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Kraftkablar med märkspänning 0,6/1 kV – Konstruktion och provning

*Power cables of rated voltage 0,6/1 kV –
Specifications for design and testing*

Som svensk standard för kraftkablar med märkspänning 0,6/1 kV gäller följande av CENELEC utarbetade harmoniseringsdokument:

HD 603 S1, HD 603 S1/A1, HD 603 S1/A2 och HD 603 S1/A3, Distribution cables of rated voltage 0,6/1 kV, part 1 och HD 603 S2^{*)}, part 3 section L, part 5 section AB, O and P. Se bilaga A.

De svenska delarna i HD 604 har utgått. Relevanta kablar som tidigare ingått i HD 604 ingår nu i HD 603.

Nationellt förord

CENELECs HD-dokument är inte allmänt tillgängliga utan utgör underlag för utgivning av nationell standard. Av praktiska skäl och med CENELECs medgivande har endast sådana delar av HD 603 som företrädesvis tillämpas i Sverige återgivits i bilaga A till denna standard. Kopior av de kompletta HD-dokumenterna, eller av utdrag ur dessa, kan beställas hos SEK Svensk Elstandard.

De kabeltyper, vars specifikationer återges i bilaga A uppfyller de fordringar som ställs i SS 436 40 00, men det åligger användaren att förvissa sig om att den valda kabeln är säker och lämplig för den avsedda användningen.

Kabelspecifikationerna i bilaga A hänvisar beträffande speciella provningsmetoder till HD 605. Den motsvarande svenska standarden är SS 424 14 19. Refererade EN är fastställda som SS-EN. SS-EN 6XXXX är normalt endast ikraftsättning av motsvarande IEC-standard.

Tidigare utgiven svensk standard SS 424 14 18, utgåva 4, 2007 och SEK TS 424 14 18-1, utgåva 1, 2021, gäller ej fr o m 2022-04-20.

^{*)} HD 603 S2 är ännu inte fastställd av CENELEC. Innehållet i bilagorna med denna referens är de bilagor som Sverige skickat till CENELEC och som kommer att finnas med i den kommande HD 603 S2.

Standarder underlättar utvecklingen och höjer elsäkerheten

Det finns många fördelar med att ha gemensamma tekniska regler för bl a mätning, säkerhet och provning och för utförande, skötsel och dokumentation av elprodukter och elanläggningar.

Genom att utforma sådana standarder blir säkerhetsfordringar 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

SEK Svensk Elstandard svarar för standardiseringen inom elområdet i Sverige och samordnar svensk medverkan i internationell och europeisk standardisering. SEK är en ideell organisation med frivilligt deltagande från svenska myndigheter, företag och organisationer som vill medverka till och påverka utformningen av tekniska regler inom elektrotekniken.

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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Bilaga A

Förteckning över de delar av CENELEC HD 603 S1:1994, HD 603 S1/A1:1997, HD 603 S1/A2:2003 och HD 603 S1/A3:2007 som ingår som bilaga A i denna tekniska specifikation.

Part 1 General requirements

Samt HD 603

Part 3 PVC insulated cables – Unarmoured

3L Cables with concentric conductor (Type 3L)

Part 5 XLPE insulated cables – Unarmoured

5AB Cables with concentric conductor (Type 5AB)

5O Cables without concentric conductor (Type 5O)

5P Cables with concentric conductor (Type 5P)

Bilaga B

Upplysning om svenska standarder som motsvarar de HD-dokument till vilka referenser lämnas i HD 603.

PART 1: GENERAL REQUIREMENTS

Replace the complete part by the following:

HD 603 S1:1994/A3:2007

DISTRIBUTION CABLES OF RATED VOLTAGE 0,6/1 KV

PART 1: GENERAL REQUIREMENTS

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REFERENCES

References are made in this Part 1 to other parts of HD 603 and to other Harmonization Documents as follows:

EN 50334	Marking by inscription for the identification of cores of electric cables
EN 60228	Conductors of insulated cables (IEC 60228)
EN 60332-1-2	Tests on electric and optical fibre cables under fire conditions - Part 1-2: Test for vertical flame propagation for a single insulated wire or cable – Procedure for 1 kW pre-mixed flame (IEC 60332-1-2)
EN 60811 (series)	Insulating and sheathing materials of electric and optical cables – Common test methods (IEC 60811 series)
HD 308	Identification of cores in cables and flexible cores
HD 605	Electric cables – Additional test methods
IEC 60287 (series)	Electric cables – Calculation of the current rating

In all cases reference to another HD or International Standard implies the latest edition of that document.

