
Prenapetostni odvodniki - 1. del: Prenapetostni odvodniki z iskrišči z nelinearnimi upori za sisteme z izmenično napetostjo (IEC 60099-1:1991)

Surge arresters - Part 1: Non-linear resistor type gapped surge arresters for a.c. systems

Überspannungsableiter - Teil 1: Überspannungsableiter mit nichtlinearen Widerständen und Funkenstrecken für Wechselspannungsnetze

Parafoudres - Partie 1: Parafoudres à résistance variable avec éclateurs pour réseaux à courant alternatif

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Ta slovenski standard je istoveten z: EN 60099-1:1994

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ICS:

29.120.50	Varovalke in druga medtokovna zaščita	Fuses and other overcurrent protection devices
29.240.10	Transformatorske postaje. Prenapetostni odvodniki	Substations. Surge arresters

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EUROPEAN STANDARD

EN 60099-1

NORME EUROPEENNE

EUROPÄISCHE NORM

May 1994

UDC 621.316.933.1:620.1

Descriptors: Surge arrester, type gapped surge arrester, non linear resistor

ENGLISH VERSION

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

Parafoudres
 Partie 1: Parafoudres à
 résistance variable avec
 éclateurs pour réseaux à courant
 alternatif
 (CEI 99-1:1991)

Überspannungsableiter
 Teil 1: Überspannungsableiter
 mit nichtlinearen Widerständen
 und Funkenstrecken für
 Wechselspannungsnetze
 (IEC 99-1:1991)

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This European Standard was approved by CENELEC on 1993-12-08. 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 CENELEC questionnaire procedure, performed for finding out whether or not the International Standard IEC 99-1:1991 could be accepted without textual changes, has shown that no common modifications were necessary for the acceptance as European Standard.

The reference document was submitted to the CENELEC members for formal vote and was approved by CENELEC as EN 60099-1 on 8 December 1993.

NOTE: Finland, Norway and Switzerland have no obligation to implement this European Standard.

The following dates were fixed:

- latest date of publication of an identical national standard (dop) 1994-12-01
- latest date of withdrawal of conflicting national standards (dow) 1994-12-01

For products which have complied with the relevant national standard before 1994-12-01, as shown by the manufacturer or by a certification body, this previous standard may continue to apply for production until 1999-12-01.

Annexes designated "normative" are part of the body of the standard. Annexes designated "informative" are given only for information. In this standard, annexes A and ZA are normative and annexes B, C, D and E are informative.

ENDORSEMENT NOTICE

The text of the International Standard IEC 99-1:1991 was approved by CENELEC as a European Standard without any modification.

Editorial correction of IEC 99-1:1991:

In subclause 5.4, replace the second sentence by:

Limits for maximum switching impulse sparkover voltage are specified in table 8.

ANNEX ZA (normative)

OTHER INTERNATIONAL PUBLICATIONS QUOTED IN THIS STANDARD
WITH THE REFERENCES OF THE RELEVANT 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.

NOTE : When the international publication has been modified by CENELEC common modifications, indicated by (mod), the relevant EN/HD applies.

IEC Publication	Date	Title	EN/HD	Date
-----	----	-----	-----	----
60	series	High-voltage test techniques	HD 588	series
71-2	1976	Insulation co-ordination Part 2: Application guide	HD 540.2 S1	1991
99-3	1990	Surge arresters - Part 3: Artificial pollution testing of surge arresters	-	-

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**NORME
INTERNATIONALE
INTERNATIONAL
STANDARD**

**CEI
IEC
99-1**

Troisième édition
Third edition
1991-05

Parafoudres

Partie 1:

Parafoudres à résistance variable avec
éclateurs pour réseaux à courant alternatif

ITeh STANDARD PREVIEW
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Surge arresters

<https://standards.iteh.ai/catalog/standards/sist/747457af-84a9-4d63-9c65-1991-d059/sist-en-60099-1-1998>

Part 1:

Non-linear resistor type gapped surge arresters
for a.c. systems

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International Electrotechnical Commission
Международная Электротехническая Комиссия

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

SURGE ARRESTERS

Part 1: Non-linear resistor type gapped surge arresters
for a.c. systems

FOREWORD

- 1) The formal decisions or agreements of the IEC on technical matters, prepared by Technical Committees on which all the National Committees having a special interest therein are represented, express, as nearly as possible, an international consensus of opinion on the subjects dealt with.
- 2) They have the form of recommendations for international use and they are accepted by the National Committees in that sense.
- 3) In order to promote international unification, the IEC expresses the wish that all National Committees should adopt the text of the IEC recommendation for their national rules in so far as national conditions will permit. Any divergence between the IEC recommendation and the corresponding national rules should, as far as possible, be clearly indicated in the latter.

iTeh STANDARD PREVIEW

This part of International Standard IEC 99 has been prepared by IEC Technical Committee No. 37: Surge arresters.

