BRITISH STANDARD

BS EN 61000-2-4:1995
IEC 1000-2-4: 1994

Electromagnetic compatibility (EMC) —

Part 2: Environment —

Section 4: Compatibility levels in industrial plants for low-frequency conducted disturbances

The European Standard EN 61000-2-4:1994 has the status of a British Standard

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Committees responsible for this British Standard

The preparation of this British Standard was entrusted by Technical Committee GEL/110, Electromagnetic compatibility, to Subcommittee GEL/110/8, Electromagnetic compatibility — Low frequency disturbances, upon which the following bodies were represented:

Association of Control Manufacturers [TACMA (BEAMA Ltd.)]
Association of Manufacturers of Domestic Electrical Appliances BEAMA Ltd.
British Lighting Association for the Preparation of Standards (BRITLAPS)
British Radio and Electronic Equipment Manufacturers' Association
British Telecommunications plc
Building Automation and Mains Signalling Association (BAMSA) (BEAMA Ltd.)
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Institution of Electrical Engineers
Lighting Industry Federation Ltd.
Power Supply Manufacturers' Association [PSMA (BEAMA Ltd.)]
Professional Lighting and Sound Association
Radiocommunications Agency
Sound and Communications Industries Federation

This British Standard, having been prepared under the direction of the Electrotechnical Sector Board, was published under the authority of the Standards Board and comes into effect on
15 July 1995

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The following BSI references relate to the work on this standard:
Committee reference GEL/110/8
Draft for comment 90/28300 DC

ISBN 0 580 24309 5

Amendments issued since publication

Amd. No.	Date	Comments

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National foreword

This British Standard has been prepared by Technical Committee GEL/110/Subcommittee GEL/110/8 and is the English language version of EN 61000-2-4:1994 *Electromagnetic compatibility (EMC)* — Part 2: *Environment* — Section 4: *Compatibility levels in industrial plants for low-frequency conducted disturbances,* published by the European Committee for Electrotechnical Standardization (CENELEC). It is identical with IEC 1000-2-4:1994 and its corrigendum 1994 published by the International Electrotechnical Commission (IEC).

IEC 1000 has been designated a basic EMC publication for use in the preparation of dedicated product, product family and genetic EMC standards.

IEC 1000 is published in separate Parts in accordance with the following structure.

— *Part 1: General — General considerations (introduction, fundamental principles);*

— *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 9: Miscellaneous.*

Each Part is subdivided into Sections each of which may be published as either a standard or a Technical Report.

Cross-references

Publication referred to	Corresponding British Standard
IEC 50 (161):1990	BS 4727 *Glossary of electrotechnical, power, telecommunication, electronics, lighting and colour terms* Part 1. *Terms common to power telecommunications and electronics* Group 09:1991 *Electromagnetic compatibility*
ENV 61000-2-2:1993	DD ENV 61000-2-2 *Electromagnetic compatibility (EMC)* Part 2.*Environment* Section 2:1993 *Compatibility levels for low-frequency conducted disturbances and signalling in public low-voltage power supply systems*

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Summary of pages

This document comprises a front cover, an inside front cover, pages i and ii, the EN title page, pages 2 to 14, an inside back cover and a back cover.

This standard has been updated (see copyright date) and may have had amendments incorporated. This will be indicated in the amendment table on the inside front cover.

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EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 61000-2-4

December 1994

ICS 29.020

Descriptors: Electric power supply, electric power networks, low voltage, network disturbances, electromagnetic compatibility, industrial electrical installations, classification

English version

Electromagnetic compatibility (EMC) Part 2: Environment Section 4: Compatibility levels in industrial plants for low-frequency conducted disturbances

(IEC 1000-2-4:1994 + corrigendum 1994)

Compatibilité électromagnétique (EMC)
Partie 2: Environnement
Section 4: Niveaux de compatibilité dans les installations industrielles pour les perturbations conduites à basse fréquence
(CEI 1000-2-4:1994 + corrigendum 1994)

Elektromagnetische Verträglichkeit
Teil 2: Umgebungsbedingungen
Hauptabschnitt 4: Verträglichkeitspegel für niederfrequente leitungsgeführte Störgrößen in Industrieanlagen
(IEC 1000-2-4 1994 + Corrigendum 1994)

This European Standard was approved by CENELEC on 1994-07-05. 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 Central Secretariat 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 Central Secretariat has the same status as the official versions.

