SEK Teknisk Rapport 61000-2-8, utg 1:2025

Utgiven	Sida	Ansvarig kommitté
2025-07-02	1 (24)	SEK TK EMC

Electromagnetic compatibility (EMC) – Part 2-8: Environment – Voltage dips and short interruptions on public electric power supply systems with statistical measurement results

(IEC/TR 61000-2-8:2002)

ISSN 1651-1417

ICS 33.100.01

Upplysningar om **sakinnehållet** i rapporten lämnas av
SEK Svensk Elstandard.
Postadress: Box 1042, 172 21 Sundbyberg
Telefon: 08 - 444 14 00.
E-post: sek@elstandard.se. Internet: elstandard.se

Standarder underlättar utvecklingen och höjer elsäkerheten

Det finns många fördelar med att ha gemensamma tekniska regler för bl a mätning, säkerhet och provning och för utförande, skötsel och dokumentation av elprodukter och elanläggningar.

Genom att utforma sådana standarder blir säkerhetsfordringar tydliga och utvecklingskostnaderna rimliga samtidigt som marknadens acceptans för produkten eller tjänsten ökar.

Många standarder inom elområdet beskriver tekniska lösningar och metoder som åstadkommer den elsäkerhet som föreskrivs av svenska myndigheter och av EU.

SEK är Sveriges röst i standardiseringsarbetet inom elområdet

SEK Svensk Elstandard svarar för standardiseringen inom elområdet i Sverige och samordnar svensk medverkan i internationell och europeisk standardisering. SEK är en ideell organisation med frivilligt deltagande från svenska myndigheter, företag och organisationer som vill medverka till och påverka utformningen av tekniska regler inom elektrotekniken.

SEK samordnar svenska intressenters medverkan i SEKs tekniska kommittéer och stödjer svenska experters medverkan i internationella och europeiska projekt.

Stora delar av arbetet sker internationellt

Utformningen av standarder sker i allt väsentligt i internationellt och europeiskt samarbete. SEK är svensk nationalkommitté av International Electrotechnical Commission (IEC) och Comité Européen de Normalisation Electrotechnique (CENELEC).

Standardiseringsarbetet inom SEK är organiserat i referensgrupper bestående av ett antal tekniska kommittéer som speglar hur arbetet inom IEC och CENELEC är organiserat.

Arbetet i de tekniska kommittéerna är öppet för alla svenska organisationer, företag, institutioner, myndigheter och statliga verk. Den årliga avgiften för deltagandet och intäkter från försäljning finansierar SEKs standardiseringsverksamhet och medlemsavgift till IEC och CENELEC.

Var med och påverka!

Den som deltar i SEKs tekniska kommittéarbete har möjlighet att påverka framtida standarder och får tidig tillgång till information och dokumentation om utvecklingen inom sitt teknikområde. Arbetet och kontakterna med kollegor, kunder och konkurrenter kan gynnsamt påverka enskilda företags affärsutveckling och bidrar till deltagarnas egen kompetensutveckling.

Du som vill dra nytta av dessa möjligheter är välkommen att kontakta SEKs kansli för mer information.

SEK Svensk Elstandard

Box 1042
172 21 Sundbyberg
Tel 08-444 14 00
elstandard.se

RAPPORT TECHNIQUE

TECHNICAL REPORT

CEI
IEC
61000-2-8

Première édition
First edition
2002-11

PUBLICATION FONDAMENTALE EN CEM
BASIC EMC PUBLICATION

Compatibilité électromagnétique (CEM) –

Partie 2-8:
Environnement – Creux de tension et coupures brèves sur les réseaux d'électricité publics incluant des résultats de mesures statistiques

Electromagnetic compatibility (EMC) –

Part 2-8:
Environment – Voltage dips and short interruptions on public electric power supply systems with statistical measurement results

International Electrotechnical Commission, 3, rue de Varembé, PO Box 131, CH-1211 Geneva 20, Switzerland
Telephone: +41 22 919 02 11 Telefax: +41 22 919 03 00 E-mail: inmail@iec.ch Web: www.iec.ch

Commission Electrotechnique Internationale
International Electrotechnical Commission
Международная Электротехническая Комиссия

CODE PRIX
PRICE CODE X

Pour prix, voir catalogue en vigueur
For price, see current catalogue

CONTENTS

INTERNATIONAL ELECTROTECHNICAL COMMISSION

ELECTROMAGNETIC COMPATIBILITY (EMC) –

Part 2-8: Environment – Voltage dips and short interruptions on public electric power supply systems with statistical measurement results

FOREWORD

1) The IEC (International Electrotechnical Commission) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of the IEC is to promote international co-operation on all questions concerning standardization in the electrical and electronic fields. To this end and in addition to other activities, the IEC publishes International Standards. Their preparation is entrusted to technical committees; any IEC National Committee interested in the subject dealt with may participate in this preparatory work. International, governmental and non-governmental organizations liaising with the IEC also participate in this preparation. The IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.
2) The formal decisions or agreements of the IEC on technical matters express, as nearly as possible, an international consensus of opinion on the relevant subjects since each technical committee has representation from all interested National Committees.
3) The documents produced have the form of recommendations for international use and are published in the form of standards, technical specifications, technical reports or guides and they are accepted by the National Committees in that sense.
4) In order to promote international unification, IEC National Committees undertake to apply IEC International Standards transparently to the maximum extent possible in their national and regional standards. Any divergence between the IEC Standard and the corresponding national or regional standard shall be clearly indicated in the latter.
5) The IEC provides no marking procedure to indicate its approval and cannot be rendered responsible for any equipment declared to be in conformity with one of its standards.
6) Attention is drawn to the possibility that some of the elements of this technical report may be the subject of patent rights. The IEC shall not be held responsible for identifying any or all such patent rights.

