SLOVENSKI STANDARD

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Instruments and software used for measurement in high-voltage impulse tests - Part 1: Requirements for instruments (IEC 61083-1:2001)

ICS 17.220.20

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English version

Instruments and software used for measurement in high-voltage impulse tests Part 1: Requirements for instruments (IEC 61083-1:2001)

Appareils et logiciels utilisés pour les mesures pendant les essais de choc à haute tension
Partie 1: Prescriptions pour les appareils
(CEI 61083-1:2001)

Messgeräte und Software bei Stoßspannungs- und Stoßstromprüfungen
Teil 1: Anforderungen an Messgeräte
(IEC 61083-1:2001)

This European Standard was approved by CENELEC on 2001-03-01. 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, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, 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

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Foreword

The text of document 42/164/FDIS, future edition 2 of IEC 61083-1, prepared by IEC TC 42, High-voltage testing techniques, was submitted to the IEC-CENELEC parallel vote and was approved by CENELEC as EN 61083-1 on 2001-03-01.

This European Standard supersedes EN 61083-1:1993 and HD 479 S1:1986.

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)	2002-03-01
– latest date by which the national standards conflicting with the EN have to be withdrawn	(dow)	2004-03-01

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

Endorsement notice

The text of the International Standard IEC 61083-1:2001 was approved by CENELEC as a European Standard without any modification.

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.

Publication	Year	Title	EN/HD	Year
IEC 60060-1 + corr. Mar.	1989 1990	High-voltage test techniques Part 1: General definitions and test requirements	HD 588.1 S1	1991
IEC 60060-2 A1 -	1994 1996 -	Part 2: Measuring systems	EN 60060-2 - A11	1994 - 1998
IEC 61000-4-4	1995	Electromagnetic compatibility (EMC) Part 4-4: Testing and measurement techniques - Electrical fast transient/burst immunity test	EN 61000-4-4	1995

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Partie 1: Prescriptions pour les appareils

Instruments and software used for measurement in high-voltage impulse tests –

Part 1: Requirements for instruments

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

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INSTRUMENTS AND SOFTWARE USED FOR MEASUREMENT IN HIGH-VOLTAGE IMPULSE TESTS –

Part 1: Requirements for instruments

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 International Standard may be the subject of patent rights. The IEC shall not be held responsible for identifying any or all such patent rights.

International Standard IEC 61083-1 has been prepared by IEC technical committee 42: High-voltage testing techniques.

This second edition cancels and replaces the first edition published in 1991 of which it constitutes a technical revision. This edition also replaces the first edition of IEC 60790 published in 1984.

Future standards in this series will carry the new general title as cited above. Titles of existing standards in this series will be updated at the time of the next edition.

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

FDIS	Report on voting
42/164/FDIS	42/166/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 3.

Words in **bold** are defined in 1.3.

Annexes A, B and C form an integral part of this standard.

Annex D is for information only.

The committee has decided that the contents of this publication will remain unchanged until 2008. At this date, the publication will be

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

INSTRUMENTS AND SOFTWARE USED FOR MEASUREMENT IN HIGH-VOLTAGE IMPULSE TESTS –

Part 1: Requirements for instruments

1 General

1.1 Scope

This part of IEC 61083 is applicable to **digital recorders**, including digital oscilloscopes, **analogue oscilloscopes** and **peak voltmeters** used for measurements during tests with high impulse voltages and high impulse currents. It specifies the measuring characteristics and calibrations required to meet the measuring uncertainties and procedures specified in IEC 60060-2.

This part

- defines the terms specifically related to **digital recorders**, **analogue oscilloscopes** and **peak voltmeters**,
- specifies the necessary requirements for such instruments to ensure their compliance with the requirements for high-voltage and for high-current impulse tests, and
- establishes the tests and procedures necessary to demonstrate their compliance.

Only **digital recorders** that permit access to **raw data** from permanent or temporary storage are covered by this standard. The **raw data**, with relevant scaling information, may be

- printed graphically, or
- stored in digital format.

1.2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this part of IEC 61083. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However, parties to agreements based on this part of IEC 61083 are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. For undated references, the latest edition of the normative document referred to applies. Members of IEC and ISO maintain registers of currently valid International Standards.

IEC 60060-1:1989, *High-voltage test techniques – Part 1: General definitions and test requirements*

IEC 60060-2:1994, *High-voltage test techniques – Part 2: Measuring systems*
Amendment 1 (1996)

IEC 61000-4-4:1995, *Electromagnetic compatibility (EMC) – Part 4: Testing and measurement techniques – Section 4: Electrical fast transient/burst immunity test.* Basic EMC Publication

1.3 Terms and definitions

For the purposes of this part of IEC 61083, the following terms and definitions apply.

1.3.1 General definitions

1.3.1.1
digital recorder
instrument, including a digital oscilloscope, which can make a temporary digital record of a high-voltage or high-current impulse, that can be converted into a permanent record. The digital record can be displayed in the form of an analogue graph

NOTE The waveform may be displayed on a screen, plotted or printed. This process may change the appearance of the waveform due to the processing involved.

1.3.1.2
analogue oscilloscope
instrument, which can make a temporary analogue record of a scaled high-voltage or high-current impulse, that can be converted into a permanent record. The permanent record can be displayed in the form of a graph or photograph of the screen of the oscilloscope

1.3.1.3
peak voltmeter
instrument, which can measure the peak value of a scaled high-voltage or high-current impulse without short-duration overshoot or high-frequency oscillation (see clause 4)

1.3.1.4
warm-up time
time interval from when the instrument is first switched on to when the instrument meets operational requirements

1.3.1.5
operating range
range of input voltage for which the instrument can be used within the uncertainty limits given in this standard

1.3.1.6
output of an instrument

1.3.1.6.1
output of a digital recorder
numerical value recorded by a **digital recorder** at a specific instant

1.3.1.6.2
output of an analogue oscilloscope
deflection of the trace of an **analogue oscilloscope** at a specific instant

1.3.1.6.3
output of a peak voltmeter
display of a **peak voltmeter**

1.3.1.7
offset
output of an instrument for zero input