



# SLOVENSKI STANDARD

## SIST EN 60099-9:2014

01-november-2014

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**Prenapetostni odvodniki - 9. del: Kovinskooksidni prenapetostni odvodniki brez iskrišč za enosmerne visokonapetostne pretvorniške postaje (IEC 60099-9:2014)**

Surge arresters - Part 9: Metal-oxide surge arresters without gaps for HVDC converter stations

**iTeh STANDARD PREVIEW**  
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Ta slovenski standard je istoveten z: **SIST EN 60099-9:2014** **EN 60099-9:2014**  
<https://standards.iteh.ai/catalog/standards/sist/c506aac6-4d25-428c-bc37-40dae5dbefb9/sist-en-60099-9-2014>

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**ICS:**

29.240.10	Transformatorske postaje. Prenapetostni odvodniki	Substations. Surge arresters
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**SIST EN 60099-9:2014**

**en**

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EUROPEAN STANDARD  
NORME EUROPÉENNE  
EUROPÄISCHE NORM

**EN 60099-9**

September 2014

ICS 29.240.10; 29.120.50

English Version

**Surge arresters - Part 9: Metal-oxide surge arresters without  
gaps for HVDC converter stations  
(IEC 60099-9:2014)**

Parafoudres - Partie 9: Parafoudres à oxyde métallique  
sans éclateur pour postes de conversion CCHT  
(CEI 60099-9:2014)

Überspannungsableiter - Teil 9: Metalloxidableiter ohne  
Funkenstrecken für HGÜ-Stromrichterstationen  
(IEC 60099-9:2014)

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Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN-CENELEC Management Centre 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 CEN-CENELEC Management Centre has the same status as the official versions.

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

**CEN-CENELEC Management Centre: Avenue Marnix 17, B-1000 Brussels**

## Foreword

The text of document 37/417/FDIS, future edition 1 of IEC 60099-9, prepared by IEC/TC 37 "Surge arresters" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN 60099-9:2014.

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) 2015-05-01
- latest date by which the national standards conflicting with the document have to be withdrawn (dow) 2017-07-31

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The text of the International Standard IEC 60099-9:2014 was approved by CENELEC as a European Standard without any modification.

In the official version, for Bibliography, the following notes have to be added for the standards indicated:

IEC 60071-1	NOTE	Harmonized as EN 60071-1.
IEC 60143-1	NOTE	Harmonized as EN 60143-1.
IEC 60633:1998	NOTE	Harmonized as EN 60633:1999 (not modified).
IEC 60507	NOTE	Harmonized as EN 60507.
IEC 62271-1:2007	NOTE	Harmonized as EN 62271-1:2008 (not modified).
ISO 4892-1	NOTE	Harmonized as EN ISO 4892-1.
ISO 4892-2	NOTE	Harmonized as EN ISO 4892-2.
ISO 4892-3	NOTE	Harmonized as EN ISO 4892-3.

## 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 1 When an International Publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

NOTE 2 Up-to-date information on the latest versions of the European Standards listed in this annex is available here: [www.cenelec.eu](http://www.cenelec.eu).

Publication	Year	Title	EN/HD	Year
IEC 60060-1	-	High-voltage test techniques - Part 1: General definitions and test requirements	EN 60060-1	-
IEC 60060-2	-	High-voltage test techniques - Part 2: Measuring systems	EN 60060-2	-
IEC 60068-2-11	1981	Environmental testing - Part 2: Tests - Test Ka: Salt mist	EN 60068-2-11	1999
IEC 60068-2-14	-	Environmental testing - Part 2-14: Tests - Test N: Change of temperature	EN 60068-2-14	-
IEC 60068-2-17	-	Environmental testing - Part 2: Tests - Test Q: Sealing	EN 60068-2-17	-
IEC 60071-2	1996	Insulation co-ordination - Part 2: Application guide	EN 60071-2	1997
IEC 60099-4 (mod)	2004	Surge arresters - Part 4: Metal-oxide surge arresters without gaps for a.c. systems	EN 60099-4	2004
IEC 60143-2	-	Series capacitors for power systems - Part 2: Protective equipment for series capacitor banks	EN 60143-2	-
IEC 60270	-	High-voltage test techniques - Partial discharge measurements	EN 60270	-
IEC 60721-3-2	-	Classification of environmental conditions - Part 3: Classification of groups of environmental parameters and their severities - Section 2: Transportation	EN 60721-3-2	-
IEC 62217	-	Polymeric HV insulators for indoor and outdoor use - General definitions, test methods and acceptance criteria	EN 62217	-

