMC.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CENELEC shall not be held responsible for identifying any or all such patent rights.

Any feedback and questions on this document should be directed to the users’ national committee. A complete listing of these bodies can be found on the CENELEC website.

1 Scope

1.1 Application

This document specifies the main characteristics of the voltage at a network user's supply terminals in public low voltage, medium, high, and extra-high voltage AC electricity networks under normal operating conditions. This document specifies the limits or values within which the voltage characteristics can be expected to remain at any supply terminal in public European electricity networks, only. Industrial networks are excluded from the scope of EN 50160.

NOTE 1 If non-public networks (e.g. residential quarters, energy communities, office centres, shopping centres) have similar end-users as public networks, it is strongly advised to apply the same requirements as for public networks.

This document does not apply under abnormal operating conditions, including the following:

a) a temporary supply arrangement to keep network users supplied during conditions arising as a result of a fault, maintenance and construction work, or to minimize the extent and duration of a loss of supply;

b) in the case of non-compliance of a network user's installation or equipment with the relevant standards or with the technical requirements for connection, established either by the public authorities or the network operator, including the limits for the emission of conducted disturbances;

NOTE 2 A network user’s installation can include load and generation.

c) in exceptional situations, in particular:

   1) exceptional weather conditions and other natural disasters;

   2) third party interference;

   3) acts by public authorities,

   4) industrial actions (subject to legal requirements);

   5) force majeure;

   6) power shortages resulting from external events.

The voltage characteristics given in this document refer to conducted disturbances in public electric power networks. They are not intended to be used as electromagnetic compatibility (EMC) levels or product emission limits.

Power quality is related to EMC in several ways – especially because compliance with power quality requirements depends on the control of cumulative effect of electromagnetic emissions from all/multiple equipment and/or installations. Therefore, the voltage characteristics given in this document gives guidance for specifying requirements in equipment product standards and in installation standards.

NOTE 3 The performance of equipment might be impaired if it is subjected to supply conditions which are not specified in the equipment product standard.

NOTE 4 This document can be superseded in total or in part by the terms of a contract between the individual network user and the network operator.

The sharing of complaint management and problem mitigation costs between the involved parties is outside the scope of EN 50160.

Measurement methods to be applied in this document are described in EN 61000-4-30.