SVENSK STANDARD SS-EN 61881-1

Fastställd	Utgåva	Sida	Ansvarig kommitté
2011-05-04	1	1 (1+45)	SEK TK 9

Järnvägsanläggningar – Elutrustning för rälsfordon – Kondensatorer för kraftelektronik – Del 1: Papperplastkondensatorer

Railway applications – Rolling stock equipment – Capacitors for power electronics – Part 1: Paper/plastic film capacitors

Som svensk standard gäller europastandarden EN 61881-1:2011. Den svenska standarden innehåller den officiella engelska språkversionen av EN 61881-1:2011.

Nationellt förord

Europastandarden EN 61881-1:2011

består av:

– **europastandardens ikraftsättningsdokument,** utarbetat inom CENELEC
– **IEC 61881-1, First edition, 2010 - Railway applications - Rolling stock equipment - Capacitors for power electronics - Part 1: Paper/plastic film capacitors**

utarbetad inom International Electrotechnical Commission, IEC.

Tidigare fastställd svensk standard SS-EN 61881, utgåva 1, 2000, gäller ej fr o m 2014-01-02.

ICS 45.060

Denna standard är fastställd av SEK Svensk Elstandard,
som också kan lämna upplysningar om **sakinnehållet** i standarden.
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Standarder underlättar utvecklingen och höjer elsäkerheten

Det finns många fördelar med att ha gemensamma tekniska regler för bl a säkerhet, prestanda, dokumentation, utförande och skötsel av elprodukter, elanläggningar och metoder. Genom att utforma sådana standarder blir säkerhetskraven tydliga och utvecklingskostnaderna rimliga samtidigt som marknadens acceptans för produkten eller tjänsten ökar.

Många standarder inom elområdet beskriver tekniska lösningar och metoder som åstadkommer den elsäkerhet som föreskrivs av svenska myndigheter och av EU.

SEK är Sveriges röst i standardiseringsarbetet inom elområdet

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SEK samordnar svenska intressenters medverkan i SEKs tekniska kommittéer och stödjer svenska experters medverkan i internationella och europeiska projekt.

Stora delar av arbetet sker internationellt

Utformningen av standarder sker i allt väsentligt i internationellt och europeiskt samarbete. SEK är svensk nationalkommitté av International Electrotechnical Commission (IEC) och Comité Européen de Normalisation Electrotechnique (CENELEC).

Standardiseringsarbetet inom SEK är organiserat i referensgrupper bestående av ett antal tekniska kommittéer som speglar hur arbetet inom IEC och CENELEC är organiserat.

Arbetet i de tekniska kommittéerna är öppet för alla svenska organisationer, företag, institutioner, myndigheter och statliga verk. Den årliga avgiften för deltagandet och intäkter från försäljning finansierar SEKs standardiseringsverksamhet och medlemsavgift till IEC och CENELEC.

Var med och påverka!

Den som deltar i SEKs tekniska kommittéarbete har möjlighet att påverka framtida standarder och får tidig tillgång till information och dokumentation om utvecklingen inom sitt teknikområde. Arbetet och kontakterna med kollegor, kunder och konkurrenter kan gynnsamt påverka enskilda företags affärsutveckling och bidrar till deltagarnas egen kompetensutveckling.

Du som vill dra nytta av dessa möjligheter är välkommen att kontakta SEKs kansli för mer information.

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EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 61881-1

February 2011

ICS 45.060

Supersedes EN 61881:1999

English version

Railway applications - Rolling stock equipment - Capacitors for power electronics - Part 1: Paper/plastic film capacitors

(IEC 61881-1:2010)

Applications ferroviaires - Matériel roulant - Condensateurs pour électronique de puissance - Partie 1: Condensateurs papier et film plastique
(CEI 61881-1:2010)

Bahnanwendungen - Betriebsmittel auf Bahnfahrzeugen - Kondensatoren für Leistungselektronik - Teil 1: Papier-/Foliekondensatoren
(IEC 61881-1:2010)

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 61881-1:2011 E

SEK Svensk Elstandard

Foreword

The text of document 9/1405/FDIS, future edition 1 of IEC 61881-1, prepared by IEC TC 9, Electrical equipment and systems for railways, was submitted to the IEC-CENELEC parallel vote and was approved by CENELEC as EN 61881-1 on 2011-01-02.

This European Standard supersedes EN 61881:1999.

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

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)	2011-10-02
– latest date by which the national standards conflicting with the EN have to be withdrawn	(dow)	2014-01-02

Annex ZA has been added by CENELEC.

Endorsement notice

The text of the International Standard IEC 61881-1:2010 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 60077-1:1999	NOTE	Harmonized as EN 60077-1:2002 (modified).
IEC 60077-2:1999	NOTE	Harmonized as EN 60077-2:2002 (modified).
IEC 60110-1:1998	NOTE	Harmonized as EN 60110-1:1998 (not modified).
IEC 60146-1-1:2009	NOTE	Harmonized as EN 60146-1-1:2009 (not modified).
IEC 60384-14:2005	NOTE	Harmonized as EN 60384-14:2005 (not modified).
IEC 60664-1:2007	NOTE	Harmonized as EN 60664-1:2007 (not modified).
IEC 60831-1:1996	NOTE	Harmonized as EN 60831-1:1996 (not modified).
IEC 60831-2:1995	NOTE	Harmonized as EN 60831-2:1996 (not modified).
IEC 60871-1:2005	NOTE	Harmonized as EN 60871-1:2005 (not modified).
IEC 60931-1:1996	NOTE	Harmonized as EN 60931-1:1996 (not modified).
IEC 60931-2:1995	NOTE	Harmonized as EN 60931-2:1996 (not modified).
IEC 61071	NOTE	Harmonized as EN 61071.
IEC 61287-1:2005	NOTE	Harmonized as EN 61287-1:2006 (not modified).

