

INTERNATIONAL STANDARD

NORME INTERNATIONALE

Terminology for high-voltage direct current (HVDC) transmission

**Terminologie pour le transport d'énergie en courant continu à haute tension
(CCHT)**

Without
drawing



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INTERNATIONAL
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INTERNATIONAL ELECTROTECHNICAL COMMISSION

TERMINOLOGY FOR HIGH-VOLTAGE DIRECT CURRENT (HVDC) TRANSMISSION

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International Standard IEC 60633 has been prepared by subcommittee 22F: Power electronics for electrical transmission and distribution systems, of IEC technical committee 22: Power electronics.

This consolidated version of IEC 60633 consists of the second edition (1998) [documents 22F/49/FDIS and 22F/53/RVD] and its amendment 1 (2009) [documents 22F/153/CDV and 22F/163/RVC].

The technical content is therefore identical to the base edition and its amendment and has been prepared for user convenience.

It bears the edition number 2.1.

A vertical line in the margin shows where the base publication has been modified by amendment 1.

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- replaced by a revised edition, or
- amended.

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TERMINOLOGY FOR HIGH-VOLTAGE DIRECT CURRENT (HVDC) TRANSMISSION

1 Scope

This International Standard defines terms for high-voltage direct current (HVDC) power transmission systems and for HVDC substations using electronic power converters for the conversion from a.c. to d.c. or vice versa.

This standard is applicable to HVDC substations with line commutated converters, most commonly based on three-phase bridge (double way) connections (see figure 2) in which unidirectional electronic valves, e.g. semiconductor valves, are used.

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 60027 (all parts), *Letter symbols to be used in electrical technology*

IEC 60050-551:1998, *International Electrotechnical Vocabulary – Part 551: Power electronics*

IEC 60146-1-1:1991, *General requirements and line commutated convertors – Part 1-1: Specifications of basic requirements*

IEC 60617-5:1996, *Graphical symbols for diagrams – Part 5: Semiconductors and electron tubes*

IEC 60617-6:1996, *Graphical symbols for diagrams – Part 6: Production and conversion of electrical energy*

3 Symbols and abbreviations

The list covers only the most frequently used symbols. For a more complete list of the symbols which have been adopted for static converters see IEC 60027 and other standards listed in the normative references and the bibliography.

3.1 List of letter symbols

U_d	direct voltage (any defined value)
U_{d0}	conventional no-load direct voltage
U_{di0}	ideal no-load direct voltage
U_{dN}	rated direct voltage
U_L	line-to-line voltage on line side of converter transformer, r.m.s. value including harmonics
U_{LN}	rated value of U_L
U_{v0}	no-load phase-to-phase voltage on the valve side of transformer, r.m.s. value excluding harmonics