
Power transformers, power supply units, reactors and similar products - EMC requirements

**iTeh STANDARD PREVIEW
(standards.iteh.ai)**

[SIST EN 62041:2004](https://standards.iteh.ai/catalog/standards/sist/cfd0031e-9e28-4e0c-b3b5-90f22688cc3a/sist-en-62041-2004)

<https://standards.iteh.ai/catalog/standards/sist/cfd0031e-9e28-4e0c-b3b5-90f22688cc3a/sist-en-62041-2004>

iTeh STANDARD PREVIEW
(standards.iteh.ai)

SIST EN 62041:2004

<https://standards.iteh.ai/catalog/standards/sist/cfd0031e-9e28-4e0c-b3b5-90f22688cc3a/sist-en-62041-2004>

EUROPEAN STANDARD

EN 62041

NORME EUROPÉENNE

EUROPÄISCHE NORM

November 2003

ICS 29.180; 33.100

English version

**Power transformers, power supply units,
reactors and similar products –
EMC requirements
(IEC 62041:2003)**

Transformateurs, blocs d'alimentation,
bobines d'inductance et produits
analogues –
Prescriptions CEM
(CEI 62041:2003)

Sicherheit von Transformatoren,
Netzgeräten, Drosseln und dergleichen –
EMV-Anforderungen
(IEC 62041:2003)

iTeh STANDARD PREVIEW
(standards.iteh.ai)

SIST EN 62041:2004

<https://standards.iteh.ai/catalog/standards/sist/cfd0031e-9e28-4e0c-b3b5-9c7e088c34/sist-en-62041-2004>
This European Standard was approved by CENELEC on 2003-10-01. 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.

CENELEC members are the national electrotechnical committees of Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Lithuania, Luxembourg, Malta, Netherlands, Norway, Portugal, Slovakia, Spain, Sweden, Switzerland and United Kingdom.

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

Foreword

The text of document 96/198/FDIS, future edition 1 of IEC 62041, prepared by IEC TC 96, Small power transformers, reactors, power supply units and similar products, was submitted to the IEC-CENELEC parallel vote and was approved by CENELEC as EN 62041 on 2003-10-01.

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) 2004-07-01
- latest date by which the national standards conflicting with the EN have to be withdrawn (dow) 2006-10-01

This standard is only intended to be used for products covered by product safety standards of IEC Technical Committee 96: the IEC 61558 series (harmonized as EN 61558) and IEC 60989.

In this standard, the following print types are used:

- requirements proper: in roman type;
- *test specifications: in italic type;*
- explanatory matter: in smaller roman type.

iTeh STANDARD PREVIEW (standards.iteh.ai) Endorsement notice

The text of the International Standard IEC 62041:2003 was approved by CENELEC as a European Standard without any modification. <https://standards.iteh.ai/catalog/standards/sist/en-62041-2004>

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

IEC 60065	NOTE	Harmonized as EN 60065:2002 (modified).
IEC 60601-1	NOTE	Harmonized as EN 60601-1:1990 (not modified).
IEC 60950	NOTE	Harmonized in EN 60950 series (partly modified).
IEC 61010-1	NOTE	Harmonized as EN 61010-1:2001 (not modified).
IEC 61347-1	NOTE	Harmonized as EN 61347-1:2001 (not modified).
IEC 61347-2-2	NOTE	Harmonized as EN 61347-2-2:2001 (not modified).
IEC 62040	NOTE	Harmonized in EN 62040 series (partly modified).

Annex ZA (normative)

Normative references to international publications with their corresponding European publications

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies (including amendments).

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

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 60989	- ¹⁾	Separating transformers, autotransformers, variable transformers and reactors	-	-
IEC 61000-3-2 (mod)	- ¹⁾	Electromagnetic compatibility (EMC) Part 3-2: Limits - Limits for harmonic current emissions (equipment input current up to and including 16 A per phase)	EN 61000-3-2	2000 ²⁾
IEC/TS 61000-3-4	- ¹⁾	Part 3-4: Limits - Limitation of emission of harmonic currents in low-voltage power supply systems for equipment with rated current greater than 16 A	-	-
IEC 61000-4-2	- ¹⁾	Part 4-2: Testing and measurement techniques - Electrostatic discharge immunity test	EN 61000-4-2	1995 ²⁾
IEC 61000-4-3	- ¹⁾	Part 4-3: Testing and measurement techniques - Radiated, radio-frequency, electromagnetic field immunity test	EN 61000-4-3	2002 ²⁾
IEC 61000-4-4	- ¹⁾	Part 4-4: Testing and measurement techniques - Electrical fast transient/burst immunity test	EN 61000-4-4	1995 ²⁾
IEC 61000-4-5	- ¹⁾	Part 4-5: Testing and measurement techniques - Surge immunity test	EN 61000-4-5	1995 ²⁾
IEC 61000-4-6	- ¹⁾	Part 4-6: Testing and measurement techniques - Immunity to conducted disturbances, induced by radio-frequency fields	-	-

