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Low voltage surge protective devices – Part 21: Surge protective devices connected to telecommunications and signalling networks – Performance requirements and testing methods

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utarbetad inom International Electrotechnical Commission, IEC.

[*)] Se även bifogat Corrigendum, mars 2001 till IEC 61643-21, 2000.

ICS 29.240; 29.240.10

Denna standard är fastställd av Svenska Elektriska Kommissionen, SEK, som också kan lämna upplysningar om **sakinnehållet** i standarden.
Postadress: SEK, Box 1284, 164 29 KISTA
Telefon: 08 - 444 14 00. *Telefax*: 08 - 444 14 30
E-post: sek@sekom.se. *Internet*: www.sekom.se

EUROPEAN STANDARD **EN 61643-21**

NORME EUROPÉENNE

EUROPÄISCHE NORM July 2001

ICS 29.240; 29.240.10

English version

Low voltage surge protective devices Part 21: Surge protective devices connected to telecommunications and signalling networks - Performance requirements and testing methods

(IEC 61643-21:2000 + corrigendum 2001)

Parafoudres basse-tension
Partie 21: Parafoudres connectés aux réseaux de signaux et de télécommunications - Prescriptions de fonctionnement et méthodes d'essais
(CEI 61643-21:2000 + corrigendum 2001)

Überspannungsschutzgeräte für Niederspannung
Teil 21: Überspannungsschutzgeräte für den Einsatz in Telekommunikations- und signalverarbeitenden Netzwerken - Leistungsanforderungen und Prüfverfahren
(IEC 61643-21:2000 + Corrigendum 2001)

This European Standard was approved by CENELEC on 2000-11-01. 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

Ref. No. EN 61643-21:2001 E

Foreword

The text of document 37A/101/FDIS, future edition 1 of IEC 61643-21, prepared by SC 37A, Low-voltage surge protective devices, of IEC TC 37, Surge arresters, was submitted to the IEC-CENELEC parallel vote and was approved by CENELEC as EN 61643-21 on 2000-11-01.

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)	2002-02-01
– latest date by which the national standards conflicting with the EN have to be withdrawn	(dow)	2003-11-01

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

Endorsement notice

The text of the International Standard IEC 61643-21:2000 + corrigendum March 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 60050-702	1992	International electrotechnical vocabulary Chapter 702: Oscillations, signals and related devices	-	-
IEC 60050-726	1982	Chapter 726: Transmission lines and waveguides	-	-
IEC 60060-1 + corr. March	1989 1990	High-voltage test techniques Part 1: General definitions and test requirements	HD 588.1 S1	1991
IEC 60068-2-30	1980	Environmental testing Part 2: Tests - Test Db and guidance: Damp heat, cyclic (12 + 12 hour cycle)	EN 60068-2-30[1)]	1999
IEC 60529	1989	Degrees of protection provided by enclosures (IP Code)	EN 60529 + corr. May	1991 1993
IEC 60695-2-1/1	1994	Fire hazard testing Part 2: Test methods Section 1/sheet 1: Glow-wire end-product test and guidance	EN 60695-2-1/1[2)]	1996
IEC 60950 (mod) + corr. January	1999 2000	Safety of information technology equipment	EN 60950	2000
IEC 60999-1	1999	Connecting devices - Electrical copper conductors - Safety requirements for screw-type and screwless-type clamping units Part 1: General requirements and particular requirements for clamping units for conductors from 0,2 mm² up to 35 mm² (included)	EN 60999-1	2000

1) EN 60068-2-30 includes A1:1985 to IEC 60068-2-30.

2) EN 60695-2-1/1 is superseded by EN 60695-2-11:2001, which is based on IEC 60695-2-11:2000.

Publication	Year	Title	EN/HD	Year
IEC 61000-4-5	1995	Electromagnetic compatibility (EMC) Part 4-5: Testing and measurement techniques - Surge immunity test	EN 61000-4-5	1995
IEC 61083-1 (mod)	1991	Digital recorders for measurements in high-voltage impulse tests Part 1: Requirements for digital recorders	EN 61083-1	1993
IEC 61180-1	1992	High-voltage test techniques for low-voltage equipment Part 1: Definitions, test and procedure requirements	EN 61180-1	1994
IEC 61643-1	1998	Surge protective devices connected to low-voltage power systems Part 1: Requirements and tests	-	-
ITU-T Recommendation K.17	1988	Tests on power-fed repeaters using solid-state devices in order to check the arrangements for protection from external interference	-	-
ITU-T Recommendation K.30	1993	Positive temperature coefficient (PTC) thermistors	-	-

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LOW VOLTAGE SURGE PROTECTIVE DEVICES –

Part 21: Surge protective devices connected to telecommunications and signalling networks – Performance requirements and testing methods

1 General

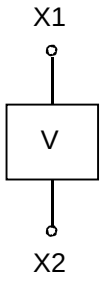
1.1 Scope

This International Standard is applicable to devices for surge protection of telecommunications and signalling networks against indirect and direct effects of lightning or other transient overvoltages.

The purpose of these SPDs is to protect modern electronic equipment connected to telecommunications and signalling networks with nominal system voltages up to 1 000 V (r.m.s.) a.c. and 1 500 V d.c.

