SLOVENSKI STANDARD
SIST EN 62310-3:2008

01-november-2008

Sistemi s statiņ nim prenosom - 3. del: Metoda za specificiranje tehniņ nih in preskusnih zahtev (IEC 62310-3:2008)

Static transfer systems (STS) - Part 3: Method for specifying performance and test requirements (IEC 62310-3:2008)

Statische Transfersysteme - Teil 3: Verfahren für die Festlegung des Betriebsverhaltens und Prüfanforderungen (IEC 62310-3:2008)

Systèmes de transfert statique (STS) - Partie 3: Méthode de spécification des performances et exigences d'essai (CEI 62310-3:2008)

Ta slovenski standard je istoveten z: **EN 62310-3:2008**

ICS:

29.200	Usmerniki. Pretvorniki. Stabilizirano elektriņ no napajanje	Rectifiers. Convertors. Stabilized power supply
29.240.30	Krmilna oprema za elektroenergetske sisteme	Control equipment for electric power systems

SIST EN 62310-3:2008 **en,fr**

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 62310-3

September 2008

ICS 29.200; 29.240.30

English version

Static transfer systems (STS) - Part 3: Method for specifying performance and test requirements

(IEC 62310-3:2008)

Systèmes de transfert statique (STS) - Partie 3: Méthode de spécification des performances et exigences d'essai (CEI 62310-3:2008)

Statische Transfersysteme - Teil 3: Verfahren für die Festlegung des Betriebsverhaltens und Prüfanforderungen (IEC 62310-3:2008)

This European Standard was approved by CENELEC on 2008-07-01. 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, Bulgaria, Cyprus, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and the 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

Ref. No. EN 62310-3:2008 E

Foreword

The text of document 22H/105/FDIS, future edition 1 of IEC 62310-3, prepared by SC 22H, Uninterruptible power systems (UPS), of IEC TC 22, Power electronic systems and equipment, was submitted to the IEC-CENELEC parallel vote and was approved by CENELEC as EN 62310-3 on 2008-07-01.

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)	2009-04-01
– latest date by which the national standards conflicting with the EN have to be withdrawn	(dow)	2011-07-01

Annex ZA has been added by CENELEC.

Endorsement notice

The text of the International Standard IEC 62310-3:2008 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 60664-3	NOTE Harmonized as HD 625.3 S1:1997 (not modified). HD 625.3 S1 is superseded by EN 60664-3:2003 which is based on IEC 60664-3:2003.
IEC 60947-1	NOTE Harmonized as EN 60947-1:2007 (not modified).
IEC 60990	NOTE IEC 60990:1990 is superseded by IEC 60990:1999, which is harmonized as EN 60990:1999 (not modified).
IEC 61140	NOTE Harmonized as EN 61140:2002 (not modified).
IEC 61400-1	NOTE Harmonized as EN 61400-1:2005 (not modified).
IEC 62040-2	NOTE Harmonized as EN 62040-2:2006 (not modified).
IEC 62040-1-1	NOTE Harmonized as EN 62040-1-1:2003 (not modified).
IEC 62040-1-2	NOTE Harmonized as EN 62040-1-2:2003 (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 60068	Series	Environmental testing	EN 60068	Series
IEC 60146-1-1	-[1)]	Semiconductor convertors - General requirements and line commutated convertors Part 1-1: Specification of basic requirements	EN 60146-1-1	1993[2)]
IEC 60439-1	-[1)]	Low-voltage switchgear and controlgear assemblies - Part 1: Type-tested and partially type-tested assemblies	EN 60439-1	1999[2)]
IEC 60529	-[1)]	Degrees of protection provided by enclosures (IP Code)	EN 60529 + corr. May	1991[2)] 1993
IEC 60947-6-1	-[1)]	Low-voltage switchgear and controlgear - Part 6-1: Multiple function equipment - Transfer switching equipment	EN 60947-6-1	2005[2)]
IEC 60950-1 (mod)	-[1)]	Information technology equipment - Safety - Part 1: General requirements	EN 60950-1	2006[2)]
IEC 61000-2-2	-[1)]	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 62040-3 (mod)	-[1)]	Uninterruptible power systems (UPS) - Part 3: Method of specifying the performance and test requirements	EN 62040-3	2001[2)]
IEC 62310-1	-[1)]	Static transfer systems (STS) - Part 1: General and safety requirements	EN 62310-1	2005[2)]
IEC 62310-2 (mod)	-[1)]	Static transfer systems (STS) - Part 2: Electromagnetic compatibility (EMC) requirements	EN 62310-2	2007[2)]
ISO 7779	-[1)]	Acoustics - Measurement of airborne noise emitted by information technology and telecommunications equipment	EN ISO 7779	2001[2)]

[1)] Undated reference.

