SLOVENSKI STANDARD
SIST EN 60099-5:1998

01-april-1998

Prenapetostni odvodniki - 5. del: Izbira in priporočila za uporabo (IEC 60099-5:1996, spremenjen)

Surge arresters -- Part 5: Selection and application recommendations

Überspannungsableiter -- Teil 5: Anleitung für die Auswahl und die Anwendung

Parafoudres -- Partie 5: Recommandations pour le choix et l'utilisation

Ta slovenski standard je istoveten z: EN 60099-5:1996

ICS:

29.240.10	Transformatorske postaje. Prenapetostni odvodniki	Substations. Surge arresters

SIST EN 60099-5:1998 **en**

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 60099-5

October 1996

ICS 29.120.50; 29.240.10

Descriptors: Surge arresters, non-linear resistor type gapped surge arresters, gapless metal-oxide surge arresters, installation, application

English version

Surge arresters
Part 5: Selection and application recommendations
(IEC 99-5:1996, modified)

Parafoudres
Partie 5: Recommandations pour le choix et l'utilisation
(CEI 99-5:1996, modifiée)

Überspannungsableiter
Teil 5: Anleitung für die Auswahl und die Anwendung
(IEC 99-5:1996, modifiziert)

This European Standard was approved by CENELEC on 1996-07-02. 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, 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

Foreword

The text of the International Standard IEC 99-5:1996, prepared by IEC TC 37, Surge arresters, together with common modifications prepared by CENELEC Reporting Secretariat SR 37, was submitted to the Unique Acceptance Procedure and was approved by CENELEC as EN 60099-5 on 1996-07-02.

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) 1997-06-01
- latest date by which the national standards conflicting with the EN have to be withdrawn (dow) 1997-06-01

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 annexes A, B and C are informative.
Annex ZA has been added by CENELEC.

Endorsement notice

The text of the International Standard IEC 99-5:1996 was approved by CENELEC as a European Standard with agreed common modifications as given below.

COMMON MODIFICATIONS

Annex B

Replace Annex B by the following Annex:

Annex B
(informative)

Current practice

B.1 General

For the power supply systems within some countries the application of this standard may result in tables of consistently used surge arrester characteristics. For the use of this standard within such countries, tables containing these characteristics are added to this Annex B.

B.2 Typical surge arrester characteristics for the power supply systems of Germany

Tables B1 - B6 show surge arresters typical for the use in German systems. However, also other rated voltages are in use for specific systems and the protective characteristics of such arresters can be obtained by linear interpolation.

Table B1:

Typical characteristics of gapped surge arresters phase-to-earth for reasonant earthed and free neutral systems in Germany

Nominal voltage of the system	Rated voltage	Sparkover voltages		Residual voltage at nominal discharge current
		power frequency	lightning impulse max	max
kV	kV	kV	kV	kV
10	12	20 to 25	40	40
20	24	40 to 50	80	80
30	36	60 to 75	120	120
110	132	200 to 240	320	350

Table B2:

Typical characteristics of gapped surge arresters phase-to-earth for earthed neutral systems in Germany

Nominal voltage of the system	Rated voltage	Sparkover voltages			Residual voltage at nominal discharge current
		power frequency	lightning impulse max	switching impulse max	max
kV	kV	kV	kV	kV	kV
110	120	180 to 220	290	-	310
220	216	325 to 395	520	-	560
220 1)	234	350 to 430	560	-	610
380	360	≥ 540	840	880	900
380 1)	420	≥ 630	980	1050	1050

1) for generator transformers

Table B3:

Typical characteristics of gapped surge arresters neutral-to-earth in Germany

Nominal voltage of the system	Rated lightning impulse withstand voltage of the neutral-to-earth insulation	Rated voltage	Sparkover voltages power frequency	Sparkover voltages switching impulse	Residual voltage at 1 kA, 8/20
			min	max	
kV	kV	kV	kV	kV	kV
110	550	85 1)	125	220	≈ 160
	550	85 2)	105	175	≈ 210
220	550	120 1)	180	310	≈ 205
380	550	175 2)	200	380	≈ 380
	650	175 1)	260	420	≈ 380