Annex ZA
(normative)

Normative references to international publications with their corresponding European publications

The following referenced documents are indispensable for the application of this document. 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 60068-2-14	-	Environmental testing - Part 2-14: Tests - Test N: Change of temperature	EN 60068-2-14	-
IEC 60068-2-20	-	Environmental testing - Part 2-20: Tests - Test T: Test methods for solderability and resistance to soldering heat of devices with leads	EN 60068-2-20	-
IEC 60068-2-21	-	Environmental testing - Part 2-21: Tests - Test U: Robustness of terminations and integral mounting devices	EN 60068-2-21	-
IEC 60068-2-78	-	Environmental testing - Part 2-78: Tests - Test Cab: Damp heat, steady state	EN 60068-2-78	-
IEC 60269-1	-	Low-voltage fuses - Part 1: General requirements	EN 60269-1	-
IEC 60695-2-11	-	Fire hazard testing - Part 2-11: Glowing/hot-wire based test methods - Glow-wire flammability test method for end-products	EN 60695-2-11	-
IEC 60695-11-5	-	Fire hazard testing - Part 11-5: Test flames - Needle-flame test method - Apparatus, confirmatory test arrangement and guidance	EN 60695-11-5	-
IEC 60721-3-5	-	Classification of environmental conditions - Part 3: Classification of groups of environmental parameters and their severities - Section 5: Ground vehicle installations	EN 60721-3-5	-
IEC 61373	-	Railway applications - Rolling stock equipment - Shock and vibration tests	EN 61373	-
IEC 62491	-	Industrial systems, installations and equipment and industrial products - Labelling of cables and cores	EN 62491	-
IEC 62497-1	-	Railway applications - Insulation coordination - Part 1: Basic requirements - Clearances and creepage distances for all electrical and electronic equipment	-	-

CONTENTS

RAILWAY APPLICATIONS – ROLLING STOCK EQUIPMENT – CAPACITORS FOR POWER ELECTRONICS –

Part 1: Paper/plastic film capacitors

1 Scope

This part of IEC 61881 applies to capacitors for power electronics intended to be used on rolling stock.

The rated voltage of capacitors covered by this part is limited to 10 000 V.

The operating frequency of the systems in which these capacitors are used is usually up to 15 kHz, while the pulse frequencies may be up to 5 to 10 times the operating frequency.

It distinguishes between AC and DC capacitors.

They are considered as components mounted in enclosures.

NOTE This standard covers an extremely wide range of capacitor technologies for numerous applications: overvoltage protection, DC and AC filtering, switching circuits, DC energy storage, auxiliary inverters, etc.

Examples are given in Clause 9.

The following are excluded from this standard:

– capacitors for induction heat-generating plants operating at frequencies between 40 Hz and 24 000 Hz (see IEC 60110-1 and 60110-2);
– capacitors for motor applications and the like (see IEC 60252-1 and IEC 60252-2);
– capacitors to be used in circuits for blocking one or more harmonics in power supply networks;
– small AC capacitors as used for fluorescent and discharge lamps (see IEC 61048 and IEC 61049);
– capacitors for suppression of radio interference (see IEC 60384-14);
– shunt capacitors for AC power systems having a rated voltage above 1 000 V (see IEC 60871-1 and IEC 60871-2);
– shunt power capacitors of the self-healing type for AC systems having a rated voltage up to and including 1 000 V (see IEC 60831-1 and IEC 60831-2);
– shunt power capacitor of the non self-healing type for AC systems having a rated voltage up to and including 1 000 V (see IEC 60931-1 and IEC 60931-2);
– series capacitors for power systems (see IEC 60143-1, IEC 60143-2 and IEC 60143-3);
– coupling capacitors and capacitors dividers (see IEC 60358);
– capacitors for applications requiring energy storage/high current discharge such as photocopiers and lasers;
– capacitors for microwave ovens;
– capacitors for power electronics (see IEC 61071).

2 Normative references

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

IEC 60068-2-14, *Environmental testing – Part 2-14: Tests. Test N: Change of temperature*

IEC 60068-2-20, *Environmental testing – Part 2-20: Tests. Test T: Test methods for solderability and resistance to soldering heat of devices with leads*

IEC 60068-2-21, *Environmental testing – Part 2-21: Tests. Test U: Robustness of terminations and integral mounting devices*

IEC 60068-2-78, *Environmental testing – Part 2-78: Tests. Test Cab: Damp heat, steady state*

IEC 60269-1, *Low-voltage fuses – Part 1: General requirements*

IEC 60695-2-11, *Fire hazard testing – Part 2-11: Glowing/hot-wire based test methods – Glow-wire flammability test method for end-products*

IEC 60695-11-5, *Fire hazard testing – Part 11-5: Test flames – Needle-flame test method – Apparatus, confirmatory test arrangement and guidance*

IEC 60721-3-5, *Classification of environmental conditions – Part 3: Classification of groups of environmental parameters and their severities – Section 5: Ground vehicles installations*

IEC 61373, *Railway applications – Rolling stock equipment – Shock and vibration tests*

IEC 62491, *Industrial systems, installations and equipment and industrial products – Labelling of cables and cores*

IEC 62497-1, *Railway applications – Insulation coordination – Part 1: Basic requirements – Clearances and creepage distance for all electrical and electronic equipment*