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 62271-200	2011	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	2012
IEC 62271-203	2011	High-voltage switchgear and controlgear - Part 203: Gas-insulated metal-enclosed switchgear for rated voltages above 52 kV	EN 62271-203	2012
IEC/TS 60071-5	2002	Insulation co-ordination - Part 5: Procedures for high-voltage direct current (HVDC) converter stations	-	-
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	-	-
CISPR 16-1-1	-	Specification for radio disturbance and immunity measuring apparatus and methods - Part 1-1: Radio disturbance and immunity measuring apparatus - Measuring apparatus	EN 55016-1-1	-
CISPR/TR 18-2	-	Radio interference characteristics of overhead power lines and high-voltage equipment - Part 2: Methods of measurement and procedure for determining limits	-	-

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IEC 60099-9

Edition 1.0 2014-06

# INTERNATIONAL STANDARD

## NORME INTERNATIONALE



**Surge arresters – iTeh STANDARD PREVIEW**  
**Part 9: Metal-oxide surge arresters without gaps for HVDC converter stations**  
 (standards.iteh.ai)

**Parafoudres –**  
**Partie 9: Parafoudres à oxyde métallique sans éclateur pour postes de**  
**conversion CCHT**

INTERNATIONAL  
ELECTROTECHNICAL  
COMMISSION

COMMISSION  
ELECTROTECHNIQUE  
INTERNATIONALE

PRICE CODE  
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**XD**

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## CONTENTS

FOREWORD.....	7
1 Scope.....	9
2 Normative references .....	9
3 Terms and definitions .....	10
4 Typical HVDC converter station schemes, arrester types, locations and operating voltage .....	19
5 Identification and classification .....	24
5.1 Arrester identification .....	24
5.2 Arrester classification .....	25
6 Service conditions .....	25
6.1 Normal service conditions .....	25
6.2 Abnormal service conditions .....	25
7 Requirements .....	26
7.1 Insulation withstand of the arrester housing .....	26
7.2 Reference voltage.....	26
7.3 Residual voltage .....	26
7.4 Internal partial discharge .....	27
7.5 Seal leak rate.....	27
7.6 Current distribution in a multi-column arrester and between matched arresters .....	27
7.7 Long term stability under continuous operating voltage .....	27
7.8 Repetitive charge transfer withstand .....	27
7.9 Thermal energy capability .....	27
7.10 Short-circuit performance.....	28
7.11 Requirements on internal grading components.....	28
7.12 Mechanical loads .....	28
7.12.1 General .....	28
7.12.2 Bending moment.....	28
7.12.3 Resistance against environmental stresses .....	28
7.12.4 Insulating base .....	28
7.12.5 Mean value of breaking load (MBL).....	29
7.13 Electromagnetic compatibility.....	29
7.14 End of life .....	29
8 General testing procedure .....	29
8.1 Measuring equipment and accuracy.....	29
8.2 Reference voltage measurements .....	29
8.3 Test samples .....	29
8.3.1 General .....	29
8.3.2 Arrester section requirements.....	30
9 Type tests (design tests) .....	31
9.1 General.....	31
9.2 Insulation withstand test on the arrester housing.....	32
9.2.1 General .....	32
9.2.2 Tests on individual unit housings .....	32
9.2.3 Tests on complete arrester housing assemblies.....	32