[2)] Valid edition at date of issue.

IEC 62310-3

Edition 1.0 2008-06

INTERNATIONAL STANDARD

NORME INTERNATIONALE

Static transfer systems (STS) –
Part 3: Method for specifying performance and test requirements

Systèmes de transfert statique (STS) –
Partie 3: Méthode de spécification des performances et exigences d'essai

INTERNATIONAL
ELECTROTECHNICAL
COMMISSION

COMMISSION
ELECTROTECHNIQUE
INTERNATIONALE

PRICE CODE
CODE PRIX XA

ICS 29.200; 29.240.30

ISBN 2-8318-9812-9

CONTENTS

INTERNATIONAL ELECTROTECHNICAL COMMISSION

STATIC TRANSFER SYSTEMS (STS) –

Part 3: Method for specifying performance and test 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, Publicly Available Specifications (PAS) 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 62310-3 has been prepared by subcommittee 22H: Uninterruptible power systems (UPS), of IEC technical committee 22: Power electronic systems and equipment.

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

FDIS	Report on voting
22H/105/FDIS	22H/107/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.

A list of all parts of the IEC 62310 series, under the general title: *Static transfer systems (STS)*, can be found on the IEC website.

The committee has decided that the contents of this publication will remain unchanged until the maintenance result 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

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

STATIC TRANSFER SYSTEMS (STS) –

Part 3: Method for specifying performance and test requirements

1 Scope

The IEC 62310 series of three standards applies to stand-alone operating a.c. static transfer systems (STS) intended to ensure the continuity of load supply through controlled transfer, with or without interruption of power, from two or more independent a.c. sources.

This series of standards includes information for the overall integration of the STS and its accessories into the a.c. power network and includes requirements for the switching elements, their control and protective elements, where applicable.

Part 1 of the series concerns general and safety requirements.

Part 2 of the series concerns electromagnetic compatibility (EMC) requirements.

This Part 3 of the series concerns methods for specifying performance and test requirements including applicable safety tests referenced in standard IEC 62310-1 for general and safety requirements.

This standard applies for single-phase, phase-phase and three-phase static transfers in a. c. systems up to 1 000 V. It takes precedence over all aspects of generic performance standards, and no additional performance testing is necessary.

The requirements have been selected so as to be consistent with compatibility levels for low-frequency conducted disturbances and signalling in public low-voltage power supply systems (see IEC 61000-2-2) as well as to ensure an adequate level of performance when the STS is applied in diverse critical load situations. The requirements take into account the differing test conditions necessary to encompass the range of physical sizes and power ratings of STS. This standard applies to STS as a stand-alone product, whether presented as a unit or an assembly of units. This standard does not apply to:

– devices for d.c. source switching;
– single source systems;
– transfer systems using only electromechanical switching devices with interruption of the supply to the load during transfer and intended to be used in emergency power systems or covered by IEC 60947-6-1;
– automatic switching devices integrated into UPS covered by the IEC 62040 series of UPS product standards.

NOTE Additional or different requirements may apply to STS intended for use on board of vehicles including ships and aircrafts, in emergency power systems subject to a particular regulation e.g. health care facilities, fire fighting or emergency rescue, in tropical countries or where elevations are greater than 1 000 m.

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 60068 (all parts), *Environmental testing*

IEC 60146-1-1, *Semiconductor convertors – General requirements and line commutated convertors – Part 1-1: Specifications of basic requirements*

IEC 60439-1, *Low-voltage switchgear and controlgear assemblies – Part 1: Type-tested and partially type-tested assemblies*

IEC 60529, *Degrees of protection provided by enclosures (IP Code)*

IEC 60947-6-1, *Low-voltage switchgear and controlgear – Part 6-1: Multiple function equipment – Transfer switching equipment*

IEC 60950-1, *Information technology equipment – Safety – Part 1: General requirements*

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

IEC 62040-3, *Uninterruptible power systems (UPS) – Part 3: Method of specifying the performance and test requirements*

IEC 62310-1, *Static Transfer Systems (STS) – Part 1: General and safety requirements*

IEC 62310-2, *Static Transfer Systems (STS) – Part 2: Electromagnetic Compatibility (EMC) requirements*

ISO 7779, *Measurement of airborne noise emitted by information technology and telecommunications equipment*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

3.1 General definitions

3.1.1
static transfer system (STS)
system that transfers a load, by static means, between a preferred source and an alternate source

NOTE 1 The transfer may be automatic and/or manual.

