SVENSK STANDARD SS-EN 60099-5

Fastställd	Utgåva	Sida	Ansvarig kommitté
2013-10-09	2	1 (1+146)	SEK TK 37

Avledare –
Del 5: Vägledning vid val och användning

Surge arresters –
Part 5: Selection and application recommendations

Som svensk standard gäller europastandarden EN 60099-5:2013. Den svenska standarden innehåller den officiella engelska språkversionen av EN 60099-5:2013.

Nationellt förord

Europastandarden EN 60099-5:2013

består av:

– **europastandardens ikraftsättningsdokument,** utarbetat inom CENELEC
– **IEC 60099-5, Second edition, 2013 - Surge arresters - Part 5: Selection and application recommendations**

utarbetad inom International Electrotechnical Commission, IEC.

Tidigare fastställd svensk standard SS-EN 60099-5, utgåva 1, 1998 och SS-EN 60099-5/A1, utgåva 1, 2000, gäller ej fr o m 2016-06-26.

ICS 29.120.50; 29.240.10

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EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 60099-5

August 2013

ICS 29.120.50; 29.240.10

Supersedes EN 60099-5:1996 + A1:1999

English version

Surge arresters -
Part 5: Selection and application recommendations
(IEC 60099-5:2013)

Parafoudres -
Partie 5: Recommandations pour le choix et l'utilisation
(CEI 60099-5:2013)

Überspannungsableiter -
Teil 5: Anleitung für die Auswahl und die Anwendung
(IEC 60099-5:2013)

CENELEC

European Committee for Electrotechnical Standardization
Comité Européen de Normalisation Electrotechnique
Europäisches Komitee für Elektrotechnische Normung

Management Centre: Avenue Marnix 17, B - 1000 Brussels

Ref. No. EN 60099-5:2013 E

SEK Svensk Elstandard

Foreword

The text of document 37/405/FDIS, future edition 2 of IEC 60099-5, prepared by IEC/TC 37 "Surge arresters" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN 60099-5:2013.

The following dates are fixed:

• latest date by which the document has to be implemented at national level by publication of an identical national standard or by endorsement	(dop)	2014-03-26
• latest date by which the national standards conflicting with the document have to be withdrawn	(dow)	2016-06-26

This document supersedes EN 60099-5:1996 + A1:1999.

EN 60099-5:2013 includes the following significant technical changes with respect to EN 60099-5:1996 + A1:1999:

a) Expanded discussion of different types of arresters and their application, including additions of discussion on
   - transmission of line arresters,
   - arresters for shunt capacitor switching,
   - arresters for series capacitor protection,
   - application of arresters between phases,
   - connecting arresters in parallel.

b) Addition of section on asset management, including
   - managing surge arresters in the power grid,
   - arrester maintenance,
   - significantly expanded discussion of performance diagnostic tools,
   - end-of-life considerations.

c) New annexes dealing with
   - arrester modelling for system studies,
   - example of data needed for specifying arresters.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CENELEC [and/or CEN] shall not be held responsible for identifying any or all such patent rights.

Endorsement notice

The text of the International Standard IEC 60099-5:2013 was approved by CENELEC as a European Standard without any modification.

Annex ZA
(normative)

Normative references to international publications with their corresponding European publications

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

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 60071-1	2006	Insulation co-ordination - Part 1: Definitions, principles and rules	EN 60071-1	2006
IEC 60071-2	1996	Insulation co-ordination - Part 2: Application guide	EN 60071-2	1997
IEC/TR 60071-4	-	Insulation co-ordination - Part 4: Computational guide to insulation co-ordination and modelling of electrical networks	-	-
IEC 60099-4 (mod) + A1 + A2	2004 2006 2009	Surge arresters - Part 4: Metal-oxide surge arresters without gaps for a.c. systems	EN 60099-4 + A1 + A2	2004 2006 2009
IEC 60099-6	2002	Surge arresters - Part 6: Surge arresters containing both series and parallel gapped structures - Rated 52 kV and less	-	-
IEC 60099-8	2011	Surge arresters - Part 8: Metal-oxide surge arresters with external series gap (EGLA) for overhead transmission and distribution lines of a.c. systems above 1 kV	EN 60099-8	2011
IEC 60507	-	Artificial pollution tests on high-voltage insulators to be used on a.c. systems	EN 60507	-
IEC/TS 60815-1	-	Selection and dimensioning of high-voltage insulators intended for use in polluted conditions - Part 1: Definitions, information and general principles	-	-
IEC/TS 60815-2	-	Selection and dimensioning of high-voltage insulators intended for use in polluted conditions - Part 2: Ceramic and glass insulators for a.c. systems	-	-
IEC/TS 60815-3	-	Selection and dimensioning of high-voltage insulators intended for use in polluted conditions - Part 3: Polymer insulators for a.c. systems	-	-
IEC 62271-1	-	High-voltage switchgear and controlgear - Part 1: Common specifications	EN 62271-1	-