9.2.4	Ambient air conditions during tests .....	32
9.2.5	Wet test procedure .....	33
9.2.6	Lightning impulse voltage test.....	33
9.2.7	Switching impulse voltage test.....	33
9.2.8	Power-frequency voltage test.....	34
9.3	Short-circuit tests .....	34
9.4	Internal partial discharge tests .....	35
9.5	Test of the bending moment.....	36
9.5.1	Test on porcelain-housed arresters.....	36
9.5.2	Test on polymer-housed arresters .....	37
9.6	Environmental tests .....	43
9.6.1	General .....	43
9.6.2	Overview .....	43
9.6.3	Sample preparation .....	44
9.6.4	Test procedure .....	44
9.6.5	Test evaluation .....	44
9.7	Weather ageing test.....	44
9.7.1	General .....	44
9.7.2	Test specimens .....	44
9.7.3	Test procedure .....	44
9.7.4	Evaluation of the test.....	45
9.8	Seal leak rate test.....	46
9.8.1	General .....	46
9.8.2	Overview .....	46
9.8.3	Sample preparation .....	46
9.8.4	Test procedure .....	46
9.8.5	Test evaluation .....	46
9.9	Radio interference voltage (RIV) test .....	46
9.10	Residual voltage test .....	48
9.10.1	General .....	48
9.10.2	Steep current impulse residual voltage test.....	49
9.10.3	Lightning impulse residual voltage test .....	49
9.10.4	Switching impulse residual voltage test.....	50
9.11	Test to verify long term stability under continuous operating voltage .....	50
9.11.1	General .....	50
9.11.2	Test procedure for arresters subjected to voltage reversal.....	51
9.11.3	Test procedure for arresters not subjected to voltage reversal .....	53
9.12	Test to verify the repetitive charge transfer rating, $Q_{rs}$ .....	54
9.12.1	General .....	54
9.12.2	Test procedure .....	55
9.12.3	Test evaluation .....	55
9.12.4	Rated values of repetitive charge transfer rating, $Q_{rs}$ .....	56
9.13	Heat dissipation behaviour of test sample .....	56
9.13.1	General .....	56
9.13.2	Arrester section requirements.....	56
9.13.3	Procedure to verify thermal equivalency between arrester and arrester section.....	56
9.14	Test to verify the thermal energy rating, $W_{th}$ .....	57
9.14.1	General .....	57

9.14.2	Arrester section requirements .....	57
9.14.3	Test procedure .....	57
9.15	Test to verify the dielectric withstand of internal components .....	58
9.15.1	General .....	58
9.15.2	Test procedure .....	59
9.15.3	Test evaluation .....	59
9.16	Test of internal grading components .....	59
9.16.1	Test to verify long term stability under continuous operating voltage .....	59
9.16.2	Thermal cyclic test .....	60
10	Routine tests and acceptance test .....	61
10.1	Routine tests .....	61
10.2	Acceptance tests .....	62
10.2.1	Standard acceptance tests .....	62
10.2.2	Special thermal stability test .....	62
11	Test requirements on different types of arresters .....	62
11.1	General .....	62
11.2	Valve arrester (V) .....	62
11.2.1	General .....	62
11.2.2	Continuous operating voltage .....	62
11.2.3	Equivalent continuous operating voltage .....	63
11.2.4	Type tests .....	64
11.2.5	Routine and acceptance tests .....	65
11.3	Bridge arrester and HV and LV converter unit arresters (B, CH, CL) .....	65
11.3.1	Continuous operating voltage .....	65
11.3.2	Equivalent continuous operating voltage .....	66
11.3.3	Type tests .....	66
11.3.4	Routine and acceptance tests .....	66
11.4	Converter unit arrester (C) .....	66
11.4.1	General .....	66
11.4.2	Continuous operating voltage .....	66
11.4.3	Equivalent continuous operating voltage .....	66
11.4.4	Type tests .....	67
11.4.5	Routine and acceptance tests .....	67
11.5	Mid-point d.c. bus arrester, mid-point bridge arresters and arrester between converters (M, MH, ML, CM) .....	67
11.5.1	Continuous operating voltage .....	67
11.5.2	Equivalent continuous operating voltage .....	67
11.5.3	Type tests .....	68
11.5.4	Routine and acceptance tests .....	68
11.6	Converter unit d.c. bus arrester (CB) .....	68
11.6.1	Continuous operating voltage .....	68
11.6.2	Equivalent continuous operating voltage .....	68
11.6.3	Type tests .....	69
11.6.4	Routine and acceptance tests .....	69
11.7	DC bus and d.c. line/cable arrester (DB, DL/DC) .....	69
11.7.1	General .....	69
11.7.2	Continuous operating voltage .....	69
11.7.3	Equivalent continuous operating voltage .....	69
11.7.4	Type tests .....	69

