

Handläggande organ

Svenska Elektriska Kommissionen, SEK

Fastställt

1998-03-27

Utgåva

1

Sida

1 (1+53)

Ingår i

SEK Övers kt 37

Reg 428 04 05

SIS FASTSTÄLLER OCH UTGER SVENSK STANDARD SAMT SÄLJER NATIONELLA, EUROPEISKA OCH INTERNATIONELLA STANDARDPUBLIKATIONER ©

Avledare –

Del 5: Vägledning vid val och användning

Surge arresters –

Part 5: Selection and application recommendations

Som svensk standard gäller europastandarden EN 60099-5:1996. Den svenska standarden innehåller den officiella engelska språkversionen av EN 60099-5:1996.

Nationellt förord

Europastandarden EN 60099-5:1996

består av:

- **europastandardens ikraftsättningsdokument**, utarbetat inom CENELEC
- **IEC 60099-5, First edition, 1996 *) – Surge arresters – Part 5: Selection and application recommendations**

utarbetad inom International Electrotechnical Commission, IEC.

Tidigare utgiven svensk standard SS 428 04 02, utgåva 1, 1978, gäller ej fr o m 1998-03-27.

*) Se även bifogat Corrigendum, april 1996, till IEC 60099-5, 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.

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 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: Artificial 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	-	-

CONTENTS

Page

Clause

SECTION 1: GENERAL

1.1	Scope	9
1.2	Normative references	9
1.3	General principles for the application of surge arresters	9
1.4	General procedure for the selection of surge arresters	11
1.5	Polluted housing arrester withstand	15

SECTION 2: NON-LINEAR RESISTOR TYPE GAPPED SURGE ARRESTERS ACCORDING TO IEC 99-1

2.1	Characteristic data of gapped surge arresters	17
2.2	Selection of gapped arresters phase-to-earth	21

SECTION 3: GAPLESS METAL-OXIDE SURGE ARRESTERS ACCORDING TO IEC 99-4

3.1	Characteristic data of gapless metal-oxide surge arresters	31
3.2	Selection of gapless metal-oxide surge arresters phase-to-earth	35

SECTION 4: APPLICATION OF ARRESTERS

4.1	Principle of insulation co-ordination	47
4.2	Protection from slow-front overvoltages	47
4.3	Protection from lightning overvoltages	51

SECTION 5: SURGE ARRESTERS FOR SPECIAL APPLICATION

5.1	Surge arresters for transformer neutrals	65
5.2	Surge arresters between phases	67
5.3	Surge arresters for rotating machines	69
5.4	Further special applications of surge arresters	71
5.5	Surge arresters for abnormal service conditions	71

SECTION 6: MONITORING (SUPERVISION)

6.1	General	73
6.2	Discharge counters	73
6.3	Monitoring spark gaps	73
6.4	Device for monitoring the continuous current	73

Annexes

A	Determination of temporary overvoltages due to earth faults	75
B	Current practice	87
C	Bibliography	89

SURGE ARRESTERS –

Part 5: Selection and application recommendations –

Section 1: General

1.1 Scope

This part of IEC 99 provides recommendations for the selection and application of surge arresters to be used in three-phase systems with nominal voltages above 1 kV. It applies to non-linear resistor type gapped surge arresters as defined in IEC 99-1 and to gapless metal-oxide surge arresters as defined in IEC 99-4.

1.2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this part of IEC 99. At the time of publication, the editions indicated were valid. All normative documents are subject to revision, and parties to agreements based on this part of IEC 99 are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

IEC 71-1: 1993, *Insulation co-ordination – Part 1: Definitions, principles and rules*

IEC 71-2: 1976, *Insulation co-ordination – Part 2: Application guide*

NOTE – The third edition of this standard is presently under revision.

IEC 99-1: 1991, *Surge arresters – Part 1: Non-linear resistor type gapped surge arresters for a.c. systems*

IEC 99-3: 1990, *Surge arresters – Part 3: Artificial pollution testing of surge arresters*

NOTE – This Technical Report applies to gapped surge arresters according to IEC 99-1.

IEC 99-4: 1991, *Surge arresters – Part 4: Metal-oxide surge arresters without gaps for a.c. systems*

IEC 507: 1991, *Artificial pollution tests on high-voltage insulators to be used on a.c. systems*

IEC 815: 1986, *Guide for the selection of insulators in respect of polluted conditions*