NOTE 2 The transfer may be with or without interruption.

3.1.2
power pole or electronic power switch
in the context of this standard, an operative unit for electronic power switching comprising at least one controlled electronic valve device

[IEV 551-13-01, modified]

3.1.3
primary circuit
internal circuit which is directly connected to the external supply source which supplies the electric power to the load. It includes the primary windings of transformers, motors, other loading devices and the means of connection to the supply source.

3.1.4
input power
power derived either from the preferred or from the alternate source or from both and supplied to the STS (and maintenance bypass if any)

3.1.5
SELV circuit
secondary circuit which is so designed and protected that under normal operating conditions and single fault conditions, its voltages do not exceed a safe value

NOTE 1 The limit values of voltages under normal operating conditions and single fault conditions are specified in 2.2 of IEC 60950-1, see also Table 1A of IEC 60950-1.

NOTE 2 This definition of an SELV CIRCUIT differs from the term “SELV system” as used in IEC 61140.

3.1.6
preferred source
source used as normal power supply to the load, usually set by the operator

3.1.7
alternate source
source used as alternate power supply to the load when the preferred source fails or is out of tolerance or is switched off for maintenance

3.1.8
normal mode of STS operation
condition where the load is supplied via the electronic (power) switches by either the preferred source or by the alternate source

3.1.9
maintenance bypass
power path designed to allow isolation of an appropriate section or sections of an STS for safety during maintenance and/or to maintain continuity of load power

3.1.10
transfer
act of altering the supply path to the load from one source to another

3.1.11
automatic transfer
transfer without human intervention as a result of the supplying source being outside specified conditions

3.1.12
automatic retransfer
transfer without human intervention from an alternate to the preferred source once the preferred source has returned to specified conditions

3.1.13
manual transfer
transfer that occurs as a result of local or remote operator intervention

3.1.14
normal transfer
transfer of load power between two sources while their voltage phase angle difference is within a tolerance band as declared by the manufacturer

3.1.15
synchronous (or synchronised) transfer
transfer within a limited voltage phase angle difference specified by the user

3.1.16
asynchronous (or non-synchronised) transfer
transfer of load power between two sources while their voltage phase angle difference, when transfer occurs, is out of a tolerance band as declared by the manufacturer

3.1.17
transfer time
time interval between initiation of transfer and the instant when the output quantities have been transferred

3.1.18
cross-current
current due to conduction from a phase of one source through electronic power switches to the corresponding phase of another source

3.1.19
objectionable current
load current that, during normal operation and/or transfers, flows in paths other than those intended and that contributes to any of the following:

– interference with the proper sensing and operation of ground-fault residual current devices (RCDs)

– arcing of sufficient energy to ignite flammable materials

– electromagnetic emission in excess of levels prescribed in IEC 62310-2 for STSs

3.1.20
linear load
load where the current drawn from the supply is defined by the relationship:

$$I = U/Z$$

where

I is the load current;

U is the supply voltage;

Z is a constant impedance

3.1.21
non-linear load
load where the parameter Z (load impedance) is no longer a constant but is a variable dependent on other parameters, such as voltage or time

3.1.22
active power
under periodic conditions, mean value, taken over one period T, of the instantaneous power p:

$$P = \frac{1}{T} \cdot \int_0^T p \cdot dt$$

[IEV 131-11-42]

NOTE 1 Under sinusoidal conditions, the active power is the real part of the complex power.

NOTE 2 The SI unit for active power is the watt.

NOTE 3 DC, fundamental and harmonic voltages contribute directly to the magnitude of the active power. Where applicable, instruments used to measure active power should therefore present sufficient bandwidth and be capable of measuring any significant non-symmetrical and harmonic power components.