IEC 61000-4-30

Edition 3.1 2021-03
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Electromagnetic compatibility (EMC) – Part 4-30: Testing and measurement techniques - Power quality measurement methods

Compatibilité électromagnétique (CEM) – Partie 4-30: Techniques d'essai et de mesure – Méthodes de mesure de la qualité de l'alimentation



IEC 61000-4-30:2015-02+AMD1:2021-03 CSV(en-fr)

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Part 4-30: Testing and measurement techniques - Power quality measurement methods

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Partie 4-30: Techniques d'essai et de mesure - Méthodes de mesure de la qualité de l'alimentation

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ELECTROMAGNETIC COMPATIBILITY (EMC) –

Part 4-30: Testing and measurement techniques – Power quality measurement methods

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IEC 61000 4-30 edition 3.1 contains the third edition (2015-02) [documents 77A/873/FDIS and 77A/878/RVD] and its corrigendum (2016-12), and its amendment 1 (2021-03) [documents 77A/1080/CDV and 77A/1092/RVC].

In this Redline 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.

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International Standard IEC 61000-4-30 has been prepared by subcommittee 77A: EMC – Low-frequency phenomena, of IEC technical committee 77: Electromagnetic compatibility.

This standard forms part 4-30 of IEC 61000. It has the status of a basic EMC publication in accordance with IEC Guide 107.

This third edition constitutes a technical revision.

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

a) the measurement method for current, previously informative, is now normative with some changes;
b) the measurement method for RVC (rapid voltage change) has been added;
c) the measurement method for conducted emissions in the 2 kHz to 150 kHz range has been added in informative Annex C;
d) underdeviation and overdeviation parameters are moved to informative Annex D;
e) Class A and Class S measurement methods are defined and clarified, while Class B is moved to informative Annex E and considered for future removal;
f) measurement methods continue in this standard, but responsibility for influence quantities, performance, and test procedures are transferred to IEC 62586-2.

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

A list of all parts in the IEC 61000 series, published under the general title *Electromagnetic compatibility (EMC)*, can be found on the IEC website.

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 "http://webstore.iec.ch" in the data related to the specific publication. At this date, the publication will be

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INTRODUCTION

IEC 61000 is published in separate parts according to the following structure:

Part 1: General

General considerations (introduction, fundamental principles)

Definitions, terminology

Part 2: Environment

Description of the environment

Classification of the environment

Compatibility levels

Part 3: Limits

Emission limits

Immunity limits (in so far as they do not fall under the responsibility of the product committees)

Part 4: Testing and measurement techniques

Measurement techniques

Testing techniques

Part 5: Installation and mitigation guidelines

Installation guidelines

Mitigation methods and devices

Part 6: Generic standards

Part 9: Miscellaneous

Each part is further subdivided into several parts, published either as International Standards or as Technical Specifications or Technical Reports, some of which have already been published as sections. Others will be published with the part number followed by a dash and completed by a second number identifying the subdivision (example: 61000-6-1).

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ELECTROMAGNETIC COMPATIBILITY (EMC) –

Part 4-30: Testing and measurement techniques – Power quality measurement methods

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1 Scope

This part of IEC 61000-4 defines the methods for measurement and interpretation of results for power quality parameters in a.c. power supply systems with a declared fundamental frequency of 50 Hz or 60 Hz.

Measurement methods are described for each relevant parameter in terms that give reliable and repeatable results, regardless of the method's implementation. This standard addresses measurement methods for in-situ measurements.

Measurement of parameters covered by this standard is limited to conducted phenomena in power systems. The power quality parameters considered in this standard are power frequency, magnitude of the supply voltage, flicker, supply voltage dips and swells, voltage interruptions, transient voltages, supply voltage unbalance, voltage harmonics and interharmonics, mains signalling on the supply voltage, rapid voltage changes, and current measurements. Emissions in the 2 kHz to 150 kHz range are considered in Annex C (informative), and over- and underdeviations are considered in Annex D (informative). Depending on the purpose of the measurement, all or a subset of the phenomena on this list may be measured.

NOTE 1 Test methods for verifying compliance with this standard can be found in IEC 62586-2.

NOTE 2 The effects of transducers inserted between the power system and the instrument are acknowledged but not addressed in detail in this standard. Guidance about effects of transducers can be found IEC TR 61869-103.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

IEC 60050 (all parts), *International Electrotechnical Vocabulary (IEV)* (available at www.electropedia.org)

IEC 61000-2-4, *Electromagnetic compatibility (EMC) – Part 2-4: Environment – Compatibility levels in industrial plants for low-frequency conducted disturbances*

IEC 61000-3-8, *Electromagnetic compatibility (EMC) – Part 3: Limits – Section 8: Signalling on low-voltage electrical installations – Emission levels, frequency bands and electromagnetic disturbance levels*

IEC 61000-4-7:2002, *Electromagnetic compatibility (EMC) – Part 4-7: Testing and measurement techniques – General guide on harmonics and interharmonics measurements and instrumentation, for power supply systems and equipment connected thereto*
IEC 61000-4-7:2002/AMD1:2008

IEC 61000-4-15:2010, *Electromagnetic compatibility (EMC) – Part 4-15: Testing and measurement techniques – Flickermeter – Functional and design specifications*

IEC 61180 (all parts), *High-voltage test techniques for low voltage equipment*

IEC 62586-1, *Power quality measurement in power supply systems – Part 1: Power quality instruments (PQI)*

IEC 62586-2, *Power quality measurement in power supply systems – Part 2: Functional tests and uncertainty requirements*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in IEC 60050-161, as well as the following apply.

3.1
channel
individual measurement path through an instrument

Note 1 to entry: "Channel" and "phase" are not the same. A voltage channel is by definition the difference in potential between 2 conductors. Phase refers to a single conductor. On polyphase systems, a channel may be between 2 phases, or between a phase and neutral, or between a phase and earth, or between neutral and earth.

3.2
declared input voltage
U_{din}
value obtained from the declared supply voltage by a transducer ratio

3.3
declared supply voltage
U_c
normally the nominal voltage U_n of the system.

Note 1 to entry: If by agreement between the supplier and the customer a voltage different from the nominal voltage is applied to the terminals, then this voltage is the declared supply voltage U_c.

3.4
dip threshold
voltage magnitude specified for the purpose of detecting the start and the end of a voltage dip

3.5
flagged data
for any measurement time interval in which interruptions, dips or swells occur, the marked measurement results of all other parameters made during this time interval

Note 1 to entry: For some applications, this 'marked' or 'flagged' data may be excluded from further analysis, for example. See 4.7 for further explanation.

3.6
flicker
impression of unsteadiness of visual sensation induced by a light stimulus whose luminance or spectral distribution fluctuates with time

[SOURCE: IEC 60050-161:1990, 161-08-13]

3.6.1
P_{st}
short-term flicker evaluation based on an observation period of 10 min

[SOURCE: IEC 61000-4-15]

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