11.7.5	Routine and acceptance tests .....	70
11.8	Neutral bus arresters (EB, E1, E) .....	71
11.8.1	Continuous operating voltage .....	71
11.8.2	Equivalent continuous operating voltage .....	71
11.8.3	Type tests .....	71
11.8.4	Routine and acceptance tests .....	72
11.9	DC and AC filter arresters (FA, FD) .....	72
11.9.1	Continuous operating voltage .....	72
11.9.2	Equivalent continuous operating voltage .....	72
11.9.3	Type tests .....	74
11.9.4	Routine and acceptance tests .....	74
11.10	Electrode line and metallic return arresters (EL, EM) .....	74
11.10.1	Continuous operating voltage .....	74
11.10.2	Equivalent continuous operating voltage .....	74
11.10.3	Type tests .....	74
11.10.4	Routine and acceptance tests .....	74
11.11	Smoothing reactor arrester (DR) .....	74
11.11.1	General .....	74
11.11.2	Continuous operating voltage .....	74
11.11.3	Equivalent continuous operating voltage .....	74
11.11.4	Type tests .....	74
11.11.5	Routine and acceptance tests .....	74
11.12	Capacitor arrester (CC) .....	75
11.12.1	General .....	75
11.12.2	Continuous operating voltage .....	75
11.12.3	Equivalent continuous operating voltage .....	75
11.12.4	Type tests .....	75
11.12.5	Routine and acceptance tests .....	75
11.13	Transformer valve winding arrester (T) .....	75
11.13.1	General .....	75
11.13.2	Continuous operating voltage .....	76
11.13.3	Equivalent continuous operating voltage .....	76
11.13.4	Type tests .....	76
11.13.5	Routine and acceptance tests .....	76
Annex A (normative)	Test to verify thermal equivalency between complete arrester and arrester section .....	77
Annex B (normative)	Determination of the start temperature in the thermal recovery test .....	79
Annex C (normative)	Mechanical considerations .....	80
C.1	Test of bending moment .....	80
C.2	Seismic test .....	81
C.3	Definition of mechanical loads .....	81
C.4	Definition of seal leak rate .....	83
C.5	Calculation of wind-bending-moment .....	83
C.6	Procedures of tests of bending moment for porcelain and polymer-housed arresters .....	84
Annex D (informative)	Different circuit configurations .....	86
Bibliography	.....	88

Figure 1 – Single line diagram of typical converter station with two 12-pulse converter bridges per pole.....	20
Figure 2 – Single line diagram of typical converter station with one 12-pulse converter bridge per pole.....	21
Figure 3 – Single line diagram of typical capacitor commutated converter (CCC) pole with two 12-pulse converters in series.....	22
Figure 4 – Typical continuous operating voltages for different arresters – low-frequency modelling (location as per Figures 1 to 3, fundamental frequency 50 Hz).....	23
Figure 5 – Typical continuous operating voltages for different arresters – high-frequency modelling (location as per Figures 1 to 3, fundamental frequency 50 Hz).....	24
Figure 6 – Thermomechanical test .....	40
Figure 7 – Example of the test arrangement for the thermomechanical test and direction of the cantilever load .....	41
Figure 8 – Water immersion .....	42
Figure 9 – Test cycle for accelerated ageing test with polarity reversals, method a).....	52
Figure 10 – Operating voltage of a valve arrester (V) (rectifier operation) and definition of PCOV and CCOV .....	63
Figure 11 – Operating voltage of a bridge arrester and definition of DCOV, PCOV and CCOV .....	65
Figure 12 – Plot showing the relative duration of voltage above certain amplitudes.....	73
Figure C.1 – Bending moment – multi-unit surge arrester .....	80
Figure C.2 – Definitions of mechanical loads .....	82
Figure C.3 – Surge arrester unit.....	83
Figure C.4 – Surge-arrester dimensions.....	84
Figure C.5 – Flow chart of bending moment test procedures.....	85
Figure D.1 – Single line diagram of CSCC converter station with two 12-pulse converters in series .....	86
Figure D.2 – Single line diagram of back-to-back converter station with two 12-pulse converters in series .....	87
Table 1 – Summary of type tests – 1 .....	64
Table 2 – Summary of type tests – 2 .....	71

