Elektromagnetiline ühilduvus. Osa 4-30: Katsetus- ja mõõtetehnika. Elektrikvaliteedi mõõtemeetodid

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ESTONIAN CENTRE FOR STANDARDISATION

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NATIONAL FOREWORD

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English version

Electromagnetic compatibility (EMC) - Part 4-30: Testing and measurement techniques - Power quality measurement methods

(IEC 61000-4-30:2008)

Compatibilité électromagnétique (CEM) - Partie 4-30: Techniques d'essai et de mesure - Méthodes de mesure de la qualité de l'alimentation (CEI 61000-4-30:2008)

Elektromagnetische Verträglichkeit (EMV) - Teil 4-30: Prüf- und Messverfahren - Verfahren zur Messung der Spannungsqualität (IEC 61000-4-30:2008)

CENELEC

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

Central Secretariat: avenue Marnix 17, B - 1000 Brussels

Ref. No. EN 61000-4-30:2009 E

Foreword

The text of document 77A/660/FDIS, future edition 2 of IEC 61000-4-30, prepared by SC 77A, Low frequency phenomena, of IEC TC 77, Electromagnetic compatibility, was submitted to the IEC-CENELEC parallel vote and was approved by CENELEC as EN 61000-4-30 on 2008-12-01.

This European Standard supersedes EN 61000-4-30:2003.

EN 61000-4-30:2009 includes the following significant technical changes with respect to EN 61000-4-30:2003.

– adjustments, clarifications, and corrections to class A and class B measurement methods;

– a new category, class S, intended for survey instruments, has been added;

– a new Annex C gives guidance on instruments.

The following dates were fixed:

– latest date by which the EN has to be implemented at national level by publication of an identical national standard or by endorsement	(dop)	2009-09-01
– latest date by which the national standards conflicting with the EN have to be withdrawn	(dow)	2011-12-01

Annex ZA has been added by CENELEC.

Endorsement notice

The text of the International Standard IEC 61000-4-30:2008 was approved by CENELEC as a European Standard without any modification.

In the official version, for Bibliography, the following notes have to be added for the standards indicated:

IEC 60044-1	NOTE	Harmonized as EN 60044-1:1999 (modified).
IEC 60044-2	NOTE	Harmonized as EN 60044-2:1999 (modified).
IEC 61000-2-12	NOTE	Harmonized as EN 61000-2-12:2003 (not modified).
IEC 61000-3-3 + A1 + A2	NOTE	Harmonized as EN 61000-3-3:1995 (not modified) + A1:2001 + A2:2005
IEC 61000-3-11	NOTE	Harmonized as EN 61000-3-11:2000 (not modified).
IEC 61010	NOTE	Harmonized in EN 61010 series (not modified).
IEC 61010-2-032	NOTE	Harmonized as EN 61010-2-032:2002 (not modified).
IEC 61557-12	NOTE	Harmonized as EN 61557-12:2008 (not modified).

Annex ZA
(normative)

Normative references to international publications with their corresponding European publications

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.

NOTE When an international publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

Publication	Year	Title	EN/HD	Year
IEC 60050-161	-[1)]	International Electrotechnical Vocabulary (IEV) - Chapter 161: Electromagnetic compatibility	-	-
IEC 61000-2-2	2002	Electromagnetic compatibility (EMC) - Part 2-2: Environment - Compatibility levels for low-frequency conducted disturbances and signalling in public low-voltage power supply systems	EN 61000-2-2	2002[2)]
IEC 61000-2-4	-[1)]	Electromagnetic compatibility (EMC) - Part 2-4: Environment - Compatibility levels in industrial plants for low-frequency conducted disturbances	EN 61000-2-4	2002[2)]
IEC 61000-3-8	-[1)]	Electromagnetic compatibility (EMC) - Part 3-8: Limits - Signalling on low-voltage electrical installations - Emission levels, frequency bands and electromagnetic disturbance levels	-	-
IEC 61000-4-4	2004	Electromagnetic compatibility (EMC) - Part 4-4: Testing and measurement techniques - Electrical fast transient/burst immunity test	EN 61000-4-4	2004
IEC 61000-4-7 A1	2002 2008	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	EN 61000-4-7 A1	2002 200X[3)]
IEC 61000-4-15	-[1)]	Electromagnetic compatibility (EMC) - Part 4-15: Testing and measurement techniques - Flickermeter - Functional and design specifications	EN 61000-4-15	1998[2)]
IEC 61180	Series	High-voltage test techniques for low-voltage equipment	EN 61180	Series

[1)] Undated reference.

[2)] Valid edition at date of issue.

[3)] To be ratified.

CONTENTS

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: IEC 61000-6-1).

ELECTROMAGNETIC COMPATIBILITY (EMC) –

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

1 Scope

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

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 voltage phenomena that can be conducted in a power system. 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 and rapid voltage changes. Depending on the purpose of the measurement, all or a subset of the phenomena on this list may be measured.

NOTE 1 Information about current parameters may be found in A.3 and A.5.

This standard gives measurement methods and appropriate performance requirements, but does not set thresholds.

The effects of transducers inserted between the power system and the instrument are acknowledged but not addressed in detail in this standard. Precautions on installing monitors on live circuits are addressed.

NOTE 2 Some guidance about effects of transducers may be found in IEC 61557-12.

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.

IEC 60050-161, *International Electrotechnical Vocabulary (IEV) – Chapter 161: Electromagnetic compatibility*

IEC 61000-2-2:2002, *Electromagnetic compatibility (EMC) – Part 2-2: Environment – Compatibility levels for low-frequency conducted disturbances and signalling in public low-voltage power supply systems*

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 61000-4-4:2004, *Electromagnetic compatibility (EMC) – Part 4-4: Testing and measurement techniques – Electrical fast transient/burst immunity test*

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*

Amendment 1 (2008)

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

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

3 Terms and definitions

For the purpose of this document, the definitions of IEC 60050-161, as well as the following, apply.

3.1
channel
individual measurement path through an instrument

NOTE "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
Coordinated Universal Time
UTC
time scale which forms the basis of a coordinated radio dissemination of standard frequencies and time signals. It corresponds exactly in rate with international atomic time, but differs from it by an integral number of seconds.

NOTE 1 Coordinated universal time is established by the International Bureau of Weights and Measures (BIPM) and the International Earth Rotation Service (IERS).

NOTE 2 The UTC scale is adjusted by the insertion or deletion of seconds, so called positive or negative leap seconds, to ensure approximate agreement with UT1.

[IEV 713-05-20]

3.3
declared input voltage
$\boldsymbol{U_{din}}$
value obtained from the declared supply voltage by a transducer ratio

3.4
declared supply voltage
$\boldsymbol{U_c}$
declared supply voltage U_c is normally the nominal voltage U_n of the system. If, by agreement between the supplier and the customer, a voltage different from the nominal voltage is applied to the terminal, then this voltage is the declared supply voltage U_c

3.5
dip threshold
voltage magnitude specified for the purpose of detecting the start and the end of a voltage dip