It forms the third edition of IEC 99-1 and supersedes the second edition issued in 1970.

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

Six Months' Rule	Reports on Voting
37(BC)23 and 23A	37(BC)28
37(BC)34	37(BC)36
37(BC)35	37(BC)37
37(BC)39	37(BC)42
37(BC)40	37(BC)43
37(BC)41	37(BC)44

Full information on the voting for the approval of this part can be found in the Voting Reports indicated in the above table.

Annex A forms an integral part of this part of IEC 99-1. Annexes B, C, D, and E are for information only.

INTRODUCTION

The major changes to the previous edition affect the following subjects:

- measurement of residual voltage;
- operating-duty test;
- pressure-relief test;
- standardized sparkover and residual voltages;
- addition of annex for information to be given on enquiries and tenders.

The changes introduced are limited to the agreed upon subjects. Additional work was not considered due to the changing technology and the present limited use of gapped surge arresters.

Appendix D of the second addition of this standard has been deleted and issued as a separate Report, IEC 99-3.

The present developing gapless surge arresters using metal oxide resistors will be the subject of the future IEC 99-4.

An application guide is under revision and will be published as IEC 99-5. It will supersede IEC 99-1A.

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SURGE ARRESTERS

Part 1: Non-linear resistor type gapped surge arresters for a.c. systems

SECTION 1: GENERAL

1.1 Scope

This part of International Standard IEC 99 applies to surge protective devices designed for repeated operation to limit voltage surges on a.c. power circuits and to interrupt power-follow current. In particular, it applies to surge arresters consisting of single or multiple spark gaps in series with one or more non-linear resistors.

1.2 Normative references

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

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IEC 60: *High-voltage test techniques* 34954d059/sist-en-60099-1-1998

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

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

SECTION 2: DEFINITIONS

For the purpose of this part, the following definitions apply:

2.1 surge arrester*: A device designed to protect electrical apparatus from high transient voltage and to limit the duration and frequently the amplitude of follow-current. The term "surge arrester" includes any external series gap which is essential for the proper functioning of the device as installed for service, regardless of whether or not it is supplied as an integral part of the device.

NOTE - Surge arresters are usually connected between the electrical conductors of a network and earth although they may sometimes be connected across the windings of apparatus or between electrical conductors.

* This type of equipment may be called "surge diverter" in some countries.

2.2 non-linear resistor type gapped arrester: An arrester having a single or a multiple spark-gap connected in series with one or more non-linear resistors.

2.3 series gap of an arrester: An intentional gap or gaps between spaced electrodes in series with the non-linear series resistor or resistors of the arrester.

2.4 non-linear series resistor of an arrester: The part of the surge arrester which, by its non-linear voltage-current characteristics, acts as a low resistance to the flow of high discharge currents thus limiting the voltage across the arrester terminals, and as a high resistance at normal power-frequency voltage thus limiting the magnitude of follow-current.

2.5 section of an arrester: A complete, suitably housed part of an arrester including series gaps and non-linear series resistors in such a proportion as is necessary to represent the behaviour of a complete arrester with respect to a particular test.

2.6 unit of an arrester: A completely housed part of an arrester which may be connected in series with other units to construct an arrester of higher voltage rating. A unit of an arrester is not necessarily a section of an arrester.

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2.7 pressure-relief device of an arrester: A means for relieving internal pressure in an arrester and preventing explosive shattering of the housing following prolonged passage of follow-current or internal flashover of the arrester.

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2.8 rated voltage of an arrester: The designated maximum permissible r.m.s. value of power-frequency voltage between its terminals at which it is designated to operate correctly. This voltage may be applied to the arrester continuously without changing its operating characteristics.

2.9 rated frequency of an arrester: The frequency of the power system on which the arrester is designed to be used.

2.10 disruptive discharge: The phenomena associated with the failure of insulation under electrical stress which include a collapse of voltage and the passage of current; the term applies to electrical breakdown in solid, liquid and gaseous dielectrics and combinations of these.

NOTE - A disruptive discharge in a solid dielectric produces permanent loss of electrical strength; in a liquid or gaseous dielectric the loss may be only temporary.

2.11 puncture: A disruptive discharge through a solid.

2.12 flashover: A disruptive discharge over a solid surface.

2.13 sparkover of an arrester: A disruptive discharge between the electrodes of the gaps of an arrester.