1) Phase-to-earth arrester
2) Arrester with reduced sparkover voltages

Table B4:

Typical characteristics of metal oxide surge arresters phase-to-earth for resonant earthed or free neutral systems in Germany

Nominal voltage of the system	Continuous operating voltage 1)	Rated voltage 1)	Residual voltage at	
			nominal discharge current	switching impulse current
	min	min	max	max
kV	kV	kV	kV	kV
10	12	15	40	-
20	24	30	80	-
30	36	45	120	-
110	123	144	370	320

1) Lower values can be selected according to 3.2.1 and 3.2.2

- if the highest system voltage is lower than the highest voltage for equipment

- if amplitude and duration of the temporary overvoltages during earth fault are known and the power frequency voltage versus time characteristic of the arrester is applied.

Table B5:

Typical characteristics of metal oxide surge arresters phase-to-earth for earthed neutral systems in Germany

Nominal voltage of the system	Continuous operating voltage 1)	Rated voltage 1)	Residual voltage at	
			nominal discharge current	switching impulse current
	min	min	max	max
kV	kV	kV	kV	kV
10	8	12	35	-
20	16	24	70	-
30	24	36	105	-
110	75	126	310	260
220	160	216	530	440
220 2)	160	240	600	500
380	260	360	900	750
380 2)	260	396	1000	830

1) Lower values can be selected according to 3.2.1 and 3.2.2
- if the highest system voltage is lower than the highest voltage for equipment
- if amplitude and duration of the temporary overvoltages during earth fault are knownand the power frequency voltage versus time characteristic of the arrester is applied.

2) for generator transformers

Table B6:

Typical characteristics of metal oxide surge arresters neutral-to-earth in Germany

Nominal voltage of the system	Rated lightning impulse withstand voltage of the neutral-to-earth insulation	Continuous operating voltage 2)	Rated voltage 2)	Residual voltage at nominal discharge current	Residual voltage at switching impulse current
kV	kV	min kV	min kV	max kV	max kV
10 1)	75	Approximately 65 % of the values in table B4		80 %	-
20 1)	125				
30 1)	170				
110 1)	550	72	84	-	190
110	550	50	78	-	165
220	550	60	108	-	230
380	550	110	168	-	350
380	650	110	168	-	350

1) Resonant earthed or free neutral systems

2) For special designs for systems with nominal voltages of 110 kV and above different values for the continuous operating voltage and the rated voltage may be suitable.

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 71-1	1993	Insulation co-ordination Part 1: Definitions, principles and rules	EN 60071-1	1995
IEC 71-2	1976	Part 2: Application guide	HD 540.2 S1	1991
IEC 99-1	1991	Surge arresters Part 1: Non-linear resistor type gapped surge arresters for a.c. systems	EN 60099-1	1994
IEC 99-3	1990	Part 3: Artifical pollution testing of surge arresters	-	-
IEC 99-4	1991	Part 4: Metal-oxide surge arresters without gaps for a.c. systems	EN 60099-4	1993
IEC 507	1991	Artificial pollution tests on high-voltage insulators to be used on a.c. systems	EN 60507	1993
IEC 815	1986	Guide for the selection of insulators in respect of polluted conditions	-	-

NORME INTERNATIONALE
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99-5

Première édition
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Parafoudres –
Partie 5:
Recommandations pour le choix et l'utilisation

Surge arresters –
Part 5:
Selection and application recommendations

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Parafoudres

Partie 5: Recommandations pour le choix et l'utilisation

IEC Publication 99-5
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Surge arresters

Part 5: Selection and application recommendations

C O R R I G E N D U M 1

Page 4

AVANT-PROPOS

Ajouter le texte suivant entre le premier et le deuxi me alin a apr s la note 6):

Le texte de la pr sente norme annule et remplace la CEI 99-1A, publi e en 1965.

Page 5

FOREWORD

Insert the following text between the first and the second paragraphs after note 6):

The text of this standard cancels and replaces IEC 99-1A, published in 1965.