The main task of IEC technical committees is to prepare International Standards. However, a technical committee may propose the publication of a technical report when it has collected data of a different kind from that which is normally published as an International Standard, for example “state of the art”.

IEC 61000-2-8, which is a technical report, has been prepared by subcommittee 77A: Low frequency phenomena, of IEC technical committee 77: Electromagnetic compatibility.

It has the status of a basic EMC publication in accordance with IEC Guide 107.

The text of this technical report is based on the following documents:

Enquiry draft	Report on voting
77A/375/DTR	77A/396/RVC

Full information on the voting for the approval of this technical report can be found in the report on voting indicated in the above table.

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

The committee has decided that the contents of this publication will remain unchanged until 2010. At this date, the publication will be

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

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, 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).

Detailed information on the various types of disturbances that can be expected on public power supply systems can be found in IEC 61000-2-1.

ELECTROMAGNETIC COMPATIBILITY (EMC) –

Part 2-8: Environment – Voltage dips and short interruptions on public electric power supply systems with statistical measurement results

1 Scope

This technical report describes the electromagnetic disturbance phenomena of voltage dips and short interruptions in terms of their sources, effects, remedial measures, methods of measurement, and measurement results (in so far as these are available). They are discussed primarily as phenomena observed on the networks of public electricity supply systems and having an effect on electrical equipment receiving its energy supply from those systems.

“Voltage sag” is an alternative name for the phenomenon voltage dip.

2 Definitions

2.1
voltage dip
voltage sag
sudden reduction of the voltage at a particular point on an electricity supply system below a specified dip threshold followed by its recovery after a brief interval

NOTE 1 Typically a dip is associated with the occurrence and termination of a short circuit or other extreme current increase on the system or installations connected to it.

NOTE 2 A voltage dip is a two-dimensional electromagnetic disturbance, the level of which is determined by both voltage and time (duration).

2.2
short interruption
sudden reduction of the voltage on all phases at a particular point on an electricity supply system below a specified interruption threshold followed by its restoration after a brief interval

NOTE Short interruptions are typically associated with switchgear operation related to the occurrence and termination of short circuits on the system or installations connected to it.

2.3
(voltage dip) reference voltage
<measurement of voltage dips and short interruptions>
value specified as the base on which depth, thresholds and other values are expressed in per unit or percentage terms

NOTE The nominal or declared voltage of the supply system is frequently selected as the reference voltage.

2.4
voltage dip start threshold
<voltage dip measurement>
r.m.s. value of the voltage on an electricity supply system specified for the purpose of defining the start of a voltage dip

NOTE Typically values between 0,85 and 0,95 of the reference voltage have been used for this threshold.

2.5
voltage dip end threshold
<voltage dip measurement>
r.m.s. value of the voltage on an electricity supply system specified for the purpose of defining the end of a voltage dip

NOTE Typically, the value used for the end threshold has been the same as the start threshold or has exceeded it by 0,01 of the reference voltage.

2.6
interruption threshold
<measurement of voltage dips and short interruptions>
r.m.s. value of the voltage on an electricity supply system specified as a boundary such that a voltage dip in which the voltage on all phases falls below it is classified as a short interruption

2.7
residual voltage (of voltage dip)
minimum value of r.m.s. voltage recorded during a voltage dip or short interruption

NOTE The residual voltage may be expressed as a value in volts or as a percentage or per unit value relative to the reference voltage.

2.8
depth (of voltage dip)
difference between the reference voltage and the residual voltage

NOTE 1 The depth may be expressed as a value in volts or as a percentage or per unit value relative to the reference voltage.

NOTE 2 Frequently the word ‘depth’ is used in a descriptive, non-quantitative sense, to refer to the voltage dimension of a voltage dip, without the intention of specifying whether that dimension is expressed as the *residual voltage* or *depth*, as defined above. Care is needed to ensure that this meaning is clear in the context in which it is used.

2.9
duration (of voltage dip)
time between the instant at which the voltage at a particular point on an electricity supply system falls below the start threshold and the instant at which it rises to the end threshold.

NOTE In polyphase events, practice varies in regard to relating the start and end of the dip to the phases concerned. Future practice is likely to be that for polyphase events a dip begins when the voltage of at least one phase falls below the dip start threshold and ends when the voltage on all phases is equal to or above the dip end threshold.

2.10
(voltage dip) sliding reference voltage
<measurement of voltage dips and short interruptions>
r.m.s. value of the voltage at a particular point on an electricity supply system continuously calculated over a specified interval to represent the value of the voltage immediately preceding a voltage dip for use as the reference voltage

NOTE The specified interval is much longer than the duration of a voltage dip.