## INTERNATIONAL ELECTROTECHNICAL COMMISSION

**SURGE ARRESTERS –****Part 9: Metal-oxide surge arresters without  
gaps for HVDC converter stations****FOREWORD**

- 1) The International Electrotechnical Commission (IEC) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of IEC is to promote international co-operation on all questions concerning standardization in the electrical and electronic fields. To this end and in addition to other activities, IEC publishes International Standards, Technical Specifications, Technical Reports, Publicly Available Specifications (PAS) and Guides (hereafter referred to as "IEC Publication(s)"). Their preparation is entrusted to technical committees; any IEC National Committee interested in the subject dealt with may participate in this preparatory work. International, governmental and non-governmental organizations liaising with the IEC also participate in this preparation. IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.
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International Standard 60099-9 has been prepared by IEC technical committee 37: Surge arresters.

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

FDIS	Report on voting
37/417/FDIS	37/422/RVD

Full information on the voting for the approval of this standard can be found in the report on voting indicated in the above table.

This publication has been drafted in accordance with the ISO/IEC Directives, Part 2.

A list of all parts in the IEC 60099 series, published under the general title *Surge arresters*, can be found on the IEC website.

The committee has decided that the contents of this publication will remain unchanged until the stability date indicated on the IEC web site under "<http://webstore.iec.ch>" in the data related to the specific publication. At this date, the publication will be

- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

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## SURGE ARRESTERS –

### Part 9: Metal-oxide surge arresters without gaps for HVDC converter stations

#### 1 Scope

This part of IEC 60099 applies to non-linear metal-oxide resistor type surge arresters without spark gaps designed to limit overvoltages in HVDC converter stations of two terminal, multiterminal and back-to-back type up to and including an operating voltage of 1 100 kV. The standard applies in general to porcelain-housed and polymer-housed type arresters but also to gas-insulated metal enclosed arresters (GIS-arresters) solely used as d.c. bus and d.c. line/cable arresters. Arresters for voltage source converters are not covered. Arresters applied on the a.c. systems at the converter station and subjected to power-frequency voltage of 50 or 60 Hz principally without harmonics are tested as per IEC 60099-4. The arresters on a.c.-filters are tested according to this standard.

#### 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 60060-1, *High-voltage test techniques – Part 1: General definitions and test requirements*  
<https://standards.iteh.ai/catalog/standards/sist/e30baeac-fd25-428c-bc37-40dae5dbefb9/sist-en-60099-9-2014>
- IEC 60060-2, *High-voltage test techniques – Part 2: Measuring systems*
- IEC 60068-2-11:1981, *Environmental testing – Part 2: Tests. Test Ka: Salt mist*
- IEC 60068-2-14, *Environmental testing – Part 2-14: Tests – Test N: Change of temperature*
- IEC 60068-2-17, *Basic environmental testing procedures – Part 2-17: Tests – Test Q: Sealing*
- IEC 60071-2:1996, *Insulation co-ordination – Part 2: Application guide*
- IEC TS 60071-5:2002, *Insulation co-ordination – Part 5: Procedures for high-voltage direct current (HVDC) converter stations*
- IEC 60099-4:2004, *Surge arresters – Part 4: Metal-oxide surge arresters without gaps for a.c. systems*
- IEC 60143-2, *Series capacitors for power systems – Part 2: Protective equipment for series capacitor banks*
- IEC 60270, *High-voltage test techniques – Partial discharge measurements*
- IEC 60721-3-2, *Classification of environmental conditions – Part 3: Classification of groups of environmental parameters and their severities – Section 2: Transportation*
- 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*