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CENELEC

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

Central Secretariat: rue de Stassart 35, B-1050 Brussels

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Foreword

The text of document 77B(CO) 16A, future edition 1 of IEC 1000-2-4, prepared by SC 77B, High-frequency phenomena, of IEC TC 77, electromagnetic compatibility, was submitted to the IEC-CENELEC parallel vote and was approved by CENELEC as EN 61000-2-4 on 1994-07-05.

NOTE Finland and Switzerland have no obligation to implement this European Standard.

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) 1995-07-01
- latest date by which the national standards conflicting with the EN have to be withdrawn (dow)1995-07-01

Annexes designated "normative" are part of the body of the standard. Annexes designated "informative" are given for information only. In this standard, Annex ZA is normative and Annex A informative. Annex ZA has been added by CENELEC.

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1 Scope

This section of IEC 1000-2 gives the requirements for the compatibility levels for industrial and non-public networks. These levels are relevant to disturbances that may occur in the electrical power supply in normal operating conditions.

This standard applies to low-voltage and medium-voltage a.c. power supply at 50 Hz/60 Hz. Networks for ships, aircraft, off-shore platforms and railways are out of the scope of this standard.

This standard deals with the parameters of voltage deviations (amplitude, frequency, phase-balance and wave-shape) from the ideal sinusoidal voltage that may be expected at the in-plant point of coupling (IPC) within industrial plants or other non-public networks.

The compatibility levels are given for different electromagnetic environment classes. The disturbances here considered are relevant to the power supply only and the classes are determined by the characteristics of the supply network. This standard is in practice a classification of the a.c. supplies associated with industrial and non-public networks.

NOTE Compatibility levels at the point of common coupling (PCC) are specified in the standards applicable to public networks or may be specified by supply authorities.

2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this section of IEC 1000-2. At the time of publication, the editions indicated were valid. All normative documents are subject to revision, and parties to agreements based on this section of IEC 1000-2 are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

IEC 50(161):1990, *International Electrotechnical Vocabulary (IEV) — Chapter 161: Electromagnetic compatibility*.

IEC 1000-2-2:1990, *Electromagnetic compatibility (EMC) — Part 2: Environment — Section 2: Compatibility levels for low-frequency conducted disturbances and signalling in public low-voltage power supply systems.*

3 Definitions

For the purpose of this section of IEC 1000-2, the following definitions apply, as well as the definitions of IEC 50(161).

3.1
electromagnetic compatibility (EMC)

the ability of an equipment or system to function satisfactorily in its electromagnetic environment without introducing intolerable electromagnetic disturbances to anything in that environment [IEV 161-01-07]

3.2
electromagnetic compatibility level

the specified maximum electromagnetic disturbance level expected to be impressed on a device, equipment or system operated in particular conditions

NOTE In practice, the electromagnetic compatibility level is not an absolute maximum level but may be exceeded by a small probability. [IEV 161-03-10]

3.3
total disturbance level

the level of a given electromagnetic disturbance caused by the superposition of the emission of all pieces of equipment in a given system

3.4
point of coupling (PC)

the point for which electromagnetic compatibility is to be considered

3.5
point of common coupling (PCC)

the point of coupling at the public supply networks to which the system to be studied is, or is to be, connected. Other systems (consumers) may also be connected to or near this point

NOTE A definition of PCC is given in IEV 161-07-15. The definition given above is more pertinent to industrial systems.

3.6
in-plant point of coupling (IPC)

the point of coupling inside the system or installation to be studied