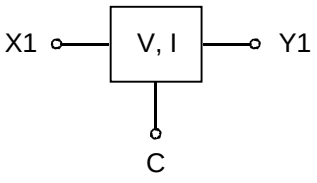
1.2 SPD configurations

The SPD configurations described in this standard are shown in figure 1. Each SPD configuration is composed of one or more voltage-limiting components and may include current-limiting components.



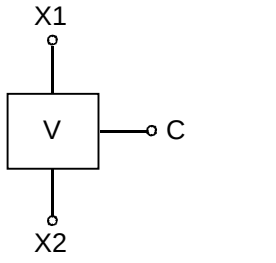
IEC 1297/2000

Figure 1a – Two-terminal SPD



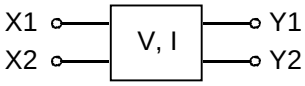
IEC 1298/2000

Figure 1b – Three-terminal SPD



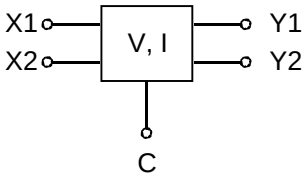
IEC 1299/2000

Figure 1c – Three-terminal SPD



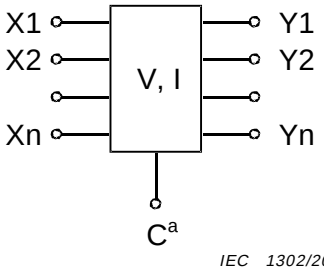
IEC 1300/2000

Figure 1d – Four-terminal SPD



IEC 1301/2000

Figure 1e – Five-terminal SPD



IEC 1302/2000

[a] The common terminal C may not be provided

Figure 1f – Multi-terminal SPD

Key

V	voltage-limiting component
V, I	voltage-limiting components or a combination of voltage-limiting and current-limiting components
X1, X2....Xn	line terminals
Y1, Y2...Yn	protected line terminals
C	common terminal

Figure 1 – SPD configurations

1.3 Use of this standard

This standard considers two basic types of SPD.

The first type of SPD contains at least one voltage-limiting component and no current-limiting component(s) in a housing. All the SPD configurations of figure 1 can be of this type. These SPDs shall satisfy the requirements of 5.1, 5.2.1 and 5.3 (see table 1). The SPDs shown in figures 1b, 1d, 1e and 1f may contain a linear component between the line terminal and the corresponding protected line terminal. These SPDs shall also satisfy the applicable requirements of 5.2.2.

The second type of SPD contains both voltage-limiting and current-limiting components in a housing. SPD configurations shown in figures 1b, 1d, 1e, and 1f are applicable for SPDs with both voltage-limiting and current-limiting components. This type of SPD shall satisfy the requirements of 5.1, 5.2.1, 5.2.2 and 5.3 (see table 1). Configurations of protective devices having only current-limiting components are covered in annex A.

SPDs may need to satisfy additional requirements depending on the application. The additional requirements are described in 5.2.3 and 5.4 (see table 1).

Subclause 5.2.3 provides transmission tests that SPDs may need to conform to, depending on their communication and signalling application. Selection of the applicable transmission tests from 5.2.3 shall be made, based on the intended application of the SPDs. Annex B provides general guidance on how to select the applicable transmission tests.

Subclause 5.4 provides the environmental requirements when the SPDs are intended only for use in uncontrolled environments as described in 4.1. SPDs shall satisfy these requirements after an agreement between the user and the manufacturer. Table 1 provides examples of what requirements different types of SPD shall satisfy.

Annex C gives the test sequence and the number of samples to be tested.

Table 1 – General SPD requirements

Type of SPD	General 5.1	Voltage-limiting 5.2.1	Current-limiting 5.2.2	Transmission 5.2.3	Mechanical 5.3	Environ-mental 5.4
SPD with only voltage-limiting function	Yes	Yes	No	No	Yes	No
SPD with both voltage-limiting and current-limiting functions	Yes	Yes	Yes	No	Yes	No
SPD with voltage-limiting function and linear component between its terminals	Yes	Yes	Yes	No	Yes	No
SPD having both voltage-limiting and current-limiting functions with enhanced transmission capabilities	Yes	Yes	Yes	Yes (select tests, see annex B)	Yes	No
SPD having only voltage-limiting function but intended for use in uncontrolled environment	Yes	Yes	No	No or Yes (select tests, see annex B)	Yes	Yes
SPD having both voltage-limiting and current-limiting functions but intended for use in uncontrolled environment	Yes	Yes	Yes	No or Yes (select tests, see annex B)	Yes	Yes

2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this part of IEC 61643. 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 61643 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 ISO and IEC maintain registers of currently valid International Standards.

IEC 60050(702):1992, *International Electrotechnical Vocabulary – Chapter 702: Oscillations, signals and related devices*

IEC 60050(726):1982, *International Electrotechnical Vocabulary – Chapter 726: Transmission lines and waveguides*

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

IEC 60068-2-30:1980, *Environmental testing – Part 2: Tests – Test Db and guidance: Damp heat, cyclic (12 + 12-hour cycle)*