Publication	Year	Title	EN/HD	Year
IEC 62271-200	-	High-voltage switchgear and controlgear - Part 200: AC metal-enclosed switchgear and controlgear for rated voltages above 1 kV and up to and including 52 kV	EN 62271-200	-
IEC 62271-203	-	High-voltage switchgear and controlgear - Part 203: Gas-insulated metal-enclosed switchgear for rated voltages above 52 kV	EN 62271-203	-

CONTENTS

SURGE ARRESTERS –

Part 5: Selection and application recommendations

1 Scope

This part of IEC 60099 is not a mandatory standard but provides information, guidance, and 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 gapless metal-oxide surge arresters as defined in IEC 60099-4, to surge arresters containing both series and parallel gapped structure – rated 52 kV and less as defined in IEC 60099-6 and metal-oxide surge arresters with external series gap for overhead transmission and distribution lines (EGLA) as defined in IEC 60099-8. In Annex H, some aspects regarding the old type of SiC gapped arresters are discussed.

The principle of insulation coordination for an electricity system is given in IEC 60071 and IEC 60071-2 standards. Basically the insulation coordination process is a risk management aiming to ensure the safe, reliable and economic design and operation of high voltage electricity networks and substations. The use of surge arrester helps to achieve a system and equipment insulation level and still maintaining an acceptable risk and the best economic of scale.

The introduction of analytical modelling and simulation of power system transients further optimise the equipment insulation level. The selection of surge arresters has become more and more important in the power system design and operation. It is worthwhile to note that the reliability of the power system and equipment is dependent on the safety margin adopted by the user in the design and selection of the equipments and surge arresters.

Surge arrester residual voltage is a major parameter of which most users have paid a lot of attention to when selecting the type and rating. The typical maximum surge arresters residual voltage are given in Annex F. It is likely, however, that for some systems, or in some countries, the system reliability requirements and design are sufficiently uniform that the recommendations of the present standard may lead to the definition of narrow ranges of arresters. The user of surge arresters will, in that case, not be required to apply the whole process introduced here to any new installation and the selection of characteristics resulting from prior practice may be continued.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

IEC 60071-1:2006, *Insulation coordination – Part 1: Definitions, principles and rules*

IEC 60071-2:1996, *Insulation coordination – Part 2: Application guide*

IEC/TR 60071-4, *Insulation coordination – Part 4: Computational guide to insulation coordination and modelling of electrical networks*

IEC 60099-4:2009, *Surge arresters – Part 4: Metal-oxide surge arresters without gaps for a.c. systems*

IEC 60099-6:2002, *Surge arresters – Part 6: Surge arresters containing both series and parallel gapped structures – Rated 52 kV and less*

IEC 60099-8:2011, *Surge arresters – Part 8: Metal-oxide surge arresters with external series gap (EGLA) for overhead transmission and distribution lines of a.c. systems above 1 kV*

IEC 60507, *Artificial pollution tests on high-voltage insulators to be used on a.c. systems*

IEC/TS 60815-1, *Selection and dimensioning of high-voltage insulators intended for use in polluted conditions – Part 1: Definitions, information and general principles*

IEC/TS 60815-2, *Selection and dimensioning of high-voltage insulators intended for use in polluted conditions – Part 2: Ceramic and glass insulators for a.c. systems*

IEC/TS 60815-3, *Selection and dimensioning of high-voltage insulators intended for use in polluted conditions – Part 3: Polymer insulators for a.c. systems*

IEC 62271-1, *High-voltage switchgear and controlgear – Part 1: Common specifications*

IEC 62271-200, *High-voltage switchgear and controlgear – Part 200: AC metal-enclosed switchgear and controlgear for rated voltages above 1 kV and up to and including 52 kV*

IEC 62271-203, *High-voltage switchgear and controlgear – Part 203: Gas-insulated metal-enclosed switchgear for rated voltages above 52 kV*