¹⁾ Undated reference.

²⁾ Valid edition at date of issue.

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 61000-4-11	1994	Part 4-11: Testing and measurement techniques - Voltage dips, short interruptions and voltage variations immunity tests	EN 61000-4-11	1994 ²⁾
IEC 61558	Series	Safety of power transformers, power supply units and similar	EN 61558	Series
CISPR 11	2003	Industrial scientific and medical (ISM) radio-frequency equipment - Electromagnetic disturbance characteristics - Limits and methods of measurement	-	-

iTeh STANDARD PREVIEW (standards.iteh.ai)

[SIST EN 62041:2004](#)

<https://standards.iteh.ai/catalog/standards/sist/cfd0031e-9e28-4e0c-b3b5-90f22688cc3a/sist-en-62041-2004>

NORME
INTERNATIONALE
INTERNATIONAL
STANDARD

CEI
IEC
62041

Première édition
First edition
2003-08

**Transformateurs, blocs d'alimentation,
bobines d'inductance et produits analogues –
Prescriptions CEM**

**Power transformers, power supply units,
reactors and similar products –
EMC requirements**

SIST EN 62041:2004

<https://standards.iteh.ai/catalog/standards/sist/cfd0031e-9e28-4e0c-b3b5-90f22688cc3a/sist-en-62041-2004>

© IEC 2003 Droits de reproduction réservés — Copyright - all rights reserved

Aucune partie de cette publication ne peut être reproduite ni utilisée sous quelque forme que ce soit et par aucun procédé, électronique ou mécanique, y compris la photocopie et les microfilms, sans l'accord écrit de l'éditeur.

No part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from the publisher.

International Electrotechnical Commission, 3, rue de Varembe, 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

N

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

CONTENTS

FOREWORD	5
1 Scope	9
2 Normative references	9
3 Terms and definitions	11
4 Classification	13
5 Test specifications	13
5.1 Immunity	13
5.1.1 Immunity against disturbances	13
5.1.2 Test levels	17
5.2 Emission	21
5.2.1 Categories	21
5.2.2 Test levels	23
6 Specification of environment	25
Bibliography	27
Table 1 – Electrostatic discharges – Test levels at enclosure	17
Table 2 – Radiated radio frequency electromagnetic field – Test levels at enclosure	17
Table 3 – Electrical fast transient/burst – Test levels at ports for signal and control lines and earth	19
Table 4 – Electrical fast transient/burst – Test levels at input and output d.c. and a.c. power ports	19
Table 5 – Conducted disturbances, inducted by radio-frequency fields – Test levels at ports for signal lines, control lines, earth and input and output at d.c. and a.c. power ports	19
Table 6 – Surge – Test levels at input and output a.c. power ports	21
Table 7 – Voltage dips and short interruptions – Test levels at input a.c. power ports	21
Table 8 – Conducted radio disturbances – Test levels at input a.c. power ports	23
Table 9 – Radiated radio disturbances – Test levels at enclosure	25

iTeh STANDARD PREVIEW
(standards.iteh.ai)