1 General

1.1 Scope

HD 603 applies to cables of rated voltage $U_0/U = 0,6/1$ kV used in underground power distribution systems mainly for public distribution, of nominal voltage not exceeding 0,6/1 kV a.c.

This part (Part 1) specifies the general requirements applicable to these cables, unless otherwise specified in the particular sections of this HD.

Test methods are specified in HD 605 and in EN 60228, EN 60332-1-2 and EN 60811.

The particular types of cables are specified in Parts 3 to 8.

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REFERENCES

References are made in Section 3-L of HD 603, to other Parts of this HD and to other Harmonisation Documents and International Standards as follows:

EN 13501-6	Fire classification of construction products and building elements – Part 6: Classification using data from reaction to fire tests on electric cables
EN 60228	Conductors of insulated cables
EN 60811 (series)	Insulating and sheathing materials of electric and optical cables – Common test methods
EN 62230	Electric cables – Spark test method
HD 308	Identification of cores in cables and flexible cords
HD 605	Electric cables – Additional test methods
IEC 60502-1	Power cables with extruded insulation and their accessories for rated voltages from 1 kV ($U_m = 1,2$ kV) up to 30 kV ($U_m = 36$ kV) – Part 1: Cables for rated voltages of 1 kV ($U_m = 1,2$ kV) and 3 kV ($U_m = 3,6$ kV)

In all cases reference to another HD or International Standard implies the latest edition of that document.

1 General

This standard specifies the construction, dimensions and test requirements of power cables with PVC insulation and with concentric conductor for rated voltage (U) of 1 kV for fixed installations. All components shall be lead free.

SECTION 5-AB - CABLES WITH CONCENTRIC CONDUCTOR (TYPE 5AB)

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	1.2 Dimensions of circular conductors	
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	1.4 Conductor resistance	
	1.5 Permissible conductor types	
	1.6 Preferred number of conductors and conductor cross-sections	
2	Insulation-----	5
	2.1 Material	
	2.2 Insulation thickness	
	2.3 Form of insulation on sector shaped conductors	
	2.4 Core identification	
3	Assembly of cores -----	5
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4	Inner covering-----	5
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5	Concentric conductor -----	6
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4	Type tests (non-electrical) -----	10
4	Annex (Tables)-----	11
5	Guide to use-----	17

REFERENCES

References are made in Section 5-AB of HD 603, to other parts of this HD and to other Harmonization Documents and International Standards as follows:

EN 13501-6	Fire classification of construction products and building elements – Part 6: Classification using data from reaction to fire tests on electric cables
EN 60228	Conductors of insulated cables
EN 60811 (series)	Insulating and sheathing materials of electric and optical cables – Common test methods
EN 62230	Electric cables – Spark test method
HD 308	Identification of cores in cables and flexible cords
HD 605	Electric cables – Additional test methods
IEC 60502-1	Power cables with extruded insulation and their accessories for rated voltages from 1 kV ($U_m = 1,2$ kV) up to 30 kV ($U_m = 36$ kV) – Part 1: Cables for rated voltages of 1 kV ($U_m = 1,2$ kV) and 3 kV ($U_m = 3,6$ kV)

In all cases reference to other HD or international standard implies the latest edition of that document

1 General

This standard specifies the construction, dimensions and test requirements of power cables with XLPE-insulation and with concentric conductor for rated voltage (U) of 1 kV for fixed installations. All components shall be halogen free.