SIST EN 62041:2004

<https://standards.iteh.ai/catalog/standards/sist/en/62041-2004/62041-2004>

90736887-3-614-en-62041-2004

INTERNATIONAL ELECTROTECHNICAL COMMISSION

**POWER TRANSFORMERS, POWER SUPPLY UNITS, REACTORS
AND SIMILAR PRODUCTS –****EMC requirements**

FOREWORD

- 1) The International Electrotechnical Commission (IEC) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of 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, IEC publishes International Standards, Technical Specifications, Technical Reports, and Guides (hereafter referred to as "IEC Publication(s)"). 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. 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 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 IEC National Committees.
- 3) IEC Publications have the form of recommendations for international use and are accepted by IEC National Committees in that sense. While all reasonable efforts are made to ensure that the technical content of IEC Publications is accurate, IEC cannot be held responsible for the way in which they are used or for any misinterpretation by any end user.
- 4) In order to promote international uniformity, IEC National Committees undertake to apply IEC Publications transparently to the maximum extent possible in their national and regional publications. Any divergence between any IEC Publication and the corresponding national or regional publication shall be clearly indicated in the latter.
- 5) IEC provides no marking procedure to indicate its approval and cannot be rendered responsible for any equipment declared to be in conformity with an IEC Publication.
- 6) All users should ensure that they have the latest edition of this publication.
- 7) No liability shall attach to IEC or its directors, employees, servants or agents including individual experts and members of its technical committees and IEC National Committees for any personal injury, property damage or other damage of any nature whatsoever, whether direct or indirect, or for costs (including legal fees) and expenses arising out of the publication, use of, or reliance upon, this IEC Publication or any other IEC Publications.
- 8) Attention is drawn to the Normative references cited in this publication. Use of the referenced publications is indispensable for the correct application of this publication.
- 9) Attention is drawn to the possibility that some of the elements of this IEC Publication may be the subject of patent rights. IEC shall not be held responsible for identifying any or all such patent rights.

International standard IEC 62041 has been prepared by Technical Committee 96: Small power transformers, reactors, power supply units and similar products.

This EMC standard covers only EMC aspects and is not a safety standard.

The text of this standard is based upon the following documents:

FDIS	Report on voting
96/198/FDIS	96/210/RVD

Full information on the voting for the approval of this standard 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.

This standard is only intended to be used for products covered by product safety standards of IEC technical committee 96: the IEC 61558 series and IEC 60989.

In this standard, the following print types are used:

- requirements proper: in roman type;
- *test specifications: in italic type;*
- explanatory matter: in smaller roman type.

The committee has decided that the contents of this publication will remain unchanged until 2007. At this date, the publication will be

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

iTeh STANDARD PREVIEW (standards.iteh.ai)

SIST EN 62041:2004

<https://standards.iteh.ai/catalog/standards/sist/cfd0031e-9e28-4e0c-b3b5-90f22688cc3a/sist-en-62041-2004>

POWER TRANSFORMERS, POWER SUPPLY UNITS, REACTORS AND SIMILAR PRODUCTS –

EMC requirements

1 Scope

This international product family standard applies to independent transformers, reactors and power supply units covered by IEC 60989 and the IEC 61558 series of standards. It prescribes the electromagnetic compatibility requirements for emission and immunity in the frequency range 0 Hz to 1 000 MHz.

Transformers, reactors and power supply units delivered with or incorporated in an appliance or equipment shall comply with the relevant EMC standard applicable to that appliance or equipment. However this standard may be used as a guide to test the transformers, reactors and power supply units separately before incorporating them in the appliance or equipment.

This EMC standard covers only performance. Abnormal operation of the transformer, reactor and power supply unit (e.g. simulated faults in the electric circuitry for testing purposes or functional safety by influence of electromagnetic phenomena) are not taken into consideration in this standard.

NOTE When the term transformer is used, it covers transformers, reactors and power supplies where applicable.

This standard does not apply to:

- motor-generator sets;
- uninterruptible power supplies (UPS) covered by IEC 62040;
- power supply units covered by IEC 61204, (i.e. DC-DC converters, DC power and distribution equipment and power supply units for use in applications covered by IEC 60950, IEC 61010-1, IEC 60601-1 and IEC 60065);
- step-down converters covered by IEC 61347-1 and 61347-2-2;
- power supplies and converters for use with or in products covered by IEC 61347-2-2.

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 60989, *Separating transformers, autotransformers, variable transformers and reactors*

IEC 61000-3-2, *Electromagnetic compatibility (EMC) – Part 3-2: Limits – Limits for harmonic current emissions (equipment input current ≤ 16 A per phase)*

IEC 61000-3-4, *Electromagnetic compatibility (EMC) – Part 3-4: Limits – Limitation of emission of harmonic currents in low-voltage power supply systems for equipment with rated current greater than 16 A*