SECTION 5-O: CABLES WITHOUT CONCENTRIC CONDUCTOR (TYPE 50)

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	1.2 Dimensions of sector-shaped conductors	
	1.4 Conductor resistance	
	1.5 Permissible conductor types	
	1.6 Preferred number of conductors and conductor cross-sections	
	2 Insulation-----	4
	2.1 Material	
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	2.3 Form of insulation on sector shaped conductors	
	2.4 Core identification	
	3 Assembly of cores-----	4
	3.1 Assembly	
	4 Inner covering-----	5
	4.1 Design	
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	5.1 Material	
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	7 Marking-----	6
	7.1 Indication of origin	
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REFERENCES

References are made in Section 5-O of HD 603, to other Parts of this HD and other Harmonisation

- | | |
|-------------------|--|
| EN 13501-6 | Fire classification of construction products and building elements – Part 6: Classification using data from reaction to fire tests on electric cables |
| EN 60228 | Conductors of insulated cables |
| EN 60754 | Test on gases evolved during combustion of materials from cables - Part 3: Detection of low level of halogen content by ion chromatography |
| EN 60811 (series) | Insulating and sheathing materials of electric and optical cables – Common test methods |
| EN 62230 | Electric cables – Spark test method |
| HD 308 | Identification of cores in cables and flexible cords |
| HD 603 | Section 5AB Cables with concentric conductor (Type 5AB) |
| HD 605 | Electric cables – Additional test methods |
| IEC 60502-1 | Power cables with extruded insulation and their accessories for rated voltages from 1 kV ($U_m = 1,2$ kV) up to 30 kV ($U_m = 36$ kV) – Part 1: Cables for rated voltages of 1 kV ($U_m = 1,2$ kV) and 3 kV ($U_m = 3,6$ kV) |

In all cases reference to other HD or International Standard implies the latest edition of that document.

1 General

This standard specifies the construction, dimensions and test requirements of power cables with XLPE-insulation and without concentric conductor for rated voltage (U) of 1 kV for fixed installations. The design with PE sheath (SE-N1XE) and the design with halogen free outer sheath (SE-N1XZ1) shall both be designed with non halogenated materials. All components shall be lead free.

SECTION 5-P: CABLES WITH CONCENTRIC CONDUCTOR (TYPE 5P)

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	1.2 Dimensions of circular conductors	
	1.3 Dimensions of sector-shaped conductors	
	1.4 Conductor resistance	
	1.5 Permissible conductor types	
	1.6 Preferred number of conductors and conductor cross-sections	
	2 Insulation-----	4
	2.1 Material	
	2.2 Insulation thickness	
	2.3 Form of insulation on sector shaped conductors	
	2.4 Core identification	
	3 Assembly of cores-----	4
	3.1 Assembly	
	4 Inner covering-----	4
	4.1 Design	
	4.2 Thickness	
	5 Concentric conductor-----	5
	5.1 Design	
	5.2 Inner layer	
	5.3 Binder wire and binder tape	
	5.4 Nominal cross-section	
	5.5 Resistance	
	6 Outer sheath-----	6
	6.1 Material	
	6.2 Colour	
	6.3 Thickness	
	7 Outer-diameter-----	6
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REFERENCES

References are made in Section 5-P of HD 603, to other parts of this HD and to other Harmonization Documents and International Standards as follows:

EN 13501-6 Fire classification of construction products and building elements – Part 6: Classification using data from reaction to fire tests on electric cables

EN 60228 Conductors of insulated cables

EN 60811 (series) Insulating and sheathing materials of electric and optical cables – Common test methods

EN 62230 Electric cables – Spark test method

HD 308 Identification of cores in cables and flexible cords

HD 605 Electric cables – Additional test methods

IEC 60502-1 Power cables with extruded insulation and their accessories for rated voltages from 1 kV ($U_m = 1,2$ kV) up to 30 kV ($U_m = 36$ kV) – Part 1: Cables for rated voltages of 1 kV ($U_m = 1,2$ kV) and 3 kV ($U_m = 3,6$ kV)

EN 13501-6 Fire classification of construction products and building elements – Part 6: Classification using data from reaction to fire tests on electric cables

In all cases reference to another HD or International Standard implies the latest edition of that document.

1 General

This standard specifies the construction, dimensions and test requirements of power cables with XLPE-insulation and with concentric conductor for rated voltage (U) of 1 kV for fixed installations. All components shall be lead free.